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CERTIFIED MAIL

January 17, 2007  
In reply refer to SHEA-104688



Ms. Cassandra Owens  
Regional Water Quality Control Board  
Los Angeles Region  
320 W. 4<sup>th</sup> Street, Suite 200  
Los Angeles, California 90013

Subject: Submittal of Technical Report  
Pursuant to Section 13267 of the California Water Code  
The Boeing Company, Santa Susana Field Laboratory  
Ventura County, California (NPDES Permit No. CA0001309)

Dear Ms. Owens:

The Boeing Company (Boeing) is submitting this Technical Report to the California Regional Water Quality Control Board, Los Angeles Region (RWQCB) to satisfy the requirements in the May 20, 2004 RWQCB letter (Attachment 1). The May 20, 2004 letter, pursuant to Section 13267 of the California Water Code, requested Boeing to perform specific sampling and analyses of storm water collected at the Santa Susana Field Laboratory (SSFL) from two outfall monitoring locations. The locations were the former Radioactive Materials Handling Facility (RMHF, Outfall 003) and Perimeter Pond (Outfall 011) (Figure 1). Sampling and analyses performed to satisfy the Section 13267 requirements were completed coincident with sampling and analyses performed to satisfy the requirements of Boeing's National Pollutant Discharge Elimination System (NPDES) monitoring and reporting program. Data provided in this Technical Report was previously reported, along with all other surface water sampling data, to the RWQCB in past quarterly NPDES Discharge Monitoring Reports (DMRs). This Technical Report only contains data collected to date as required pursuant to the 2004 Section 13267 request. As noted in the attached document we are unable to complete the dry weather sampling and we are waiting on direction from your office.

Please contact Mr. Paul Costa of my staff at (818) 466-8778 if you have questions or comments regarding the contents of this technical report.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. D. Gallacher', written over a horizontal line.

Thomas D. Gallacher, Director  
SSFL - Safety, Health & Environmental Affairs

PJC:bjc

Attachment: October 2006 Technical Report Results

**The Boeing Company  
Santa Susana Field Laboratory**

**Results of the  
Evaluation of Grab Versus Flow Weighted Samples  
and  
Evaluation of Filtered Versus Unfiltered Samples for Radionuclides  
October 2006**

**Introduction**

In a May 20, 2004 letter (Attachment 1), the RWQCB requested Boeing to conduct a special study of surface water runoff at the SSFL. This study was required pursuant to Section 13267 of the California Water Code with the intent of providing information to the RWQCB regarding the quality of water leaving SSFL during rain events and dry weather discharges. Specifically, the letter requested Boeing to conduct two special studies. Study 1 was to compare the results of grab sampling versus flow-weighted composite sampling of surface water run-off. Study 2 was to compare the results of filtered and unfiltered surface water samples that were analyzed for radiological constituents. Boeing submitted a Technical Workplan (Workplan) on August 31, 2004 that outlined the details of the two studies (Attachment 2), and commenced sampling in accordance with the Workplan, in early January 2005.

The January 12, 2005 RWQCB response (Attachment 3) to the Workplan indicated that the Workplan had sufficiently addressed the issues for Study 1. However, in their response, the RWQCB provided clarification and comment on the Study 2 portion of the 13267 request. Furthermore, a subsequent RWQCB letter dated March 22, 2005 (Attachment 4) provided additional clarification on the protocols and requirements of Study 2. Therefore, Boeing submitted a revised Technical Workplan (Revised Workplan) to the RWQCB, dated April 25, 2005 (Attachment 5) to address the RWQCB January 12 and March 22, 2005 comments. Summaries of Study 1 and Study 2 are presented below.

**Study 1 -- Grab versus Composite Sampling**

Overview of Study

This study consisted of six sampling events at the weir immediately downstream from Perimeter Pond (Outfall 011). Three were to occur during wet weather discharges and three during dry weather discharges. Each sampling event was to include the collection of a grab sample during the first 30 minutes of discharge and a flow-weighted composite sample over the course of the first three hours of flow or for the duration of the discharge if less than three hours. The constituents to be analyzed were specified in the May 20, 2004 RWQCB letter (Attachment 1).

Grab Sampling

Field personnel collected the grab samples following methodologies outlined in Chapter 3 of the Environmental Protection Agency's (EPA's) July 1992 NPDES Storm Water Sampling Guidance Document (Guidance Document). Samples were collected and

stored in appropriate laboratory-provided bottles under prescribed temperature conditions following EPA methodologies. Samples were transferred via laboratory courier to an approved EPA Certified Laboratory (laboratory) for analysis using standard chain of custody (COC) forms for proper handling documentation.

#### Composite Sampling

Surface water samples were collected for flow-weighted compositing from the same location as indicated above. For consistency in comparing flow-weighted composite sample results with grab sample results, the grab samples noted above were collected at approximately the same time as the first aliquot for the composite sample. Composite samples were also collected and stored according to methodologies outlined in the Guidance Document. Composite sampling took place over a three-hour period or for the duration of the flow event, and was composed of equal aliquots of sample volume collected approximately every 15 minutes for the duration of the sampling period. Individual aliquot volumes were approximately 2 gallons, and when composited, the total volume was sufficient to complete analyses of all required parameters. Samples were transferred via laboratory courier to an approved laboratory for analysis using standard COC forms for proper handling documentation.

The amount of sample from each aliquot that was used to make up the composite sample was determined based on the proportion of flow during each sampling interval versus the total flow during the sampling event. Flow data from an ISCO Model 4210 Ultrasonic Flow Meter was used to determine aliquot amount. The composite samples, using the individual aliquots and flow data provided, were prepared and analyzed at the laboratory.

#### Wet Weather Storm Water Sampling

Wet weather storm water sample collection at Outfall 011 was initially performed on January 4, and repeated on January 11, February 11, February 25, March 18, and March 25, 2005. Grab samples were collected in the same manner in which they are collected for the NPDES program. Composite sampling occurred over a period of approximately three hours for each event. The laboratory was to perform the flow-weighted compositing portion of the study by taking a quantity of water from each container, based on the flow volume during the sample collection period, and mixing that proportional quantity of water from each container for that flow volume interval.

Initially, the laboratory inadvertently composited the storm water samples for the January 4 and 11, and February 11, 2005 sampling events by taking equal quantities of water from each container and mixing them into a combined sample for each respective sampling day. This resulted in a time-weighted average sample, not a flow-weighted average sample. Upon becoming aware of the erroneous procedure, Boeing collected additional surface water samples from Outfall 011 on February 25, and on March 18 and 25, 2005 to perform flow-weighted averaging. The time-weighted average results from these wet weather-sampling events were not used to fulfill the requirements of the 13267 request. These additional samples were flow-weighted and composited by the

laboratory based on flow volume during the sample collection period. Samples from these three events met the requirements of Study 1 for wet weather.

Table 1 presents the results from the Study 1 samples collected that met the requirements of wet weather sampling. The samples that were inadvertently analyzed as time-weighted samples are included in Appendix A, in a comprehensive data summary table that includes all Study 1 sampling results.

#### Dry Weather Water Sampling

As referenced on Page 5 of the Fact Sheet in the 2004 NPDES Permit (and in subsequent Permits issued), Boeing uses a water management program at the SSFL. This water management program, along with the reduced introduction of water from onsite activities, has significantly reduced the frequency of both wet and dry weather discharges from Outfall 011. Although the procedure for dry weather discharge sampling would have been the same as the wet weather procedure, there has not been a dry weather discharge at Outfall 011 since the RWQCB's May 20, 2004 letter was issued. Therefore, the three dry weather discharge samples to be collected and analyzed could not be collected or analyzed. Boeing notified the RWQCB that the dry weather discharge samples could not be collected, and the RWQCB directed Boeing to submit this technical report without the dry weather data.

#### Reporting of Study 1 Sample Analyses

Table 1 provides a summary of the analytical results that meet the requirements for Study 1. Study 1 results are included herein without the other NPDES Permit-required routine surface water results. The routine surface water analytical results have been previously reported, with corresponding laboratory analytical reports appended, to the RWQCB in the respective quarterly DMRs. For thoroughness, those samples that were collected and analyzed that did not meet the requirements of the RWQCB 13267 request (e.g. the inadvertently composited time-weighted samples, discussed above) are included in Appendix A. Appendix A also contains the analytical laboratory reports for Study 1.

### **Study 2--Sampling for Radiological Components**

#### Overview of Study

Study 2 was to facilitate the comparison of ten storm water samples analyzed for radiological constituents. Each of the collected samples was to be analyzed prior to and after filtering took place in the laboratory. As stated in the May 20, 2004 RWQCB letter, a minimum of four of the samples were to be obtained from the RMHF facility (Outfall 003). The other six samples could be obtained while completing Study 1 at Perimeter Pond, using the wet and dry weather grab samples from that study.

Based on the Workplan submitted, Boeing commenced sampling in early January 2005. However, the RWQCB's January 12 and March 22, 2005 responses to the Workplan (Attachments 3 and 4) provided additional clarification and comments on the Workplan.

Therefore, Boeing collected additional samples during subsequent storm events to meet the additional study modifications requested by the RWQCB.

### Study 2 Sampling and Analyses

Data for Study 2 initially included results from a total of nine sampling events. Samples were collected from Outfall 003 on January 4, February 11 and 18, March 19, and April 28, 2005 (additional samples were collected from Outfall 003 on October 18 and November 9, 2005, and on January 1, February 19, March 1, and March 11, 2006 to satisfy NPDES Permit requirements related to Strontium-90 [as discussed below]). Samples were collected from Outfall 011 on February 11 and 25, and March 18 and 25, 2005. However, similar to Study 1, some initial samples were collected prior to the RWQCB's January 12 or March 22, 2005 letters and, therefore, these samples were not considered adequate to satisfy the requirements of Study 2. The four samples collected from Outfall 003 on February 11 and 18, March 19, and April 28, 2005, and the three samples collected from Outfall 011 on February 25, and March 18 and 25, 2005 were used to satisfy the requirements of Study 2. Table 2 presents the results from the Study 2 samples collected that met the requirements of the study. The samples that were collected from Outfall 003 on January 4 and Outfall 011 on February 11, 2005 that were not used to fulfill the study requirements are included in Appendix A.

Study 2 sampling and analysis consisted of collecting two equal aliquots of surface water per monitoring event and performing analyses according to the RWQCB's request. One aliquot was analyzed unfiltered. Per RWQCB direction, the unfiltered sample was not acidified prior to analysis. The second aliquot was filtered at the laboratory prior to acidification and analysis. A 0.45-micron filter was weighed and tared prior to filtration. The filtered aliquot was then acidified prior to analysis. Both the filtered and unfiltered samples were analyzed for Gross Alpha, Gross Beta, Radium 226 & 228, Tritium, and Strontium-90. As required by the RWQCB, the filter and substrate (the solid material remaining in the filter) from the filtered sample were subsequently analyzed for Cesium-137 using Gamma Spectroscopy.

The surface water sample collected from Outfall 003 on April 28, 2005 that was analyzed for the constituents as part of Study 2 exceeded the established NPDES permit limit for unfiltered Strontium-90. Therefore, as required in the NPDES Permit, additional surface water samples were collected during subsequent flow events from Outfall 003 and analyzed for Strontium-90. The subsequent samples collected on November 9, 2005, and January 1, February 19, March 1, and March 11, 2006 did not contain Strontium-90 at concentrations greater than the NPDES Permit limit. The results of these additional unfiltered Strontium-90 analyses are included in this report in Appendix A.

### Dry Weather Water Sampling

As stated above in reference to the grab sample versus composite sample Study 1, although the procedure for dry weather discharge sampling would have been the same as the wet weather procedure, there has not been a dry weather discharge at Outfall 011 since the RWQCB's May 20, 2004 letter was issued. Therefore, the three dry

weather discharge samples that would have been used to fulfill the requirements of Study 2 could not be collected and analyzed.

#### Reporting of Study 2 Sample Analyses

Table 2 provides a summary of the analytical results that meet the requirements for Study 2. Study 2 results are included herein without the other NPDES Permit-required routine surface water results. The routine surface water analytical results have been previously reported, with corresponding laboratory analytical reports appended, to the RWQCB in the respective quarterly DMRs. For thoroughness, those samples that were collected and analyzed that did not meet the requirements of the RWQCB 13267 request (e.g. those collected and analyzed before receiving final comments on the Workplan from the RWQCB) are included in Appendix A. Appendix A also contains the analytical laboratory reports for Study 2.

Prior to the date of this letter, the total combined radium (TCR) values were reported in a similar format to chemical data, which is amenable to evaluating reporting limits and permit limit compliance. This methodology, applied consistent with the intent of the NPDES Permit, may yield different total combined radium concentrations than the methodology described below (and the methodology used in the Total Combined Radium Addendum summary data sheets (as part of Table 2 and in Appendix A). For consistency and accuracy, and to preserve the true meaning and intent of the data, future data of this type will be reported as reported herein in Table 2 and Appendix A. This does not imply a change in the way constituents are measured. Previously used methodologies and individual measurement results used for reporting purposes have been submitted in the DMRs on a quarterly basis for independent review or comment dating back to February 2005. To summarize, the previously used methodology was:

If both the radium 226 and radium 228 results were non-detected values, then the TCR was "ND" at the lowest minimum detectable activity (MDA).

If one of the radium 226 and radium 228 results was ND and the other was a detected value, then the TCR was equal to the detected value. The reported TCR MDA was equal to the MDA associated with the detected value.

If both the radium 226 and radium 228 results were detected values, then the TCR was equal to the sum of the two values. Likewise, the TCR MDA was equal to the sum of the two MDAs.

The Total Combined Radium Addendum data summary sheets in Table 2 and in Appendix A provide explanation and formulas for calculating TCR (which is the result or the measured value [MV]), the MDA, and the potential error range (plus or minus) in the result. Variances in TCR values are included for the reasons described above and are shown in the tables of this submittal. The values presented in the Total Combined Radium Addendum data summary sheets should be used for the purposes of this study.

## **Summary**

In accordance with RWQCB requirements, Boeing implemented the Section 13267 study to evaluate potential analytical result variations in grab and composite sampling methodologies, and in pre-analytical testing procedures for radiological analysis (filtering and not filtering prior to radiological analysis). With the exception of collecting storm water samples during three dry weather discharges at Perimeter Pond (Outfall 011), because there were no dry weather discharges at Perimeter Pond during the study period, the requirements of the field portions of the studies have been fulfilled. With a decrease in onsite operations, and surface water management programs in place, Boeing does not anticipate that dry weather discharges will occur at Outfall 011 in the future. Based on this, the dry weather portion of the study cannot be completed. Therefore, based on discussion with the RWQCB, submittal of this technical report and associated supporting figure, tables, laboratory reports, and prior correspondence, fulfills the requirements of the May 20, 2004 RWQCB Section 13267 request.

**13267 TECHNICAL REPORT SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

**Notes:**

1. For Dioxins and Furans, laboratory results may have been reported in picograms/liter (pg/L). However, the permit limit is stated in micrograms/liter (µg/L). To evaluate permit compliance, the laboratory results have been converted to µg/L, as necessary, to calculate the TCDD TEQ.
2. TCDD TEQs for the purpose of determining permit compliance are the sum of the products of the detected dioxin congener concentration multiplied by that congener's TEF. The resulting compliance TCDD TEQ does not include those congener concentrations that are reported as DNQ, as specified on Page 46 of the NPDES permit.
3. For some sample dates, pH was determined with a field instrument and was noted as such. These results were not validated. Since pH does not have an RL, the possible pH range is shown in the RL column.
4. The NPDES permit limits for mercury of 0.10 µg/L (Outfalls 1-2) and 0.13 µg/L (Outfalls 3-7) are not achievable by the laboratory; therefore, the laboratory reporting limit of 0.20 µg/L was used to determine compliance.
5. The volume discharged at the Alfa Test Stand (Outfall 012) is estimated based on the run time of the test.
6. For mass based results, the following assumptions and rationale were used:  
Daily Constituent Mass (lbs/day) = Constituent Concentration (mg/L) x 8.34 x Measured Outfall Flow (mgd) during the Flow Event.  
  
Monthly Average Constituent Mass (lbs/day) = Sum of all Daily Constituent Mass within a calendar month / Total Number of Days Flow Events Occurred during that month.
7. In calculating monthly average, one-half of the MDL was used for concentration results reported as ND. The estimated value was used for concentration results reported as DNQ. If all pollutants belonging to the same group are reported as ND or DNQ, the sum of the individual pollutant concentrations were considered zero for calculation of the monthly average.
8. All of the following abbreviations and/or notes may not occur on every table.

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-92.9 +/-200	A negative radiochemical analytical result indicates the count rate of the sample was less than the background condition
\$	reported result or other information was incorrectly reported by the laboratory;
--	result was corrected by the data validator
-/-	based on validation of the data, a qualifier was not required
<(value)	no permit limit established for daily maximum or monthly average
*	analyte not detected at a concentration greater than or equal to the DL, MDL, or RL (see laboratory report for specific detail)
*1	result not validated
*	improper preservation of sample



**13267 TECHNICAL REPORT SUMMARY NOTES  
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*2	the ICP/MS ppb check standard was recovered above the control limit; therefore, the constituent detected was qualified as estimated (J)
*3	initial and or continuing calibration recoveries were outside acceptable control limits
*4	Extractable Fuel Hydrocarbon (EFH) recovery was above control limit in the blank spike only and relative percent difference for the EFH blank spike/blank spike duplicate pair exceeded the quality control (QC) limit of <-25%
*5	blank spike/blank spike duplicate relative percent difference was outside the control limit
*7	BOD results were estimated due to method derivation
*10	value was estimated detect or estimated non detect (J,UJ) due to deficiencies in quantitation of the constituent including constituents reported by the laboratory as Estimated Maximum Possible Concentration (EMPC) values
*11	no calibration was performed for this compound; result is reported as a tentatively identified compound (TIC)
ANR	analysis not required; e.g., constituent or outfall was not required by the permit to be sampled and analyzed (annual, semi-annual, etc.)
B	laboratory method blank contamination
C	calibration %RSD or %D were noncompliant
C5	Calibration verification %R was outside method control limits
D	analysis with this flag should not be used because another more technically sound analysis is available
%D	percent difference between the initial and continuing calibration relative response factors
deg F	degrees Fahrenheit
DL	detection limit
DNQ	detected but not quantified (constituent value greater than or equal to the laboratory method detection limit and less than the laboratory reporting limit)
E	duplicates show poor agreement
H	holding time was exceeded
I	ICP interference check solution results were unsatisfactory
J	estimated value
K	The sample dilution's set-up did not meet the oxygen depletion criteria of at least 2 mg/l. Therefore, the reported result is an estimated value only.
L2	the laboratory control sample %R was below the method control limits
L	laboratory control sample %R was outside control limits
LOD	limit of detection
M1	matrix spike (MS) and/or MS duplicate were above the acceptance limits due to sample matrix interference
M2	the MS and/or MS duplicate were below the acceptance limits due to sample matrix interference
M-3	Results exceeded the linear range in the MS and/or MS duplicate and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
MDA	minimum detectable activity
MDL	method detection limit
MGD	million gallons per day
mg/L	milligrams per liter
ml/L/hr	milliliters per liter per hour

**13267 TECHNICAL REPORT SUMMARY NOTES  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

NA	not applicable; no permit limit established for the constituent and/or outfall
ND	analyte value less than the LOD or MDL
NM	not measured or determined
NTU	nephelometric turbidity unit
pCi/L	picocuries per liter
pg/L	picograms per liter
Q	matrix spike recovery outside of control limits
R	as a validation qualifier, results are rejected; the presence or absence of analyte cannot be verified
R	(reason code in parentheses) %R for calibration not within control limits
RL	laboratory reporting limit
RL-1	reporting limit raised due to sample matrix effects
%RSD	percent relative standard deviation
S	surrogate recovery was outside control limits
TEQ	toxic equivalent
T	presumed contamination, as indicated by a detect in the trip blank
TU <sub>c</sub>	toxicity units (chronic)
U	result not detected
µg/L	micrograms per liter
UJ	result not detected at the estimated reporting limit
umhos/cm	micromhos per centimeter
WHO TEF	World Health Organization toxic equivalency factor
^	analysis not completed due to hold time exceedence or insufficient sample volume
+	False positive – reported compound was not present. Not applicable.

**Table 1 – Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1–Grab versus Composite Samples**

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			2/25/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	0.68	J (DNQ)	0.76	J (DNQ)
Chloride	mg/L	-/-	5.1	--	5.1	--
Specific Conductivity (Lab)	umhos/cm	-/-	150	--	150	--
Surfactants (MBAS)	mg/L	-/-	0.054	J (DNQ)	0.051	J (DNQ)
Fluoride	mg/L	-/-	0.17	J (DNQ)	0.15	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	0.38	--	0.38	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	7.0	*	7.0	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	11	--	11	--
Temperature	deg. F	86/-	55.7	*	55.4	*
Total Cyanide	ug/L	-/-	ND < 2.2	U	ND < 2.2	U
Total Dissolved Solids	mg/L	-/-	100	--	110	--
Total Organic Carbon	mg/L	-/-	11	--	9.0	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	9.4	--	8.0	--
Volume Discharged	MGD	-/-	1.4751	*	0.9834	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,S)	ND < 2.0	UJ (B,S)
Arsenic	ug/L	-/-	1.3	J (*3)	2.1	J (*3)
Barium	mg/L	-/-	0.020	--	0.020	--
Beryllium	ug/L	-/-	ND < 0.037	U	ND < 0.037	U
Boron	mg/L	-/-	ND < 0.062	UJ (B)	ND < 0.065	UJ (B)
Cadmium	ug/L	-/-	0.10	J (DNQ)	0.091	J (DNQ)
Chromium	ug/L	-/-	ND < 2.0	UJ (B)	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.23	J (DNQ)	0.19	J (DNQ)
Copper	ug/L	-/-	3.2	--	3.3	--
Iron	mg/L	-/-	0.56	--	0.46	--
Lead	ug/L	-/-	0.57	J (B,DNQ)	0.30	J (B,DNQ)
Manganese	ug/L	-/-	13	--	12	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	1.0	J (B,DNQ)	0.87	J (B,DNQ)
Selenium	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	UJ (*3)	ND < 0.089	UJ (*3)
Thallium	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Vanadium	ug/L	-/-	1.5	J (B,DNQ)	ND < 2.0	UJ (B)
Zinc	ug/L	-/-	16	J (DNQ,*3)	13	J (*3,DNQ)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab 2/25/2005		Composite 2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	*	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	*
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.13	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	U	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
2-Methylnaphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
4,4'-DDE	ug/L	-/-	ND < 0.025	U	ND < 0.025	U
4,4'-DDT	ug/L	-/-	0.038	J (DNQ)	ND < 0.10	UJ (B,*5)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			2/25/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	U	ND < 4.6	U
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
alpha-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Aroclor-1221	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Aroclor-1232	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1242	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1248	ug/L	-/-	ND < 0.25	UJ (C)	ND < 0.25	UJ (C)
Aroclor-1254	ug/L	-/-	ND < 0.25	UJ (C)	ND < 0.25	UJ (C)
Aroclor-1260	ug/L	-/-	ND < 0.40	UJ (C)	ND < 0.40	UJ (C)
Benzidine	ug/L	-/-	ND < 3.2	UJ (*5)	ND < 3.2	UJ (*5)
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	UJ (C)	ND < 0.015	U
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 1.1	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 0.34	U	ND < 5.0	U (B)
Chlordane	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Diethylphthalate	ug/L	-/-	ND < 0.12	U	ND < 1.0	UJ (B)

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			2/25/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endosulfan II	ug/L	-/-	ND < 0.040	U	ND < 0.040	U
Endosulfan sulfate	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endrin	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Endrin aldehyde	ug/L	-/-	ND < 0.045	U	ND < 0.045	U
Endrin ketone	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
Heptachlor epoxide	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	U	ND < 1.8	U
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	UJ (H)	ND < 0.39	UJ (H)
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Methoxychlor	ug/L	-/-	ND < 0.035	U	ND < 0.035	U
Methylene Chloride	ug/L	-/-	ND < 5.0	U (T)	1.1	J (DNQ)
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	UJ (H)	ND < 1.2	UJ (H)
Naphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	UJ (C)	ND < 0.49	UJ (C)
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	U	ND < 1.5	U
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	UJ (H)	ND < 0.27	UJ (H)

**Table I-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab 3/18/2005		Composite 3/18/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	0.56	--
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	1.6	J (DNQ)	3.8	--
Chloride	mg/L	-/-	15	--	15	--
Specific Conductivity (Lab)	umhos/cm	-/-	360	--	350	--
Surfactants (MBAS)	mg/L	-/-	0.080	J (DNQ)	0.064	--
Fluoride	mg/L	-/-	ND < 0.50	UJ (B)	ND < 0.50	UJ (B)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	ND < 0.072	U	ND < 0.072	U
Oil & Grease	mg/L	-/-	ND < 0.94	U	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.73	*	ANR	ANR
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	42	--	41	--
Temperature	deg. F	86/-	60.4	*	ANR	ANR
Total Cyanide	ug/L	-/-	ND < 6.2	UJ (B,C,S)	ND < 6.2	UJ (B,C,S)
Total Dissolved Solids	mg/L	-/-	220	--	230	--
Total Organic Carbon	mg/L	-/-	13	--	13	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	3.1	--	2.4	--
Volume Discharged	MGD	-/-	0.2532	*	0.1688	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,*3,S)	ND < 2.0	UJ (B,*3,S)
Arsenic	ug/L	-/-	2.4	--	2.1	--
Barium	mg/L	-/-	0.036	--	0.036	--
Beryllium	ug/L	-/-	ND < 0.037	U	ND < 0.037	U
Boron	mg/L	-/-	0.090	--	0.090	--
Cadmium	ug/L	-/-	0.085	J (DNQ)	0.079	J (DNQ)
Chromium	ug/L	-/-	1.0	J (B,DNQ)	0.93	J (B,DNQ)
Chromium VI	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.35	J (DNQ)	0.33	J (DNQ)
Copper	ug/L	-/-	4.0	--	3.0	--
Iron	mg/L	-/-	0.29	--	0.27	--
Lead	ug/L	-/-	0.30	J (DNQ)	0.39	J (DNQ)
Manganese	ug/L	-/-	65	--	56	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	ND < 2.5	UJ (B)	ND < 2.0	UJ (B)
Selenium	ug/L	-/-	0.55	J (DNQ)	0.43	J (DNQ)
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Thallium	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Vanadium	ug/L	-/-	2.0	--	1.3	J (DNQ)
Zinc	ug/L	-/-	12	J (DNQ)	9.8	J (DNQ)



**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab 3/18/2005		Composite 3/18/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	UJ (C)	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	UJ (C)	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	UJ (C)	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.26	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.42	U	ND < 0.42	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.62	U	ND < 0.62	U
2,4-Dinitrophenol	ug/L	-/-	ND < 5.4	U	ND < 5.4	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.46	U	ND < 0.46	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.48	U	ND < 0.48	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Chlorophenol	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.76	UJ (C)	ND < 0.76	UJ (C)
2-Methylnaphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
2-Methylphenol	ug/L	-/-	ND < 0.56	U	ND < 0.56	U
2-Nitrophenol	ug/L	-/-	ND < 0.46	U	ND < 0.46	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 1.9	UJ (C)	ND < 1.9	UJ (C)
4,4'-DDD	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
4,4'-DDE	ug/L	-/-	ND < 0.025	U	ND < 0.025	UJ (S)
4,4'-DDT	ug/L	-/-	0.039	J (DNQ)	0.11	J (S)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			3/18/2005		3/18/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
4-Bromophenylphenylether	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.68	U	ND < 0.68	U
4-Chloroaniline	ug/L	-/-	ND < 0.40	U	ND < 0.40	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
4-Nitrophenol	ug/L	-/-	ND < 1.5	U	ND < 1.5	U
Acenaphthene	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Acenaphthylene	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	R (R)
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	U	ND < 0.030	UJ (S)
alpha-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Aniline	ug/L	-/-	ND < 5.8	U	ND < 5.8	U
Anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Aroclor-1016	ug/L	-/-	ND < 0.20	U	ND < 0.20	UJ (S)
Aroclor-1221	ug/L	-/-	ND < 0.10	U	ND < 0.10	UJ (S)
Aroclor-1232	ug/L	-/-	ND < 0.15	U	ND < 0.15	UJ (S)
Aroclor-1242	ug/L	-/-	ND < 0.15	U	ND < 0.15	UJ (S)
Aroclor-1248	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (S)
Aroclor-1254	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (S)
Aroclor-1260	ug/L	-/-	ND < 0.40	U	ND < 0.40	UJ (S)
Benzidine	ug/L	-/-	ND < 4.8	R (L)	ND < 4.8	R (L)
Benzo(a)anthracene	ug/L	-/-	ND < 0.076	U	ND < 0.076	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Benzoic acid	ug/L	-/-	ND < 7.4	UJ (C)	ND < 7.4	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.42	U	ND < 0.42	U
beta-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 2.2	U	ND < 2.2	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	UJ (C)	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 10	U (B)	ND < 10	U (B)
Chlordane	ug/L	-/-	ND < 0.20	U	ND < 0.20	UJ (S)
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	UJ (C)	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	UJ (C)	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Dibenzofuran	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Diethylphthalate	ug/L	-/-	ND < 2.0	U (B)	ND < 2.0	U (B)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			3/18/2005		3/18/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Dimethylphthalate	ug/L	-/-	ND < 0.16	U	ND < 0.16	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Endosulfan II	ug/L	-/-	ND < 0.040	U	ND < 0.040	UJ (S)
Endosulfan sulfate	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Endrin	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Endrin aldehyde	ug/L	-/-	ND < 0.045	U	ND < 0.045	UJ (S)
Endrin ketone	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Fluoranthene	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
Fluorene	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	UJ (S)
Heptachlor epoxide	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Hexachlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.76	U	ND < 0.76	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 3.6	U	ND < 3.6	U
Hexachloroethane	ug/L	-/-	ND < 1.0	U	ND < 1.0	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Isophorone	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Methoxychlor	ug/L	-/-	ND < 0.035	U	ND < 0.035	UJ (S)
Methylene Chloride	ug/L	-/-	ND < 0.48	U	ND < 0.48	U
m-Nitroaniline	ug/L	-/-	ND < 0.70	U	ND < 0.70	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Naphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Nitrobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.44	U	ND < 0.44	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
o-Nitroaniline	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
p-Cresol	ug/L	-/-	ND < 0.40	U	ND < 0.40	U
Pentachlorophenol	ug/L	-/-	ND < 1.6	U	ND < 1.6	U
Phenanthrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Phenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
p-Nitroaniline	ug/L	-/-	ND < 0.98	U	ND < 0.98	U
Pyrene	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Toxaphene	ug/L	-/-	ND < 1.5	U	ND < 1.5	UJ (S)
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	U

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			3/25/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	0.56	--	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	0.91	J (DNQ)	1.1	J (DNQ)
Chloride	mg/L	-/-	8.4	--	9.2	--
Specific Conductivity (Lab)	umhos/cm	-/-	210	--	220	--
Surfactants (MBAS)	mg/L	-/-	ND < 0.044	U	ND < 0.044	U
Fluoride	mg/L	-/-	0.25	J (DNQ)	0.25	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	0.14	--	0.15	--
Oil & Grease	mg/L	-/-	1.6	J (DNQ)	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.7	*	ANR	ANR
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	20	--	22	--
Temperature	deg. F	86/-	59.7	*	59.7	6.7
Total Cyanide	ug/L	-/-	ND < 5.2	UJ (B,S)	ND < 5.6	UJ (B,S)
Total Dissolved Solids	mg/L	-/-	120	--	140	--
Total Organic Carbon	mg/L	-/-	11	--	10	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	4.4	--	4.2	--
Volume Discharged	MGD	-/-	0.4749	*	0.3166	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (*3,B)	ND < 2.0	UJ (*3,B)
Arsenic	ug/L	-/-	2.7	J (I)	2.6	J (I)
Barium	mg/L	-/-	0.023	--	0.024	--
Beryllium	ug/L	-/-	0.041	J (DNQ)	ND < 0.037	U
Boron	mg/L	-/-	ND < 0.092	UJ (B)	ND < 0.095	UJ (B)
Cadmium	ug/L	-/-	0.22	J (DNQ)	0.20	J (DNQ)
Chromium	ug/L	-/-	ND < 2.0	UJ (B)	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.29	J (DNQ)	0.29	J (DNQ)
Copper	ug/L	-/-	3.9	--	3.7	--
Iron	mg/L	-/-	0.43	--	0.43	--
Lead	ug/L	-/-	0.46	J (DNQ)	0.43	J (DNQ)
Manganese	ug/L	-/-	36	--	41	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	3.4	--	3.5	--
Selenium	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Thallium	ug/L	-/-	ND < 1.0	UJ (B)	ND < 0.075	U
Vanadium	ug/L	-/-	ND < 0.86	U	1.2	J (DNQ)
Zinc	ug/L	-/-	13	J (DNQ)	13	J (DNQ)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab 3/25/2005		Composite 3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	*	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,1,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.13	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	U	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	UJ (C)	ND < 0.38	UJ (C)
2-Methylnaphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
4,4'-DDE	ug/L	-/-	ND < 0.025	UJ (S)	ND < 0.025	UJ (S)
4,4'-DDT	ug/L	-/-	ND < 0.030	UJ (S)	ND < 0.030	UJ (S)

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			3/25/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	R (R)
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	UJ (S)	ND < 0.030	UJ (S)
alpha-BHC	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	UJ (S)	ND < 0.20	UJ (S)
Aroclor-1221	ug/L	-/-	ND < 0.10	UJ (S)	ND < 0.10	UJ (S)
Aroclor-1232	ug/L	-/-	ND < 0.15	UJ (S)	ND < 0.15	UJ (S)
Aroclor-1242	ug/L	-/-	ND < 0.15	UJ (S)	ND < 0.15	UJ (S)
Aroclor-1248	ug/L	-/-	ND < 0.25	UJ (S)	ND < 0.25	UJ (S)
Aroclor-1254	ug/L	-/-	ND < 0.25	UJ (S)	ND < 0.25	UJ (S)
Aroclor-1260	ug/L	-/-	ND < 0.40	UJ (S)	ND < 0.40	UJ (S)
Benzidine	ug/L	-/-	ND < 2.4	R (L)	ND < 2.4	R (L)
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 1.1	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 5.0	U (B)	ND < 5.0	U (B)
Chlordane	ug/L	-/-	ND < 0.20	UJ (S)	ND < 0.20	UJ (S)
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Diethylphthalate	ug/L	-/-	ND < 1.0	U (B)	ND < 1.0	U (B)

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request**  
**Study 1--Grab versus Composite Samples**  
**Outfall 011**  
**THE BOEING COMPANY**  
**SANTA SUSANA FIELD LABORATORY**  
**NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	Grab		Composite	
			3/25/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 2.0	U (B)	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Endosulfan II	ug/L	-/-	ND < 0.040	UJ (S)	ND < 0.040	UJ (S)
Endosulfan sulfate	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Endrin	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Endrin aldehyde	ug/L	-/-	ND < 0.045	UJ (S)	ND < 0.045	UJ (S)
Endrin ketone	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	UJ (S)	ND < 0.030	UJ (S)
Heptachlor epoxide	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	UJ (C)	ND < 1.8	UJ (C)
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Methoxychlor	ug/L	-/-	ND < 0.035	UJ (S)	ND < 0.035	UJ (S)
Methylene Chloride	ug/L	-/-	ND < 0.48	U	ND < 0.48	U
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Naphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	UJ (S)	ND < 1.5	UJ (S)
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	U

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 1--Grab versus Composite Samples  
 Outfall 011-Grab  
 Sample Date 2/25/2005**

**THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	9.15E-06	J (DNQ)	0.01	9.15E-08	ND
1,2,3,4,6,7,8-HpCDF	2.06E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	2.09E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	2.84E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.18E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	2.65E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.11E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	2.73E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.81E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.26E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.91E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	1.27E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.74E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	9.21E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.46E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	8.12E-05	J (DNQ)	0.0001	8.12E-09	ND
OCDF	0.00E+00	1.00E-04	3.94E-06	J (DNQ)	0.0001	3.94E-10	ND
<b>TCDD TEQ w/ DNQ Values</b>						<b>1.00E-07</b>	
<b>TCDD TEQ w/out DNQ Values</b>							<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.



**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1--Grab vs Composite Samples  
Outfall 011-Composite  
Sample Date 2/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	6.35E-06	J (DNQ)	0.01	6.35E-08	ND
1,2,3,4,6,7,8-HpCDF	2.11E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	2.23E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.06E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	8.22E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.12E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	7.51E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	3.08E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.25E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.11E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.88E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	9.05E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.79E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	9.58E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.25E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	6.21E-05	J (DNQ)	0.0001	6.21E-09	ND
OCDF	4.47E-06	1.00E-04	ND	U	0.0001	ND	ND
<b>TCDD TEQ w/ DNQ Values</b>						<b>6.97E-06</b>	
<b>TCDD TEQ w/out DNQ Values</b>							<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1--Grab versus Composite Samples  
Outfall 011-Grab  
Sample Date 3/18/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	2.62E-06	J (DNQ)	0.01	2.62E-08	ND
1,2,3,4,6,7,8-HpCDF	9.32E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	1.07E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.40E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	5.75E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.38E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	5.35E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.39E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	9.76E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	8.11E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.67E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.10E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.48E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	7.23E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.14E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	2.23E-05	J (DNQ)	0.0001	2.23E-09	ND
OCDF	3.17E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>2.54E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1--Grab vs Composite Samples  
Outfall 011-Composite  
Sample Date 3/18/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	1.56E-06	ND	UJ (*10)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	7.63E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	9.23E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.61E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	6.46E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.53E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	6.12E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.56E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.12E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	6.58E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.91E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.97E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.78E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	6.91E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	9.79E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	1.81E-05	J (DNQ)	0.0001	1.81E-09	ND
OCDF	3.25E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>1.81E-09</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall? No TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1--Grab versus Composite Samples  
Outfall 011-Grab  
Sample Date 3/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	6.55E-06	J (DNQ)	0.01	6.55E-08	ND
1,2,3,4,6,7,8-HpCDF	0.00E+00	5.00E-05	1.85E-06	J (DNQ)	0.01	1.85E-08	ND
1,2,3,4,7,8,9-HpCDF	6.06E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	6.22E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.99E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	6.21E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	2.99E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	6.15E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	5.43E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	4.55E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	6.32E-07	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	3.61E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	5.34E-07	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	4.60E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	5.65E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	5.99E-05	J (DNQ)	0.0001	5.99E-09	ND
OCDF	0.00E+00	1.00E-04	2.90E-06	J (DNQ)	0.0001	2.90E-10	ND
<b>TCDD TEQ w/ DNQ Values</b>						<b>9.03E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>							<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Table1-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 1--Grab vs Composite Samples  
Outfall 011-Composite  
Sample Date 3/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	7.34E-06	J (DNQ)	0.01	7.34E-08	ND
1,2,3,4,6,7,8-HpCDF	0.00E+00	9.89E-07	ND	UJ (*10)	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	5.31E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	7.40E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.47E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	7.54E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	2.38E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	7.40E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	3.91E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	4.49E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	8.50E-07	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.55E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	7.79E-07	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	5.45E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	4.47E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	6.92E-05	J (DNQ)	0.0001	6.92E-09	ND
OCDF	0.00E+00	1.00E-04	2.73E-06	J (DNQ)	0.0001	2.73E-10	ND

TCDD TEQ w/ DNQ Values	8.06E-08	
TCDD TEQ w/out DNQ Values		ND

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

Table 1-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 1--Grab versus Composite Samples  
 Outfall 011

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

ANALYTE	UNITS	Grab 2/25/2005			Comp 2/25/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Gross Alpha (filtered)	pCi/L	0.662 ±0.67	0.986	UJ (*I,R,H)	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	1.50 ±0.89	1.05	J (R)	1.29 ±0.80	0.947	J (R)
Gross Beta (filtered)	pCi/L	2.27 ±1.2	1.88	J (*I,H)	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.27 ±1.2	1.77	--	2.12 ±1.2	1.89	--
Strontium-90 (unfiltered)	pCi/L	-0.075 ±0.26	0.514	UJ (*I,H)	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	0.306 ±0.25	0.451	U	-0.059 ±0.24	0.459	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.930 ± 0.322	0.713	J (*I, H)	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.081 ± 0.231	0.026	--	ND < 0.024 ±0.29	0.024	U
Tritium (filtered)	pCi/L	-22.3 ±99	168	U	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-45.7 ±150	259	U	-7.08 ±150	261	U
Cesium 137	pCi/g	ND < 27.5	27.5	U	ANR	ANR	ANR

Table 1-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 1--Grab versus Composite Samples  
 Outfall 011

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

ANALYTE	UNITS	Grab 3/18/2005			Comp 3/18/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Gross Alpha (filtered)	pCi/L	0.626 ±0.83	1.28	UJ (R)	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.067 ±0.71	1.39	UJ (R,H)	0.305 ±0.81	1.20	UJ (R,H)
Gross Beta (filtered)	pCi/L	3.37 ±1.3	1.79	--	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.09 ±1.3	1.94	J (H)	1.96 ±1.1	1.80	J (H)
Strontium-90 (filtered)	pCi/L	0.029 ±0.29	0.588	U	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.108 ±0.25	0.508	UJ (H)	0.032 ±0.22	0.442	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ND < 0.450 ± 0.475	0.450	U	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.084 ± 0.251	0.023	J (H)	0.063 ±0.23	0.024	J (H)
Tritium (filtered)	pCi/L	-63.2 ±96	166	U	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-16.2 ±98	166	U	-31.0 ±98	166	U
Cesium 137	pCi/g	ND < 23.0	23.0	U	ANR	ANR	ANR

Table 1-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 1--Grab versus Composite Samples  
 Outfall 011

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

ANALYTE	UNITS	Grab 3/25/2005			Comp 3/25/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Gross Alpha (filtered)	pCi/L	-0.086 ±0.62	1.29	UJ (R)	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.510 ±0.59	0.852	UJ (R,H)	0.216 ±0.63	1.16	UJ (R,H)
Gross Beta (filtered)	pCi/L	-0.473 ±1.3	2.32	U	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.97 ±1.3	1.84	J (H)	2.35 ±1.2	1.82	J (H)
Strontium-90 (filtered)	pCi/L	-0.105 ±0.26	0.535	U	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.052 ±0.37	0.658	UJ (H)	-0.105 ±0.25	0.514	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.407 ± 0.283	0.285	--	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ND < 0.396 ± 0.248	0.396	UJ (H)	ND < 0.477 ±0.38	0.477	UJ (H)
Tritium (filtered)	pCi/L	129 ±170	278	U	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-16.7 ±160	279	U	83.4 ±170	278	U
Cesium 137	pCi/g	ND < 19.4	19.4	U	ANR	ANR	ANR



**Table 2 – Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 2--Filtered versus Unfiltered Samples**

Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2--Filtered versus Unfiltered Samples  
 Outfall 003 (RMHF)

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/18/2005				
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER	
<b>RADIOACTIVITY</b>									
Gross Alpha (filtered)	pCi/L	15/-	-0.288 ±0.45	0.969	UJ (R,Q)	0.904 ±0.74	1.00	UJ (R)	
Gross Alpha (unfiltered)	pCi/L	15/-	0.240 ±0.58	1.09	UJ (R,Q,H)	1.42 ±0.93	1.19	UJ (H,R)	
Gross Beta (filtered)	pCi/L	50/-	4.44 ±1.3	1.80	--	3.32 ±1.2	1.79	--	
Gross Beta (unfiltered)	pCi/L	50/-	3.53 ±1.2	1.82	UJ (H)	3.75 ±1.2	1.78	J (H)	
Strontium-90 (filtered)	pCi/L	8.0/-	1.04 ±0.31	0.428	--	0.901 ±0.24	0.280	--	
Strontium-90 (unfiltered)	pCi/L	8.0/-	1.10 ±0.34	0.462	J (H)	0.892 ±0.22	0.253	--	
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	1.426 ±0.460	0.801	--	ND < 0.039 ± 0.361	0.039	U	
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.30 ± 0.370	0.756	J (H)	1.249 ± 0.361	0.768	J (H)	
Tritium (filtered)	pCi/L	20000/-	138 ±150	242	U	-41.9 ±150	254	U	
Tritium (unfiltered)	pCi/L	20000/-	106 ±150	242	U	-77.0 ±140	255	U	
Cesium 137	pCi/g	-/-	ND <19.8	19.8	U	ND <20.5	20.5	U	

Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2--Filtered versus Unfiltered Samples  
 Outfall 003 (RMHF)

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/19/2005		4/28/2005				
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER	
<b>RADIOACTIVITY</b>									
Gross Alpha (filtered)	pCi/L	15/-	8.96 ±3.3	2.54	J (R)	2.79 ±3.7	4.35	UJ (R)	
Gross Alpha (unfiltered)	pCi/L	15/-	5.03 ±3.0	3.27	J (R,H)	8.85 ±5.0	5.79	J (R,H)	
Gross Beta (filtered)	pCi/L	50/-	18.0 ±3.1	3.73	--	43.2 ±5.9	6.39	--	
Gross Beta (unfiltered)	pCi/L	50/-	19.0 ±3.7	4.56	J (H)	43.8 ±6.9	8.12	J (H)	
Strontium-90 (filtered)	pCi/L	8.0/-	5.49 ±0.58	0.445	--	10.8 ±0.85	0.551	--	
Strontium-90 (unfiltered)	pCi/L	8.0/-	5.49 ±0.56	0.404	J (H)	11.4 ±0.82	0.457	J (H)	
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	0.091 ± 0.531	0.034	--	ND < 0.630 ± 0.895	0.630	U	
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	0.145 ± 0.561	0.031	J (H)	ND < 0.707 ± 0.723	0.707	UJ (H)	
Tritium (filtered)	pCi/L	20000/-	43.7 ±96	164	U	56.8 ±110	185	U	
Tritium (unfiltered)	pCi/L	20000/-	-34.3 ±99	168	U	65.7 ±110	189	U	
Cesium 137	pCi/g	-/-	ND <10.9	10.9	U	ND <13.9	13.9	U	

**Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2--Filtered versus Unfiltered Samples  
 Outfall 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309**

ANALYTE	UNITS	2/25/2005			3/18/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Gross Alpha (filtered)	pCi/L	0.662 ±0.67	0.986	UJ (*1,R,H)	0.626 ±0.83	1.28	UJ (R)
Gross Alpha (unfiltered)	pCi/L	1.50 ±0.89	1.05	J (R)	0.067 ±0.71	1.39	UJ (R,H)
Gross Beta (filtered)	pCi/L	2.27 ±1.2	1.88	J (*1,H)	3.37 ±1.3	1.79	--
Gross Beta (unfiltered)	pCi/L	2.27 ±1.2	1.77	--	2.09 ±1.3	1.94	J (H)
Strontium-90 (filtered)	pCi/L	-0.075 ±0.26	0.514	UJ (*1,H)	0.029 ±0.29	0.588	U
Strontium-90 (unfiltered)	pCi/L	0.206 ±0.25	0.451	U	-0.108 ±0.25	0.508	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.930 ±0.322	0.713	J (*1, H)	ND < 0.450 ± 0.475	0.450	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.081 ±0.231	0.026	--	0.084 ± 0.251	0.023	J (H)
Tritium (filtered)	pCi/L	-22.3 ±99	168	U	-63.2 ±96	166	U
Tritium (unfiltered)	pCi/L	-45.7 ±150	259	U	-16.2 ±98	166	U
Cesium 137	pCi/g	ND < 27.5	27.5	U	ND < 23.0	23.0	U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

**Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2--Filtered versus Unfiltered Samples  
 Outfall 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 NPDES PERMIT CA0001309**

ANALYTE	UNITS	RESULT	3/25/2005		VALIDATION QUALIFIER
			MDA		
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	-0.086 ±0.62	1.29		UJ (R)
Gross Alpha (unfiltered)	pCi/L	0.510 ±0.59	0.852		UJ (R,H)
Gross Beta (filtered)	pCi/L	-0.472 ±1.3	2.32		U
Gross Beta (unfiltered)	pCi/L	2.97 ±1.3	1.84		J (H)
Strontium-90 (filtered)	pCi/L	-0.105 ±0.26	0.535		U
Strontium-90 (unfiltered)	pCi/L	-0.052 ±0.37	0.658		UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.407 ± 0.283	0.285		
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ND < 0.396 ± 0.248	0.396		UJ (H)
Tritium (filtered)	pCi/L	129 ±170	278		U
Tritium (unfiltered)	pCi/L	-16.7 ±160	279		U
Cesium 137	pCi/g	ND < 19.4	19.4		U

See attached notes for abbreviations, definitions, and other explanations for the data presented.

Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2-Filtered versus Unfiltered Samples  
 OUTFALL 003

Total Combined Radium Addendum

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 PERMIT CA0001309

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/18/2005		
			RESULT	MDA	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	1.426 ± 0.460	0.801	0.763 ± 0.361	0.815	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.318 ± 0.370	0.777	1.249 ± 0.361	0.768	J (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
Study 2-Filtered versus Unfiltered Samples  
OUTFALL 003**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/19/2005		4/28/2005	
			RESULT	MDA	RESULT	MDA
<b>RADIOACTIVITY</b>						
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	0.539 ± 0.531	0.995	1.530 ± 0.895	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	0.521 ± 0.561	0.928	1.192 ± 0.723	UJ (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

See attached notes for abbreviations, definitions and other explanations for the data presented.

Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2-Filtered versus Unfiltered Samples  
 OUTFALL 011

Total Combined Radium Addendum

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 PERMIT CA0001309

ANALYTE	UNITS	RESULT	2/25/2005	
			MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.930 ± 0.322	0.713	J (*1, H)
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.331 ± 0.231	0.621	U

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

See attached notes for abbreviations, definitions, and other explanations for the data presented.



Table 2-Analytical Summary Tables of Data Satisfying the 13267 Request  
 Study 2-Filtered versus Unfiltered Samples  
 OUTFALL 011

Total Combined Radium Addendum

THE BOEING COMPANY  
 SANTA SUSANA FIELD LABORATORY  
 PERMIT CA0001309

ANALYTE	UNITS	3/18/2005			3/25/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.732 ± 0.475	1.167	U	0.663 ± 0.283	0.786	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.537 ± 0.251	0.634	UJ (H)	0.099 ± 0.248	0.799	UJ (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

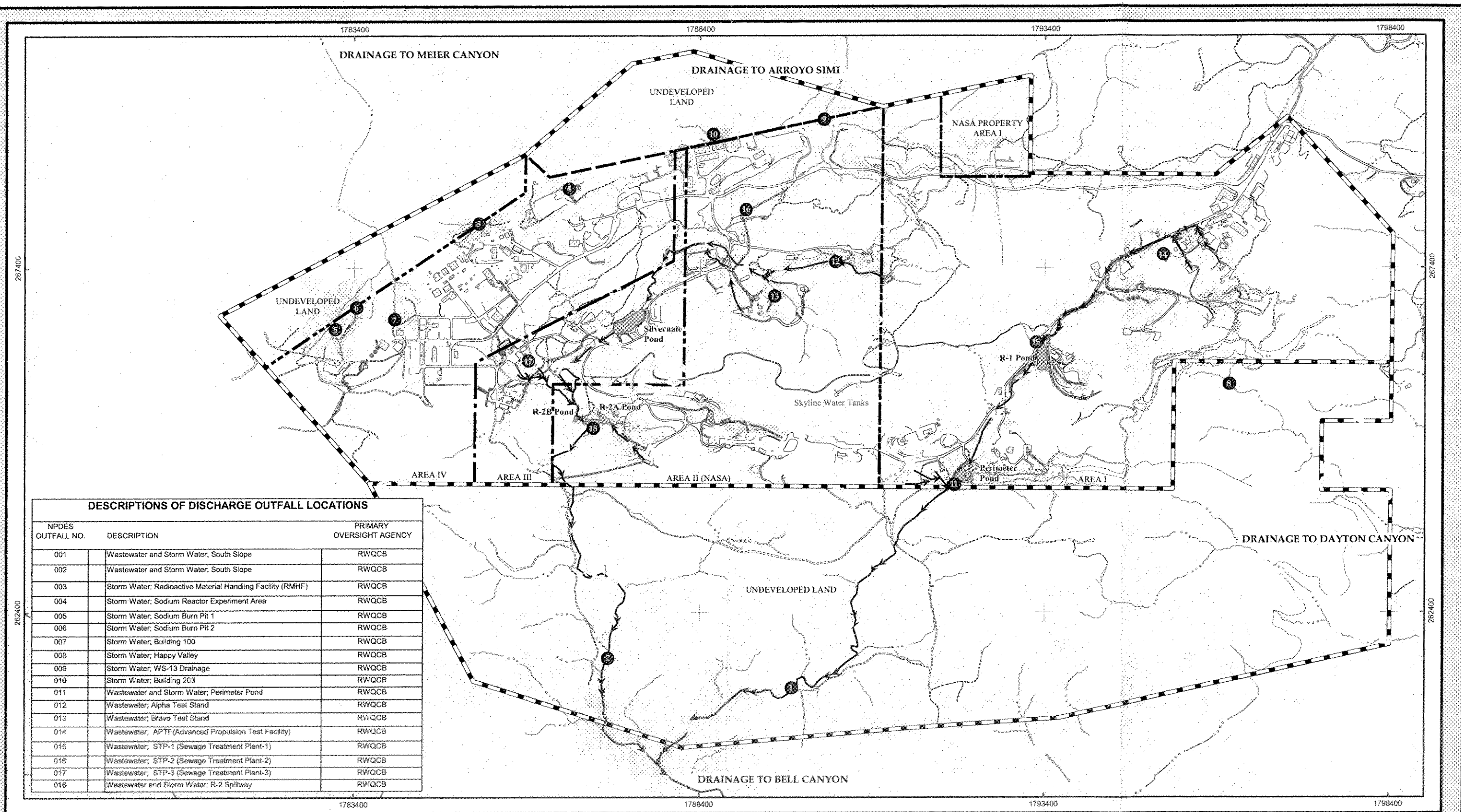
**Measure Value (MV)**  
 $MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$

**Minimum Detectable Activity (MDA)**  
 $MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$

**2-Sigma Error (2σ)**  
 $2\sigma_{Ra-226+Ra-228} = 2 * (\sigma_{Ra-226}^2 + \sigma_{Ra-228}^2)^{0.5}$

See attached notes for abbreviations, definitions, and other explanations for the data presented.

**Figure 1**  
**Surface Water Monitoring Locations**



**DESCRIPTIONS OF DISCHARGE OUTFALL LOCATIONS**

NPDES OUTFALL NO.	DESCRIPTION	PRIMARY OVERSIGHT AGENCY
001	Wastewater and Storm Water, South Slope	RWQCB
002	Wastewater and Storm Water, South Slope	RWQCB
003	Storm Water, Radioactive Material Handling Facility (RMHF)	RWQCB
004	Storm Water, Sodium Reactor Experiment Area	RWQCB
005	Storm Water, Sodium Burn Pit 1	RWQCB
006	Storm Water, Sodium Burn Pit 2	RWQCB
007	Storm Water, Building 100	RWQCB
008	Storm Water, Happy Valley	RWQCB
009	Storm Water, WS-13 Drainage	RWQCB
010	Storm Water, Building 203	RWQCB
011	Wastewater and Storm Water, Perimeter Pond	RWQCB
012	Wastewater, Alpha Test Stand	RWQCB
013	Wastewater, Bravo Test Stand	RWQCB
014	Wastewater, APTF(Advanced Propulsion Test Facility)	RWQCB
015	Wastewater, STP-1 (Sewage Treatment Plant-1)	RWQCB
016	Wastewater, STP-2 (Sewage Treatment Plant-2)	RWQCB
017	Wastewater, STP-3 (Sewage Treatment Plant-3)	RWQCB
018	Wastewater and Storm Water, R-2 Spillway	RWQCB



- Legend**
- NPDES Outfalls (RWQCB Primary Oversight Authority)
  - Treated Effluent Pathways
  - HPDE Transmission Pipelines
  - Natural Drainage
  - Concrete Lined Drainage
  - Graded Drainage
  - Surface Water Reclamation Ponds

- Base Map Legend**
- SSFL Property Boundary
  - Administrative Area Boundary
  - Ground Elevation Contours
  - Drainage Pathways
  - A/C Curbing
  - Dirt Road
  - Existing Building or Structure

**Storm Water Drainage Systems and Outfall Locations**

Date: May 09, 2005  
 File: c:\msd\p\msd\stwrmap\epdsw\_basemap\_permit\_polly.mxd



**Attachment 1**  
**RWQCB May 20, 2004 Section 13267 Request Letter to Boeing**



# California Regional Water Quality Control Board Los Angeles Region



Terry Taraminen  
Secretary for  
Environmental  
Protection

Over 51 Years Serving Coastal Los Angeles and Ventura Counties  
Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

320 W. 4th Street, Suite 200, Los Angeles, California 90013  
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.swrcb.ca.gov/rwqcb4>

Arnold Schwarzenegger  
Governor

May 20, 2004

Mr. Steve Lafflam, Division Director  
Safety, Health & Environmental Affairs  
The Boeing Company  
P.O. Box 7922  
Canoga Park, California 91309

Dear Mr. Lafflam:

## REQUIREMENT TO SUBMIT A TECHNICAL REPORT PURSUANT TO SECTION 13267 OF THE CALIFORNIA WATER CODE - BOEING COMPANY, SANTA SUSANA FIELD LABORATORY, CANOGA PARK (NPDES NO. CA0001309, CI NO. 6027)

As you are aware, comments received by the Regional Board during the development of the revised tentative National Pollutant Discharge Elimination System (NPDES) requirements have resulted in a review of the sampling protocols utilized for stormwater constituents and radionuclides in wastewater at the Santa Susana Field Laboratory (SSFL). The protocols for sample collection that are stipulated in the Monitoring and Reporting Requirements for storm water runoff are based on the *NPDES Storm Water Sampling Guidance Document* which was issued by United States Environmental Protection Agency (USEPA). The USEPA methods specified for the analysis of the radiochemicals are those typically used for drinking water by the California Department of Health Services. As a result of questions raised in comments submitted on the tentative requirements and during the May 6, 2004, Board Meeting, the Regional Board has determined that an additional study would provide valuable information regarding the transport of contaminants offsite in storm water runoff and regarding the effects of filtering on the samples analyzed for radiochemicals. In addition, it would confirm that current sampling procedures result in representative samples. Pursuant to Water Code section 13267, the Regional Board may require Dischargers subject to waste discharge requirements to furnish technical or monitoring reports in order to determine the effect of discharge on the water quality.

Therefore, pursuant to section 13267 of the California Water Code, you are hereby directed to submit a technical report. In this case, you are required to submit a detailed technical workplan to conduct the following sampling and analyses. The workplan, at a minimum, should describe the protocol for the following activities:

1. Sampling and analysis at Perimeter Pond during dry weather discharges and wet weather discharges for six sampling events, starting with the first storm event of the 2004-2005 rainy season and the subsequent two discharge events. A grab sample shall be collected during the first 30 minutes of discharge and a flow-weighted average sample shall be collected during the first three hours of discharge of the same discharge event, or for as long as the discharge occurs if it is less than three hours. The three dry weather samples are also to be collected

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California Environmental Protection Agency



Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

Mr. Steve Lafflam  
Santa Susana Field Laboratory

- 2 -

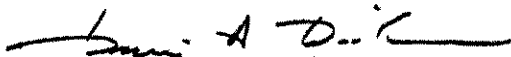
May 20, 2004

from the Perimeter Pond discharge, a grab and a flow-weighted average sample during each discharge event. The samples are to be analyzed for all of the constituents listed in the attached Table 1.

2. Ten samples shall be collected and analyzed for Gross Alpha, Gross Beta, combined Radium 226 & Radium 228, Tritium, and Strontium-90. Six of the grab samples collected from the Perimeter Pond may be used for this analysis. The other four samples must be collected from Outfall 003 (former Radioactive Materials Disposal Facility) during rain event discharges. Sampling shall occur during the first hour of discharge or at the first safe opportunity. The reason for delay shall be included in the report. The samples must be split and one half of the sample filtered. The unfiltered and filtered samples (including the filtrate) are to be analyzed for the radionuclides listed above, utilizing the methods specified in Table 1.

The workplan to conduct the required sampling and analyses is due to the Regional Board by August 31, 2004. If you have any questions, please contact Cassandra Owens at (213) 576-6750.

Sincerely,



Dennis A Dickerson,  
Executive Officer

cc: Honorably Sheila Kuehl, Senator, 23<sup>rd</sup> District  
Assemblymember Hannah-Beth Jackson, Assemblymember 35<sup>th</sup> District  
Mr. Greg Dempsey, Environmental Protection Agency, Radiation and Indoor Environments  
National Laboratory, Las Vegas, Nevada  
Environmental Protection Agency, Region 9, Permits Branch (WTR-5)  
Mr. Thomas Kelly, Environmental Protection Agency, Region 9, (WTR-5)  
Environmental Protection Agency, Region 9, Office of Radiation Programs  
Mr. Michael Lopez, U.S.D.O.E., Oakland  
Ms. Mary Gross, U.S. D. O. E., Oakland  
Mr. Dean Kunihiro, U.S. Nuclear Regulatory Commission  
U.S. Army Corps of Engineers  
NOAA, National Marine Fisheries Service  
Department of Interior, U.S. Fish and Wildlife Service  
Mr. Michael Lauffer, State Water Resources Control Board, Office of Chief Counsel  
Mr. William Paznokas, Department of Fish and Game, Region 5  
Mr. Joseph Smith, Department of Toxic Substances Control, Office of Legal Counsel  
Sacramento  
Ms. Karen Baker, Department of Toxic Substances Control  
Ms. Pauline Batarseh, Department of Toxic Substances Control, Sacramento  
Mr. Peter Bailey, Department of Toxic Substances Control, Sacramento  
Mr. Stephen Baxter, Department of Toxic Substance Control, Glendale

*California Environmental Protection Agency*



*Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.*

**MAILING LIST (continued)**

California Coastal Commission, South Coast District  
Department of Health Services, Public Water Supply Branch  
Los Angeles County, Department of Public Works, Environmental Programs Division  
Los Angeles County, Department of Health Services  
City of Los Angeles, Bureau of Engineering, Wastewater Systems Engineering Division  
ULARA Watermaster  
Water Replenishment District of Southern California  
Ventura County Air Pollution Control District  
Ventura County Public Works  
Ventura County Department of Public Health  
Ms. Sally Coleman, Ventura County Watershed Protection District  
Ms. Darla Weiss, Ventura County Watershed Protection District  
Ms. Linda Parks, Ventura County Board of Supervisors  
City Manager, City of Simi Valley  
Dr. Mark Gold, Heal the Bay  
Mr. David Beckman, NRDC  
Mr. Damon Wing, Wishtoyo Foundation  
Friends of the Los Angeles River  
Los Angeles and San Gabriel Rivers Watershed Council  
Bell Creek Homeowners Association, c/o Jerry Murphy  
Ms. Carol Henderson, Office Manager, Bell Canyon Association  
Ms. Barbara Johnson, Susana Knolls Homeowners, Inc.  
Ms. Gayle Demirtas, Simi Valley Library  
Mr. Howard Kaplan and Mr. Arthur Pinchey, Brandeis-Bardin Institute  
Dr. Joseph K. Lyou, Executive Director, Committee to Bridge the Gap (CBG)  
Mr. Dan Hirsch, CBG  
Mr. Jerome Raskin, Pierce College  
Mr. Sheldon Plotkin, SCFS  
Mr. Wayne Lee  
Simi Valley Library  
California State University, Northridge  
Mr. Evan Rose, L.A.U.S.D.  
Mr. Cybil Zeppleri  
Mr. Lori Zinkan  
Ms. Christina Walsh  
Ms. Teresa Jordan  
Ms. Liz Crawford  
Ms. Mary Wisebrock  
Mr. Edward L. Masry, Esq., Masry & Vititoe Law Offices  
Mr. Jonathan Parfrey, Executive Director, Physicians for Social Responsibility  
Mr. Matt Hagemann, Soil/Water/Air Protection Enterprise  
Paul Costa, Boeing  
Mr. William McIlvaine, Boeing  
Ms. Darlene Ruiz  
Ms. Jan Jacobson

*California Environmental Protection Agency*



Table 1

Constituent	Units	Type of Sample	Minimum Frequency of Analysis <sup>1</sup>
Total waste flow	gal/day	—	once per discharge event
Temperature	°F	grab	once per discharge event
pH	pH Units	grab	once per discharge event
Conductivity at 25°C	µmhos/cm	grab	once per discharge event
Total suspended solids	mg/L	grab	once per discharge event
Settleable solids	ml/L	grab	once per discharge event
BOD <sub>5</sub> (20°C)	mg/L	grab	once per discharge event
Oil and grease	mg/L	grab	once per discharge event
Ammonia-N	mg/L	grab	once per discharge event
Turbidity	NTU	grab	once per discharge event
Total residual chlorine	mg/L	grab	once per discharge event
Total organic carbon	mg/L	grab	once per discharge event
Total dissolved solids	mg/L	grab	once per discharge event
Chloride	mg/L	grab	once per discharge event
Sulfate	mg/L	grab	once per discharge event
Detergents (as MBAS)	mg/L	grab	once per discharge event
Nitrate + Nitrate-N	mg/L	grab	once per discharge event
Cyanide <sup>2</sup>	µg/L	grab	once per discharge event
Copper <sup>2</sup>	µg/L	grab	once per discharge event
Lead <sup>2</sup>	µg/L	grab	once per discharge event
Mercury <sup>2</sup>	µg/L	grab	once per discharge event
1,1-Dichloroethylene	µg/L	grab	once per discharge event
Perchlorate	µg/L	grab	once per discharge event
2,4,6-Trichlorophenol	µg/L	grab	once per discharge event
2,4-Dinitrotoluene	µg/L	grab	once per discharge event
Alpha-BHC	µg/L	grab	once per discharge event
Bis(2-ethylhexyl)phthalate	µg/L	grab	once per discharge event
N-Nitrosodimethylamine	µg/L	grab	once per discharge event
Pentachlorophenol	µg/L	grab	once per discharge event
TCDD*	µg/L	grab	once per discharge event
Boron	mg/L	grab	once per discharge event
Fluoride	mg/L	grab	once per discharge event
Barium	mg/L	grab	once per discharge event
Iron	mg/L	grab	once per discharge event
Manganese <sup>2</sup>	µg/L	grab	once per discharge event
Antimony <sup>2</sup>	µg/L	grab	once per discharge event
Arsenic <sup>2</sup>	µg/L	grab	once per discharge event

<sup>1</sup> During wet weather flow, a discharge event is greater than 0.1 inch of rainfall in a 24-hour period. No more than one sample per week need be obtained during extended periods of rainfall. Minimum sampling frequency during operations generating discharges shall be once per month. If the rain event is not sufficient to produce flow from the area, the observation must be documented with date, time condition and rainfall amount.

\* Analysis must be completed for TCDD and all congeners.



Table 1 (continued)

Constituent	Units	Type of Sample	Minimum Frequency of Analysis <sup>1</sup>
Beryllium <sup>2</sup>	µg/L	grab	once per discharge event
Cadmium <sup>2</sup>	µg/L	grab	once per discharge event
Chromium (VI) <sup>2,3</sup>	µg/L	grab	once per discharge event
Nickel <sup>2</sup>	µg/L	grab	once per discharge event
Selenium <sup>2</sup>	µg/L	grab	once per discharge event
Silver <sup>2</sup>	µg/L	grab	once per discharge event
Thallium <sup>2</sup>	µg/L	grab	once per discharge event
Zinc <sup>2</sup>	µg/L	grab	once per discharge event
Cobalt	µg/L	grab	once per discharge event
Vanadium	µg/L	grab	once per discharge event
Radioactivity- Gross Alpha Gross Beta <sup>4</sup>	PCi/L PCi/L	grab grab	once per discharge event once per discharge event
Combined Radium 226 & Radium 228 <sup>5</sup>	PCi/L	grab	once per discharge event
Tritium <sup>4</sup>	PCi/L	grab	once per discharge event
Strontium-90 <sup>4</sup>	PCi/L	grab	once per discharge event
PCBs	µg/L	grab	once per discharge event
TPH <sup>6</sup>	µg/L	grab	once per discharge event
Monomethylhydrazine	µg/L	grab	once per discharge event
cis-1,2-Dichloroethene	µg/L	grab	once per discharge event
1,4-Dioxane	µg/L	grab	once per discharge event
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	grab	once per discharge event
1,2-Dichloro-1,1,2-trifluoroethane	µg/L	grab	once per discharge event
Cyclohexane	µg/L	grab	once per discharge event
Remaining USEPA priority pollutants excluding asbestos <sup>7</sup>	µg/L	grab	once per discharge event
Acute toxicity	% survival	grab	once per discharge event
Chronic toxicity	TU <sub>c</sub>	grab	once per discharge event

<sup>2</sup> Total recoverable results are required.

<sup>3</sup> The Discharger has the option to meet the hexavalent chromium limitations with a total chromium analysis. However, if the total chromium level exceeds the hexavalent chromium limitation, it will be considered a violation unless an analysis has been made for hexavalent chromium in replicate sample and the result is reported within the hexavalent chromium limits.

<sup>4</sup> Analyze these radiochemicals by the following USEPA testing methods: method 900.0 for gross alpha and gross beta, method 903.0 or 903.1 for radium-226, method 904.0 for radium-228, method 906.0 for tritium, and method 905.0 for strontium-90.

<sup>5</sup> Analysis for combined Radium-226 & 228 shall be conducted only if gross alpha results for the same sample exceed 15 pCi/L or beta greater than 50 pCi/L. If the Radium-226 & 228 exceeds the stipulated criteria analyze for Tritium and Strontium-90. If the analyses of these constituents demonstrates exceedances the monitoring frequency is increased to once per discharge until four consecutive analysis demonstrates compliance with the effluent limitations.

<sup>6</sup> Total petroleum hydrocarbons includes all fuels, gasoline, diesel and jet fuel. Analysis should be completed using EPA 418.1 and EPA 8015 (modified) methods.

<sup>7</sup> Analysis shall include xylenes and trichlorofluoromethane.

**Attachment 2**  
**Boeing August 31, 2004 Technical Workplan**

The Boeing Company  
6200 George Avenue  
P.O. Box 7922  
Canoga Park, CA 91309-7922

CERTIFIED MAIL

August 31, 2004  
In reply refer to 2004RC02494

California Regional Water Quality Control Board  
Los Angeles Region  
320 W. 4<sup>th</sup> Street, Suite 200  
Los Angeles, California 90013

Attention: Cassandra Owens  
Project Manager

**Subject: Submission of Technical Workplan Pursuant to Section 13267 of the California Water Code Boeing Company, Santa Susana Field Laboratory Canoga Park, California (NPDES Permit No. CA0001309)**

Dear Ms. Owens:

The Boeing Company (Boeing) is submitting a Technical Workplan pursuant to Section 13267 of the California Water Code and as requested by the California Regional Water Quality Control Board, Los Angeles Region (RWQCB) in a letter dated May 20, 2004. This Technical Workplan describes the protocol for additional sampling and analyses activities at the Santa Susana Field Laboratory (SSFL). This required sampling is in conjunction with current National Pollutant Discharge Elimination System (NPDES) sampling conducted at the SSFL as required under permit number CA0001309.

If there are any questions pertaining to this Workplan, please contact Bill McIvaine at (818) 586-9228.

Sincerely,



Paul J. Costa, Manager  
Environmental Protection

PJC:po

Attachment: Technical Workplan

SHEA-100496



**The Boeing Company  
Rocketdyne Propulsion & Power**

**Technical Workplan to Investigate Surface Water Run-off Leaving the Santa  
Susana Field Laboratory**

**Overview of the Technical Study Requirements**

On May 20, 2004 The Boeing Company received a letter from the Los Angeles Regional Water Quality Control Board (Board) requiring Boeing to conduct a special study of surface water runoff at the Santa Susana Field Laboratory. This study was required pursuant to Section 13267 of the California Water Code and its intent is to provide information to the Board regarding the quality of water leaving SSFL during rain events and dry weather discharges. Specifically this letter required Boeing to conduct two special studies. The first is to compare the results of grab sampling versus flow weighted composite sampling of surface water run-off. The second is to compare the results of radiological samples that have been filtered and unfiltered prior to analysis. Boeing was required to submit a technical workplan (workplan) by August 31, 2004 that outlines the details of these two studies. The following workplan is intended to meet this requirement and will become effective once it has been approved by Board staff.

**Study 1. Composite versus Grab Sampling**

Overview of Study:

The Board requires this study to consist of six sampling events at Perimeter Pond (Outfall 011). Three are to occur during wet weather discharges and three during dry weather discharges. Each sampling event is to include collecting a grab sample during the first 30 minutes of discharge and a flow-weighted composite sample that is to be collected over the course of the first three hours of flow or for the duration of the discharge if less than three hours. The constituents to be analyzed have been specified in the Board letter and are included in Table 1. of this workplan.

General Sampling Protocols:

Wet weather sample collection will commence at Perimeter Pond (Outfall 011) upon the first storm event that produces sufficient flow for complete analyses. Wet weather sample collection will continue for the two subsequent rain events that produce sufficient flow. The sample collection point will be located at the weir immediately downstream from Perimeter Pond and be will representative of all surface water that comes from the eastern portion of the Santa Susana Field Lab including that which flows through Perimeter pond. Sampling will continue through the dry season(s) until three additional samples of dry weather discharge have been collected. It should be noted that as referenced on page 5 of the Fact Sheet for NPDES Permit No. CA0001309, water may be transferred from Perimeter Pond to the R-1 Pond and then

up to the Skyline Tank Farm for reuse as engine test cooling water or released to Silvernale pond as needed. This water management program along with the reduced introduction of water from ongoing activities will reduce the frequency of both wet and dry weather discharges from this sampling location. It is therefore possible that meeting the sampling requirements for this portion of the study may take several years. It should also be noted that prior to sampling, an evaluation will take place to identify potential safety issues. Such factors considered would include the amount of ambient light, road conditions, and potential for flash flooding. Samples may not be collected within the prescribed time if it has been determined that doing so may jeopardize the safety of field personnel. In such cases, sample collection will begin as soon as it is safe to do so. If such a delay occurs, an explanation as to the reason for the delay will be noted in technical report submission.

Grab Sampling Methodology:

Field personnel will collect the grab samples following methodologies outlined in Chapter 3 of the EPA's July 1992 NPDES Storm Water Sampling Guidance Document (Guidance Document). An excerpt of this document has been enclosed for your review. Samples will be stored in appropriate bottles under prescribed temperature conditions following EPA methodologies. An outside courier will transport the samples to a State Certified Analytical Laboratory for analysis using standard chain of custody forms to document proper handling.

Composite Sampling Methodology:

Flow weighted samples will be collected from the same location at Perimeter Pond as the grab samples. For this portion of the study, samples will be collected utilizing an automatic sampler that is capable of refrigerating the samples until collected by field personnel. For consistency in comparing grab sample results with flow weighted composite samples results, the grab sample noted above will be collected at approximately the same time taken first aliquot for the composite sample is taken. Composite samples will also be collected and stored according to methodologies outlined in the Guidance Document. Sampling will take place over a three hour period or for the duration of the flow event whichever is shorter. During this time and also in accordance with the Guidance Document, three equal aliquots of sample will be collected per hour at equal time intervals. Aliquot volumes will be sufficient to complete analyses of all required parameters. It is expected that each aliquot will contain approximately 2 liters of liquid which will be used for flow proportioning.

The amount of sample from each aliquot that will be used to make up the composite sample will be calculated using the formula expressed in Exhibit 3-23 and 3-24 of the Guidance Document as applicable. Flow data from an ISCO model 4210 Ultrasonic flow meter which has been installed at the sample point will be used for determination of aliquot amount. The flow meter was calibrated in July 2004 to assure accurate measurements, and will be re-calibrated on an annual basis. The formation of the composited sample using the individual aliquots and flow data will either be performed in the field or at the laboratory depending upon environmental conditions. A

courier will transport the resultant samples to a State Certified Analytical Laboratory for analysis using standard chain of custody forms to document proper handling.

The automatic sampler will only be used for those analyses amenable to such collection techniques as noted in exhibit 3-23 of the Guidance Document. For analytes that are not amenable to collection by automatic samplers, (i.e.: VOCs) samples will be manually collected by field personnel using proper collection containers at equal intervals and will be stored per requirements for compositing either in the field or at the laboratory per Guidance Document specifications.

## **Study 2. Sampling for Radiological Components**

### Overview of Study

This second study requires the collection and analysis of ten samples for Gross Alpha, Gross Beta, combined Radium 226 & Radium 228 (if analytical results require it), Tritium, and Strontium-90. Each sample is to be split into two halves, with one portion being filtered and analyzed while the other portion being left intact prior to analysis. Sampling is to be conducted using the specified EPA radiological methodologies as directed by the Board and is included in Table 1.

### Sampling Methodology:

Data for this study will include results from a total of ten sampling events. A minimum of four of the samples will be taken from the RMHF facility (Outfall 003). The other six samples will be the same samples from the first study conducted at Perimeter Pond. All will be grab samples collected during the first hour of discharge or at the first safe opportunity. Any delays in sampling will be detailed in the final report. Each grab sample will be split into two equal aliquots after mixing. One aliquot will be submitted to the laboratory unfiltered. The second aliquot will be filtered using a 0.45 micron filter. Both samples along with the filtrate from the filtered aliquot will be transported by courier to a State Certified Analytical Laboratory for analysis using standard chain of custody forms to document proper handling.

Each resultant sample including the filtrate will be analyzed for the following:

Gross Alpha (using EPA Method 900.0)

Gross Beta (using EPA Method 900.0)

Radium-226 (using EPA Method 903.0 or 903.1 if required)

Radium-228 (using EPA Method 904.0 if required)

Tritium (using EPA Method 906)

Strontium-90 (using EPA Method 905.0)

It should be noted that the EPA Method 900.0 for Gross Alpha is designed for water with low suspended solids and turbidity. Samples with more than 100 mg/l of solids or greater than 5.0 NTU turbidity will likely raise the detection limits due to the limitations of the method. The detection limit for each sample will be included in the report.

### **Reporting of Results**

Since these analyses are being performed on samples taken from locations regulated under NPDES Permit No. CA0001309, sampling results will be submitted in Boeing's quarterly Self Monitoring Report (SMR). Sample results from modified procedures (flow weighted and filtered samples) will be summarized in a special section that will be submitted along with the quarterly SMR. In the event there was insufficient flow to support this study in the reporting quarter, a notation will be made in the report. Boeing assumes that those samples undergoing analyses required in the NPDES permit will be subject to permit requirements including the 24 hour notification required under Section III. A of the WDRs in the existing NPDES permit (CA0001309). Boeing also assumes that those samples which deviate from normal sampling methodologies as specified in the NPDES permit would not be used for compliance determination. This would include the composite sample results.

Upon completion of all required sampling and analysis, a Final Technical Report will be prepared and submitted to the RWQCB. The Technical Report will include a summary of sampling activities, summary of analytical results, and supporting laboratory data sheets.

Attachment: Table 1 – Section 13627 Sample Schedule  
Excerpts from Chapter 3 of the EPA's July 1992 NPDES Storm  
Water Sampling Guidance Document including Exhibits 3-17, 3-23,  
and 3-24

PAS/Projects/SSFL/NPDES/Sect 13267 tech rpt.doc

**TABLE 1**  
**SECTION 13267 SAMPLE SCHEDULE**  
**SANTA SUSANA FIELD LABORATORY, CANOGA PARK, CALIFORNIA**

EPA Test Method	Sample Parameter	Sample Location and Discharge Event		
		Perimeter Pond		Outfall 003
		Dry Weather (3 events)	Wet Weather (3 events)	Wet Weather (4 events)
field instrument	Total waste flow	G, FW	G, FW	--
field instrument	Temperature	G, FW	G, FW	--
150.1	pH	G, FW	G, FW	--
SM2510B	Conductivity at 25o C	G, FW	G, FW	--
160.1	Total dissolved solids	G, FW	G, FW	--
160.2	Total suspended solids	G, FW	G, FW	--
160.5	Settleable solids	G, FW	G, FW	--
180.1	Turbidity	G, FW	G, FW	--
300.0	Chloride	G, FW	G, FW	--
300.0	Fluoride	G, FW	G, FW	--
300.0	Nitrate + Nitrate-N	G, FW	G, FW	--
300.0	Sulfate	G, FW	G, FW	--
330.5	Total residual chlorine	G, FW	G, FW	--
335.2	Cyanide (total recoverable)	G, FW	G, FW	--
350.2	Ammonia-N	G, FW	G, FW	--
405.1	BOD5(20 deg C)	G, FW	G, FW	--
413.1	Oil and grease	G, FW	G, FW	--
415.1	Total organic carbon	G, FW	G, FW	--
425.1	Detergents (as MBAS)	G, FW	G, FW	--
314.0	Perchlorate	G, FW	G, FW	--
200.8	Boron	G, FW	G, FW	--
200.8	Copper (total recoverable)	G, FW	G, FW	--
200.8	Lead (total recoverable)	G, FW	G, FW	--
200.8	Barium	G, FW	G, FW	--
200.8	Iron	G, FW	G, FW	--
200.8	Manganese (total recoverable)	G, FW	G, FW	--
200.8	Antimony (total recoverable)	G, FW	G, FW	--
200.8	Arsenic (total recoverable)	G, FW	G, FW	--
200.8	Beryllium (total recoverable)	G, FW	G, FW	--
200.8	Cadmium (total recoverable)	G, FW	G, FW	--
200.8	Nickel (total recoverable)	G, FW	G, FW	--
200.8	Selenium (total recoverable)	G, FW	G, FW	--
200.8	Silver (total recoverable)	G, FW	G, FW	--
200.8	Thallium (total recoverable)	G, FW	G, FW	--
200.8	Zinc (total recoverable)	G, FW	G, FW	--
200.8	Cobalt (total recoverable)	G, FW	G, FW	--
200.8	Vanadium (total recoverable)	G, FW	G, FW	--
218.6	Chromium (VI) (total recoverable)	G, FW	G, FW	--
245.1	Mercury (total recoverable)	G, FW	G, FW	--
200.8	Remaining Metal USEPA priority pollutants (Chromium-total recoverable)	G, FW	G, FW	--
900.0	Gross Alpha	G, G*, FW	G, G*, FW	G*
900.0	Gross Beta	G, G*, FW	G, G*, FW	G*
903.0/903.1	Radium 226	G, G*, FW	G, G*, FW	G*
904.0	Radium 228	G, G*, FW	G, G*, FW	G*
906.0	Tritium	G, G*, FW	G, G*, FW	G*
905.0	Strontium-90	G, G*, FW	G, G*, FW	G*
608	PCBs	G, FW	G, FW	--
608	Alpha-BHC	G, FW	G, FW	--
608	Remaining Pesticides & PCB's USEPA Priority Pollutants	G, FW	G, FW	--
418.1/8015M	TPH	G, FW	G, FW	--
8315M	Monomethylhydrazine	G, FW	G, FW	--
624	o,s-1,2-Dichloroethene	G, FW	G, FW	--
624	1,4-Dioxane	G, FW	G, FW	--
624	1,1,2-Trichloro-1,2,2-Trifluoroethane	G, FW	G, FW	--
624	1,2-Dichloro-1,1,2-trifluoroethane	G, FW	G, FW	--
624	1,1-Dichloroethylene	G, FW	G, FW	--
624	Cyclohexane	G, FW	G, FW	--
624	Remainingg VOC USEPA priority pollutants	G, FW	G, FW	--
625	2,4,6-Trichlorophenol	G, FW	G, FW	--
625	2,4-Dinitrotoluene	G, FW	G, FW	--
625	Bis(2-ethylhexyl)phthalate	G, FW	G, FW	--
625	N-Nitrosodimethylamine	G, FW	G, FW	--
625	Pentachlorophenol	G, FW	G, FW	--
625	Remaining Base/Neutral & Acid Extractables USEPA Priority Pollutants	G, FW	G, FW	--
1613	TCDD	G, FW	G, FW	--
EPA 600/4-90/027	Acute Toxicity	G, FW	G, FW	--
EPA 600/4-89/001	Chronic Toxicity	G, FW	G, FW	--

**Notes:**

- Total of 3 dry weather sampling events, when there is discharge flow from Perimeter Pond.
- Total of 3 wet weather sampling events, when there is discharge flow from Perimeter Pond: (1) First rain event; (2) Subsequent rain event; (3) Subsequent rain event.
- Total of 4 wet weather sampling events, when there is discharge flow from Outfall 003.

EPA - United States Environmental Protection Agency  
 FW - Flow-weighted sample  
 G - Grab sample  
 G\* - Grab sample for radiochemical analysis



United States  
Environmental Protection  
Agency

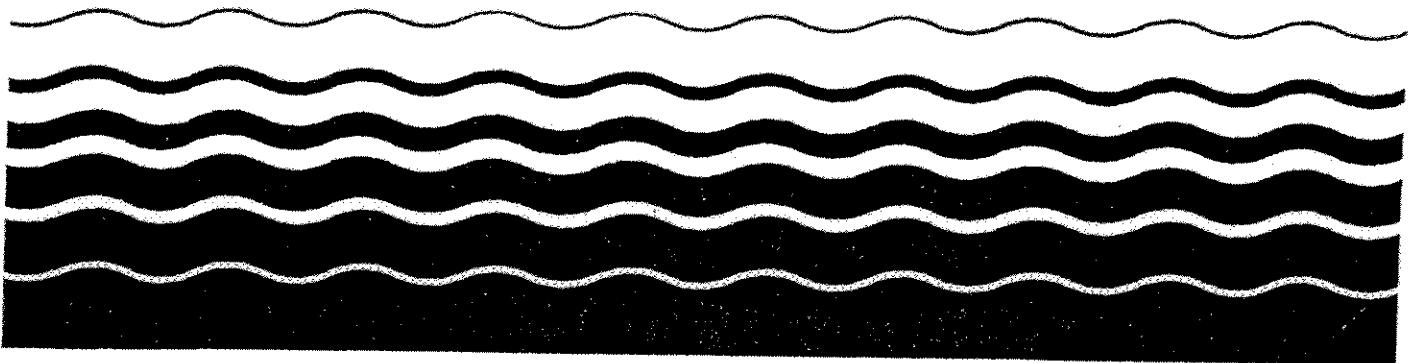
Office Of Water  
(EN-336)

EPA 833-B-92-001  
July 1992



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# NPDES Storm Water Sampling Guidance Document



## DISCLAIMER

This document was issued in support of EPA regulations and policy initiatives involving the development and implementation of a national storm water program. This document is agency guidance only. It does not establish or affect legal rights or obligations. Agency decisions in any particular case will be made applying the laws and regulations on the basis of specific facts when permits are issued or regulations promulgated. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

### 3.2.5 REPORTING STORM WATER DISCHARGE FLOW RATES AND VOLUMES

Form 2F requires applicants to provide quantitative data (reported both as concentration and as total mass) based on flow-weighted samples collected during storm events. In addition, applicants are required to provide flow estimates or flow measurements, as well as an estimate of the total volume of the discharge. The method of flow estimation or measurement must be described in the application. Although EPA only requires flow estimates in Form 2F, accurate flow measurement is necessary for collecting representative flow-weighted composite samples and reporting pollutant mass loadings.

### 3.2.6 MEASURING RAINFALL

Many types of instruments have been developed to measure the amount and intensity of precipitation. All forms of precipitation are measured on the basis of the depth of the water that would accumulate on a level surface if precipitation remained where it fell. There are two types of rain gauges -- standard and recording gauges. A standard rain gauge collects the rainfall so that the amount of rain can be easily measured. The standard gauge for the NWS has a collector which is 8 inches in diameter. Rain flows from the collector into a cylindrical measuring tube inside the overflow can. The measuring tube has a cross-sectional area one tenth the size of the collector so that 0.1 inch of rainfall will fill 1 inch of the measuring tube. While this standard gauge is both accurate and easy to use, any open receptacle with vertical sides can be an effective rain gauge. Standard rain gauges are simple and inexpensive; however, with a standard gauge, there is no way to record changes in the intensity of the rainfall without making frequent observations of the gauge during the storm.

The second type of gauge is the recording rain gauge, which provides a permanent record of the amount of rainfall which accumulates over time. Three common types of recording gauges are:

- Tipping Bucket Gauge - Water caught in a collector is funneled into a two-compartment bucket; a known quantity of rain fills one compartment, overbalancing the bucket and emptying it into a reservoir. This moves the second bucket into place beneath the funnel. The tipping of the bucket engages an electric circuit, which records the event.
- Weighing Type Gauge - Water is weighed when it falls into a bucket placed on the platform of a spring or lever balance. The weight of the contents is recorded on a chart, showing the accumulation of precipitation.
- Float Recording Gauge - Water is measured by the rise of a float that is placed in the receiver. These gauges may be self-siphoning, or may need to be emptied periodically by hand.

Recording rain gauges provide a permanent record of rainfall, and they can be used to determine variations in rainfall intensity over time without making frequent observations during the storm. But recording gauges are more complicated mechanically than standard gauges, making them more costly, less durable, and more difficult to operate.

Although all gauges are subject to error, most errors can be minimized. To minimize errors, the gauge should be placed on a level surface that is not windswept and is away from trees or buildings that might interfere with the path of rainfall. When taking measurements, other factors contributing to error should also be considered: mistakes in reading the scale, dents in the collector rim (which changes the receiving area), measuring sticks that may retain some of the water, and water lost to evaporation. In the case of tipping bucket gauges, water may not be collected while the bucket is still tipping. The most common source of inaccuracy is changes in data that are attributable to wind. It is possible to assess wind errors by comparing measurements of gauges that are protected from the wind with those that are not.

### 3.3 GRAB SAMPLE COLLECTION

Section 3.1.2 discussed both the parameters that must be monitored by grab sample and the conditions under which grab sampling is required. This section explains how to collect grab samples. The entire sample is collected at an uninterrupted interval (i.e., grabbed at one time). A grab sample provides information on the characterization of storm water at a given time and may be collected either manually or automatically as discussed below.

#### 3.3.1 HOW TO MANUALLY COLLECT GRAB SAMPLES

A manual grab is collected by inserting a container under or downcurrent of a discharge with the container opening facing upstream. Generally, simplified equipment and procedures can be used. In most cases, the sample container itself may be used to collect the sample. Less accessible outfalls may require the use of poles and buckets to collect grab samples. To ensure that manual grab samples are representative of the storm water discharged, the procedures set forth in Exhibit 3-17 should be followed.

**EXHIBIT 3-17. RECOMMENDED OPERATING PROCEDURES FOR TAKING GRAB SAMPLES**

- Label sample containers before sampling event
- Take a cooler with ice to the sampling point
- Take the grab from the horizontal and vertical center of the channel
- Avoid stirring up bottom sediments in the channel
- Hold the container so the opening faces upstream
- Avoid touching the inside of the container to prevent contamination
- Keep the sample free from uncharacteristic floating debris
- Transfer samples into proper containers (e.g., from bucket to sample container), however, fecal coliform, fecal streptococcus, phenols and O&G should remain in original containers
- If taking numerous grabs, keep the samples separate and labelled clearly
- Use safety precautions (see Chapter 6)

Specialized equipment and procedures may be needed, particularly in situations where storm water discharges are inaccessible or where certain parameters are monitored. For example:

- When sampling for O&G and VOCs, equipment that safely and securely houses O&G bottles or VOC vials should be used. This may be necessary because: (1) O&G will adhere to containers and thus should not be transferred from one container to another; and (2) excessive aeration during sampling may result in the partial escape of VOCs.
- Since facilities sometimes use sample bottles that already contain preservatives (as provided by contract laboratories), extreme care should be taken when filling them to avoid spills, splatters, or washout of the preservatives.

All equipment and containers that come into contact with the sample must be clean to avoid contamination. Additionally, sample collection equipment and container materials should be totally unreactive to prevent leaching of pollutants. Cleaning procedures are discussed in detail in Section 3.5.

### 3.3.2 HOW TO COLLECT GRAB SAMPLES BY AUTOMATIC SAMPLER

Grab samples can also be collected using programmed automatic samplers. Automatic samplers come equipped with computers that can be programmed to collect grab samples. Programming for grabs is specific to the type of automatic sampler. Some samplers are portable and have been developed specifically to sample for storm water discharges. These samplers are frequently attached to a rain gauge and/or a flow sensor. Such samplers can be programmed to initiate sample collection by one or more of the following conditions: (1) depth of flow in a channel; (2) rainfall in inches; (3) flow rate; (4) time; (5) external signal; and (6) combinations of the first three conditions. For example, an automatic sampler could be used to collect a sample at 15-minute intervals after its sensors indicate that rainfall has begun.

When using an automatic sampler, planning is very important. First, all equipment must be properly cleaned, particularly the tubing and the sample containers. There are several different types of tubing available, including rubber and Tygon tubing. Tygon tubing is commonly used since it generally does not leach contaminants. Deionized water should be drawn through the sampler to remove any remaining pollutant residuals prior to taking samples. Tubing should also be replaced periodically to avoid algae or bacterial growth.

Sampling personnel should also use adequate and appropriate containers and ensure they are properly cleaned. Section 3.5 contains information on cleaning procedures which should be followed for all equipment. Additionally, the utilization of blanks (a control used to verify the accuracy of analytical results) is recommended to determine if cross-contamination of sampling equipment has occurred. Samplers should also be programmed, set up, and supplied with a source of power. Properly charged batteries should be readily available for portable samplers in advance of a storm event and, as a backup power supply in case of power failure. Finally, although automatic samplers may be useful in some situations, several parameters are not amenable to collection by automatic sampler. These pollutants include fecal streptococcus, fecal coliforms, oil and grease and VOCs which should be collected manually, not automatically, as discussed in Section 3.1.2.

### 3.4 FLOW-WEIGHTED COMPOSITE SAMPLE COLLECTION

Composite samples are samples simply comprised of a series of individual sample aliquots that have been combined to reflect average pollutant concentrations of the storm water discharge during the

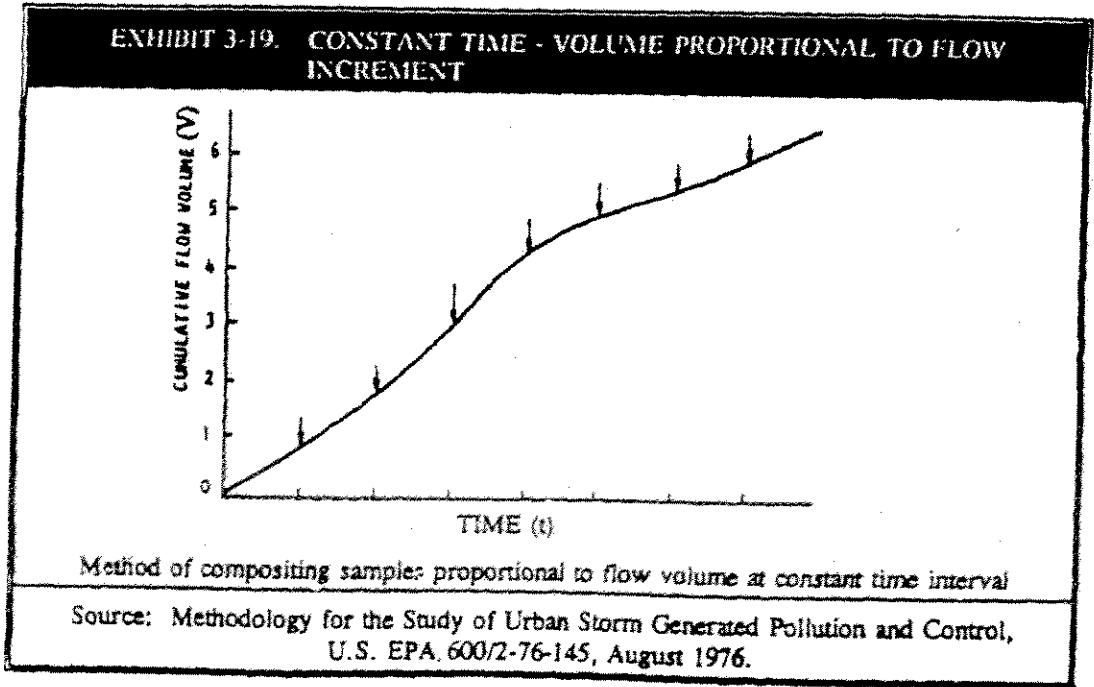
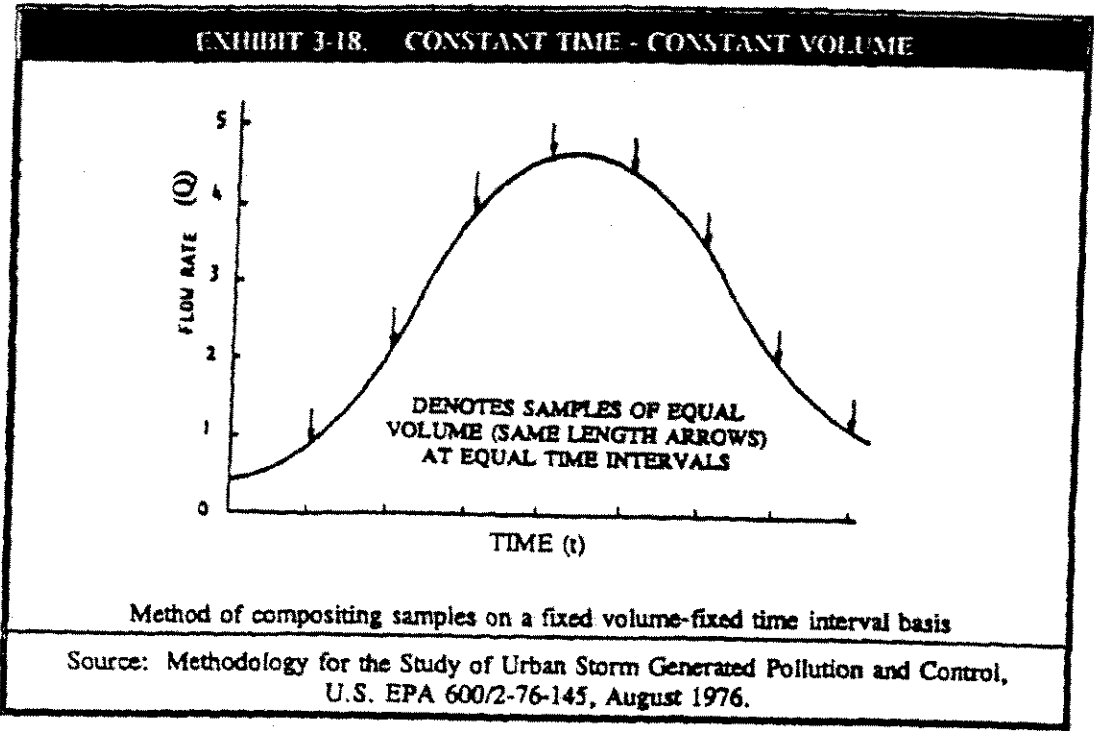
sampling period. Composite samples can be developed based on time or flow rate. There are four different types of composite samples, as follows:

- Constant Time - Constant Volume - Samples of equal volume are taken at equal increments of time and composited to make an average sample (similar to Exhibit 3-18). This method is not acceptable for samples taken for compliance with the storm water permit application regulations.
- Constant Time - Volume Proportional to Flow Increment - Samples are taken at equal increments of time and are composited proportional to the volume of flow since the last sample was taken (see Exhibit 3-19).
- Constant Time - Volume Proportional to Flow Rate - Samples are taken at equal increments of time and are composited proportional to the flow rate at the time each sample was taken (see Exhibit 3-20).
- Constant Volume - Time Proportional to Flow Volume Increment - Samples of equal volume are taken at equal increments of flow volume and composited (see Exhibit 3-21).

Generally, flow-weighted composite samples must be collected for most parameters. The methods for generating flow-weighted composite samples are discussed in the following sections.

For storm water discharge permit applications, the aliquots for flow-weighted composite samples must be collected during a representative storm for the first 3 hours, or for the duration of the storm event if it is less than 3 hours long. The storm water application regulations allow for flow-weighted composite samples to be collected manually or automatically. For both methods, equal volume aliquots may be collected at the time of sampling and then flow-proportioned and composited in the laboratory, or the aliquot may be collected based on the flow rate at the time of sample collection and composited in the field. When composite samples are collected, the regulations require that each aliquot collection be separated by a minimum of 15 minutes and that a minimum of three sample aliquots be taken within each hour of the discharge. See Exhibit 3-22 for an example of how this requirement may be fulfilled.

The provisions set forth in 40 CFR 122.21(g)(7) for collecting flow-weighted composite samples establish specific requirements for minimum time duration between sample aliquots. Where these conditions cannot be met, the permitting authority may allow alternate protocols with respect to the time duration between sample aliquots (see Chapter 5). However, permission from the permitting





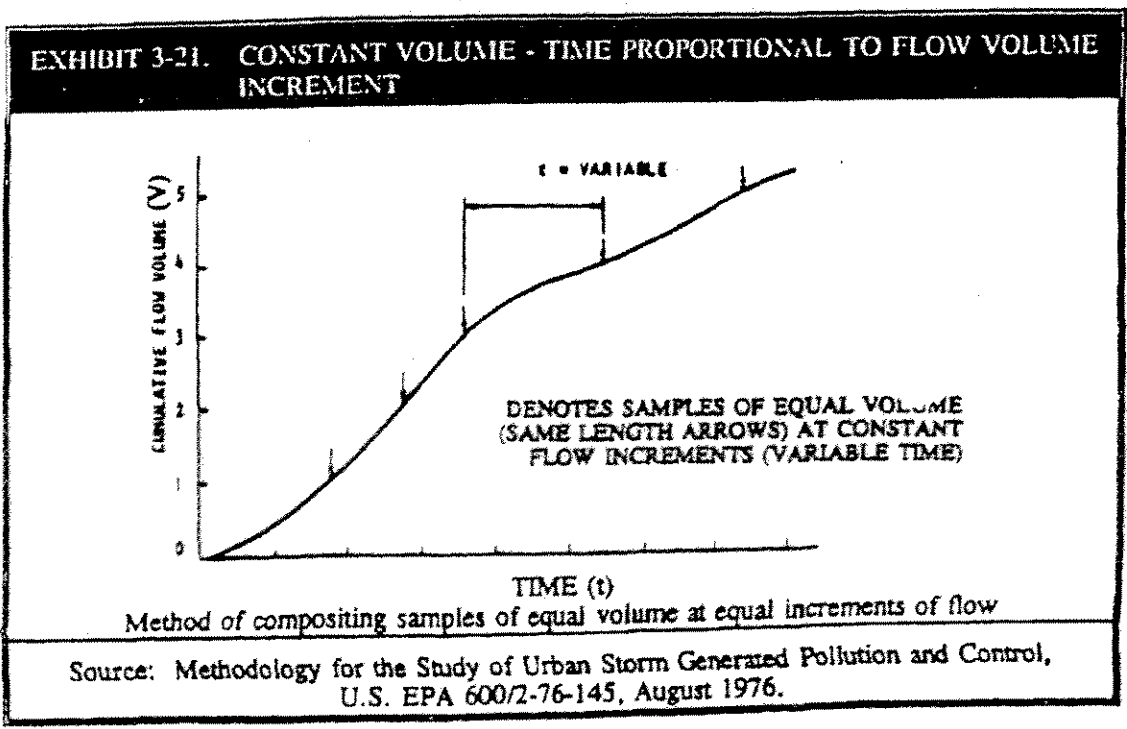
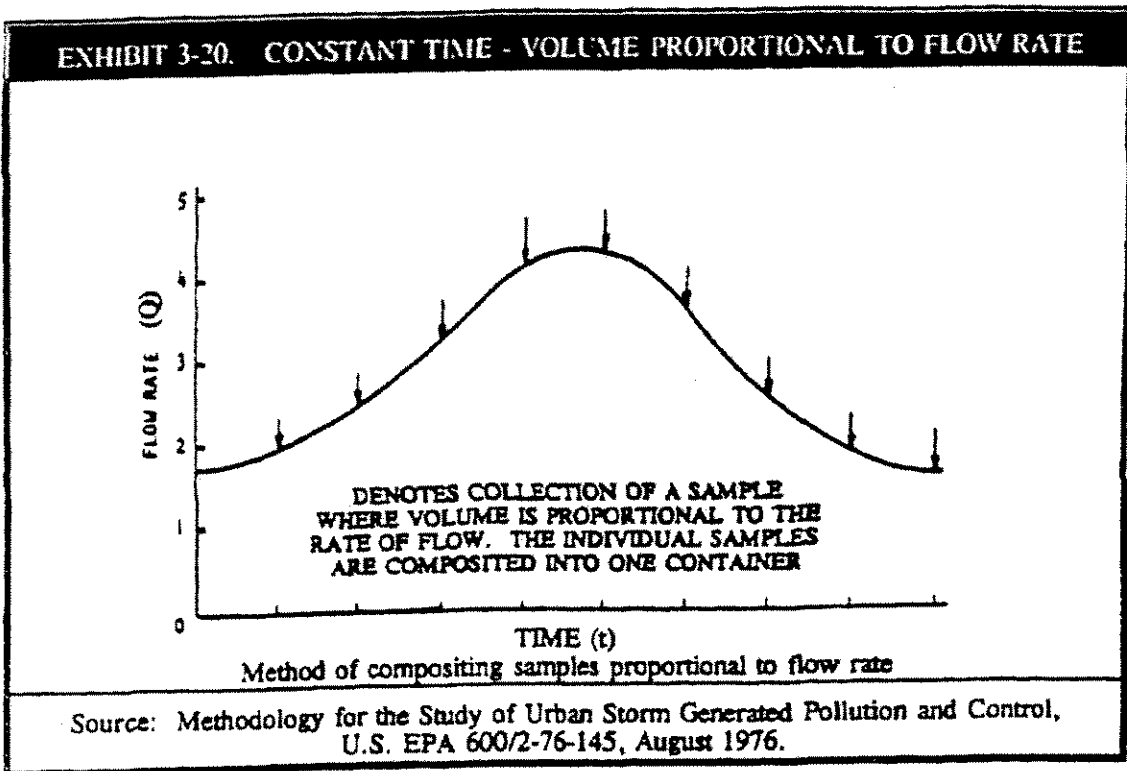
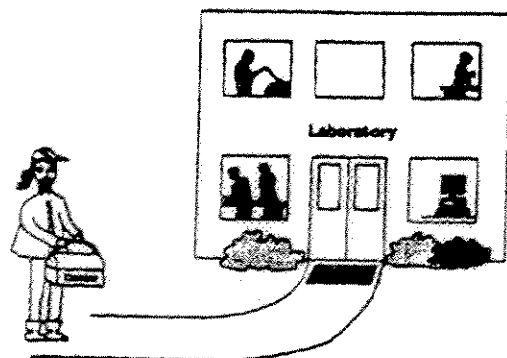
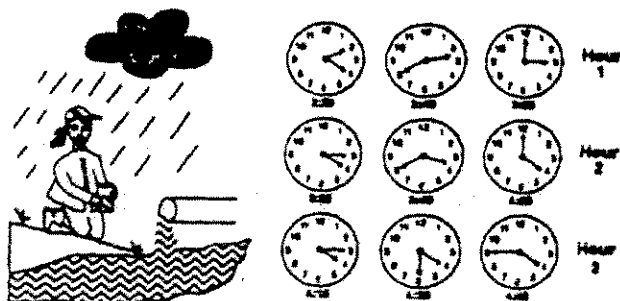


EXHIBIT 3-22. EXAMPLE OF SAMPLING INTERVALS

Suppose that a storm water discharge began at 2:15 p.m. and lasted until 5:15 p.m. on a Friday. The field staff person wants to collect the samples at regular intervals, so s/he plans to collect an aliquot with a volume that is proportional to the flow every 20 minutes. After the third hour of collection, the field staff person must deliver the samples to the laboratory (which is 10 minutes away). The laboratory closes at 5:00 p.m. So, s/he should take the last sample at 4:45 p.m. One way of doing this would be to collect samples (in hour three) at 4:15, 4:30, and 4:45 p.m. This would comply with the three-sample minimum in hour three (4:15-5:15 p.m.) and the required 15-minute minimum interval between collections. It would also allow the field staff person to get the samples to the lab before it closes for the weekend. On the other hand, if s/he missed the sample collection at 4:15 p.m. and instead, collected the sample at 4:20 p.m., then s/he would have to collect the next sample at 4:35 p.m. and the last sample at 4:50 p.m., and the field staff person would not be able to deliver the sample until Monday (by which time the required maximum holding time would be exceeded), and the sampling would need to be repeated.



authority must be obtained before changes are initiated. Considerations applicable to the collection of flow-weighted composites by automatic and manual techniques are discussed in the following sections.

### 3.4.1 HOW TO MANUALLY COLLECT FLOW-WEIGHTED COMPOSITE SAMPLES

Manually collected, flow-weighted composite samples may be appropriate for a facility that prefers not to invest in automatic equipment. This technique is cost-effective for short-term monitoring programs and for facilities where few outfalls are being sampled. The fundamental requirement for facilities that use these methodologies is that they should have personnel available to perform the sampling when needed. Those facilities where VOCs analysis of storm water discharges are required should manually collect composite samples since these parameters may not be amenable to sampling by automatic samplers. Compositing of VOC samples should be conducted in the laboratory as discussed in Section 3.5.2.

The manual collection of a flow-weighted sample is performed in the same manner as taking manual grab samples (see Section 3.3.1). The only difference is that a series of samples (or aliquots) will be collected. As discussed in the previous section, there are two ways to manually collect and combine the aliquots for a flow-weighted sample:

- Collect sample aliquot volumes based on the flow at the time of sampling which can immediately be combined to make the composite sample in the field (see Exhibit 3-23)
- Collect equal volume sample aliquots at the time of sampling and then flow-proportion and composite the aliquots in the laboratory (see Exhibit 3-24).

When uniform time intervals are used between the collection of the sample aliquots, the volumes of each aliquot used in the composite sample can be determined based on either volumes of flow or the flow rate, as they will result in similar proportions. However, when there are different time intervals between the sample aliquots, the individual sample aliquot volumes should be based on the runoff volume (calculated from the individual flow rates and durations) associated with each sample aliquot.

Generally, 1,000 ml for each aliquot collected should provide enough sample volume, when composited, for pollutant analyses of the required parameters contained in Section VII.A of Form 2F (see Section 3.6). More aliquot volume may be required if sampling is conducted for additional parameters. The laboratory conducting the analyses should always be contacted prior to a sampling event to determine how much sample volume they will require.

**EXHIBIT 3-23 EXAMPLE OF HOW TO COLLECT SAMPLE ALIQUOT VOLUMES BASED ON FLOW, AND PROPORTION AND COMPOSITE IN THE FIELD**

**Step 1:** Determine the necessary volume for compositing purposes.

**Example:** To fulfill analyses for all parameters in Section VII.A of Form 2F for which composite samples are required [Biochemical Oxygen Demand (BOD<sub>5</sub>), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN), nitrate plus nitrite, and phosphorous] a total composite sample volume of 5,000 ml is needed by the contract laboratory.

**Step 2:** Determine an appropriate interval for collection of samples.

**Example:** Manually collected flow-weighted composite samples must consist of at least three sample aliquots collected per hour and must be gathered at least 15 minutes apart. For this example, sample aliquots will be collected exactly 20 minutes apart.

**Step 3:** Estimate or measure the volume of discharge for each sampling event.

**Example:** A discharge flow volume of 4.8 cubic feet will be used here.

**Step 4:** Convert the discharge flow volume to liters.

**Example:** To convert cubic feet to liters, use the conversion factor of 28.32 liters per 1 cubic foot as set forth in the following formula:

$$\text{Volume (liters)} = \text{Volume (cubic feet)} \times \frac{28.32 \text{ liters}}{1 \text{ cubic foot}}$$

$$\text{Volume} = 4.8 \text{ cubic feet} \times \frac{28.32 \text{ liters}}{1 \text{ cubic foot}} = 136 \text{ liters}$$

**Step 5:** Using Steps 3 and 4, volumes that have been discharged between the collection of each aliquot can be calculated.

(Note that the discharge volumes provided for aliquot numbers 2-9 have already been given for the purposes of this exhibit.)

**Example:** The procedures set forth in Section 3.2 may be used to calculate discharge volumes. The following table presents aliquot numbers, time of aliquot collection, and discharge volumes.

Aliquot Number	Time of Aliquot Collection	Discharged Volume
1	2:15 p.m.	136 liters
2	2:35 p.m.	200 liters
3	2:55 p.m.	122 liters
4	3:15 p.m.	178 liters
5	3:35 p.m.	156 liters
6	3:55 p.m.	117 liters
7	4:15 p.m.	94 liters
8	4:30 p.m.	21 liters
9	4:45 p.m.	12 liters

**EXHIBIT 3-23. EXAMPLE OF HOW TO COLLECT SAMPLE ALIQUOT VOLUMES BASED ON FLOW, AND PROPORTION AND COMPOSITE IN THE FIELD (Continued)**

- Step 6:** Determine the appropriate minimum aliquot volume as the basis for collecting other aliquot samples which together will provide adequate volume to fulfill the analytic requirements.  
 Example: In Step 1, it was determined that at least 5,000 ml of sample were required for flow-weighted composite sample analytical testing. As discussed in Section 3.4.1, basing the sample collection on a minimum aliquot volume of 1,000 ml gathered every interval (i.e., every 15 minutes) should result in adequate sample volume.
- Step 7:** Calculate the volume of the sample aliquot which must be collected during each aliquot sample period using the following formula:

$$\text{Aliquot volume (ml)} = \text{Minimum aliquot volume (ml)} \times \frac{\text{Aliquot's discharge volume (liters)}}{\text{Initial discharge volume (liters)}}$$

Step 6 shows that the minimum aliquot volume is 1,000 ml.

$$\text{Aliquot \#1 volume (ml)} = 1,000 \text{ ml} \times \frac{136 \text{ liters}}{136 \text{ liters}} = 1,000 \text{ ml}$$

$$\text{Aliquot \#2 volume (ml)} = 1,000 \text{ ml} \times \frac{200 \text{ liters}}{136 \text{ liters}} = 1,471 \text{ ml}$$

$$\text{Aliquot \#3 volume (ml)} = 1,000 \text{ ml} \times \frac{122 \text{ liters}}{136 \text{ liters}} = 897 \text{ ml}$$

$$\text{Aliquot \#4 volume (ml)} = 1,000 \text{ ml} \times \frac{178 \text{ liters}}{136 \text{ liters}} = 1,309 \text{ ml}$$

$$\text{Aliquot \#5 volume (ml)} = 1,000 \text{ ml} \times \frac{156 \text{ liters}}{136 \text{ liters}} = 1,147 \text{ ml}$$

$$\text{Aliquot \#6 volume (ml)} = 1,000 \text{ ml} \times \frac{117 \text{ liters}}{136 \text{ liters}} = 860 \text{ ml}$$

$$\text{Aliquot \#7 volume (ml)} = 1,000 \text{ ml} \times \frac{94 \text{ liters}}{136 \text{ liters}} = 691 \text{ ml}$$

$$\text{Aliquot \#8 volume (ml)} = 1,000 \text{ ml} \times \frac{21 \text{ liters}}{136 \text{ liters}} = 154 \text{ ml}$$

$$\text{Aliquot \#9 volume (ml)} = 1,000 \text{ ml} \times \frac{12 \text{ liters}}{136 \text{ liters}} = 88 \text{ ml}$$

A table of these calculations follows:

Aliquot Number	Discharged Volume	Aliquot Volume
1	136 liters	1,000 ml
2	200 liters	1,471 ml
3	122 liters	897 ml
4	178 liters	1,309 ml
5	156 liters	1,147 ml
6	117 liters	860 ml
7	94 liters	691 ml
8	21 liters	154 ml
9	12 liters	88 ml

In conclusion, a combination of the above sample aliquots result in a composite of 7,617 ml.

**EXHIBIT 3-24. EXAMPLE OF HOW TO MANUALLY COLLECT EQUAL SAMPLE ALIQUOTS WHICH ARE LATER FLOW-PROPORTIONED AND COMPOSITED IN THE LABORATORY**

**Step 1: Determine the necessary volume for compositing purposes.**

*Example:* To fulfill analyses for all parameters in Section VII.A of Form 2F for which composite samples are required (BOD<sub>5</sub>, COD, TSS, TKN, nitrate plus nitrite, and phosphorous) a total composite sample volume of 5,000 ml is needed by the contract laboratory.

**Step 2: Determine an appropriate interval for collection of samples.**

*Example:* Manually collected flow-weighted composite samples must consist of at least nine sample aliquots and must be gathered at least 15 minutes apart; only three or four samples per hour may be taken. For convenience, the minimum number of three is chosen. Sample aliquots will be collected every 20 minutes.

**Step 3: Determine the aliquot which should be taken during each sampling event.**

*Example:* At least 5,000 ml of sample is required for flow-weighted composite sample analytical testing. As discussed in Section 3.4.1, a minimum aliquot volume of 1,000 ml gathered every interval (i.e., every 15 minutes) should result in adequate sample volume to be used for later flow-weighted compositing.

**Step 4: Estimate or measure the volume of discharge for each sampling event while collecting a discrete 1,000-ml aliquot, as discussed in Step 3, for later compositing.**

*Example:* Section 3.2 discusses methods to calculate total discharge volumes. A discharge flow volume of 4.8 cubic feet will be used here.

**Step 5: Convert the discharge flow volume to liters.**

*Example:* To convert cubic feet to liters, use the conversion factor of 28.32 liters per 1 cubic foot as set forth in the following formula:

$$\text{Volume (liters)} = \text{Volume (cubic feet)} \times \frac{28.32 \text{ liters}}{1 \text{ cubic foot}}$$

$$\text{Volume} = 4.8 \text{ cubic feet} \times \frac{28.32 \text{ liters}}{1 \text{ cubic foot}} = 136 \text{ liters}$$

**EXHIBIT 3-24. EXAMPLE OF HOW TO MANUALLY COLLECT EQUAL SAMPLE ALIQUOTS WHICH ARE LATER FLOW-PROPORTIONED AND COMPOSITED IN THE LABORATORY (Continued)**

Step 6: Using Steps 3 and 4, calculate the volumes that have been discharged between the collection of each aliquot.

Example: The procedures set forth in Section 3.2 may be used to calculate discharge volumes. The following table presents aliquot numbers, time of aliquot collection, and discharge volumes (note that the discharge volumes provided for aliquot numbers 2-9 were chosen for purposes of this exhibit).

Aliquot Number	Time of Aliquot Collection	Discharged Volume
1	2:15 p.m.	136 liters
2	2:35 p.m.	200 liters
3	2:55 p.m.	122 liters
4	3:15 p.m.	178 liters
5	3:35 p.m.	156 liters
6	3:55 p.m.	117 liters
7	4:15 p.m.	94 liters
8	4:30 p.m.	21 liters
9	4:45 p.m.	12 liters

Step 7: Determine the aliquot sample which is associated with the greatest discharge volume.

Example: Aliquot number 2 was taken when the volume was 200 liters. This is the largest discharge volume.

Step 8: Calculate the volume of sample aliquot which must be used subsequent to the sample event to comprise a flow-weighted composite sample. The following formula should be used:

$$\text{Aliquot volume (ml)} = \frac{\text{Minimum aliquot volume (ml)} \times \text{Aliquot's discharge volume (liters)}}{\text{Largest discharge volume (liters)}}$$

Step 3 shows that the minimum aliquot volume is 1,000 ml. Using this value and the data determined as part of Steps 6 and 7, the following can be calculated:

$$\text{Aliquot \#1 volume (ml)} = 1,000 \text{ ml} \times \frac{136 \text{ liters}}{200 \text{ liters}} = 680 \text{ ml}$$

$$\text{Aliquot \#2 volume (ml)} = 1,000 \text{ ml} \times \frac{200 \text{ liters}}{200 \text{ liters}} = 1,000 \text{ ml}$$

$$\text{Aliquot \#3 volume (ml)} = 1,000 \text{ ml} \times \frac{122 \text{ liters}}{200 \text{ liters}} = 610 \text{ ml}$$

$$\text{Aliquot \#4 volume (ml)} = 1,000 \text{ ml} \times \frac{178 \text{ liters}}{200 \text{ liters}} = 890 \text{ ml}$$

$$\text{Aliquot \#5 volume (ml)} = 1,000 \text{ ml} \times \frac{156 \text{ liters}}{200 \text{ liters}} = 780 \text{ ml}$$

$$\text{Aliquot \#6 volume (ml)} = 1,000 \text{ ml} \times \frac{117 \text{ liters}}{200 \text{ liters}} = 585 \text{ ml}$$

**EXHIBIT 3-24. EXAMPLE OF HOW TO MANUALLY COLLECT EQUAL SAMPLE ALIQUOTS WHICH ARE LATER FLOW-PROPORTIONED AND COMPOSITED IN THE LABORATORY (Continued)**

$$\text{Aliquot \#7 volume (ml)} = 1,000 \text{ ml} \times \frac{94 \text{ liters}}{200 \text{ liters}} = 470 \text{ ml}$$

$$\text{Aliquot \#8 volume (ml)} = 1,000 \text{ ml} \times \frac{21 \text{ liters}}{200 \text{ liters}} = 105 \text{ ml}$$

$$\text{Aliquot \#9 volume (ml)} = 1,000 \text{ ml} \times \frac{12 \text{ liters}}{200 \text{ liters}} = 60 \text{ ml}$$

A table of these calculations follows

Aliquot Number	Discharged Volume	Aliquot Volume
1	136 liters	680 ml
2	200 liters	1,000 ml
3	122 liters	610 ml
4	178 liters	890 ml
5	156 liters	780 ml
6	117 liters	585 ml
7	94 liters	470 ml
8	21 liters	105 ml
9	12 liters	60 ml

In conclusion, a combination of the above sample aliquots results in a composite sample of 5,100 ml.

Manually collected flow-weighted composite samples can also be prepared by collecting sample aliquots of equal volume where the collection times are related to the volume of discharge which has passed since the last sample aliquot collection. However, this method is subject to fluctuating flow rates and volumes which may dictate that samples be taken prior to the 15-minute interval required by the regulations. In that case, the alternative sampling protocol would have to be approved by the permitting authority.

**3.4.2 HOW TO COLLECT FLOW-WEIGHTED COMPOSITE SAMPLES BY AUTOMATIC SAMPLER**

The typical automatic sampler collects sample aliquots after a specific interval. These aliquots can be flow-weight composited by the automatic sampler; or by hand in the laboratory. The automatic



sampler may be programmed in one of three ways: (1) to collect a sample at equal time intervals and varying aliquot volumes commensurate with the flow (either rate or volume) that has passed; (2) to collect equal volume aliquots at varying time intervals commensurate with the flow volume that has passed; or (3) to collect equal volume aliquots of sample at equal time intervals.

The first two methods automatically composite the sample but require that the sampler be connected to a flow meter such that the sampler determines either the flow rate or the amount of volume that passes. Since these methods automatically composite samples, one main sample container may be used to receive all aliquots. The third method automatically collects the sample aliquots but does not automatically flow-weight composite the sample. As such, discrete sample containers must be used, and manual flow-weighted compositing must be conducted after the aliquots are collected. Exhibits 3-23 and 3-24 in Section 3.4.1 describe the manual compositing procedures that should be followed.

Manufacturers' instructions for the use of an automatic sampler provide the best explanation of programming options and should be consulted for information on programming samplers for storm water collection. Some of the points regarding automatic samplers discussed in Section 3.3.2 should also be considered.

### 3.5 SAMPLE HANDLING AND PRESERVATION

Samples must be handled and preserved in accordance with 40 CFR Part 136. This section describes acceptable analytical methods, including requirements regarding sample holding times, containers, sizes, and preservation requirements. For each pollutant or parameter that may have to be analyzed, 40 CFR Part 136 includes information on:

- Container types to be used to store the samples after collection
- Procedures to correctly preserve the samples
- The maximum holding time allowed for each parameter.

The following sections present a detailed discussion of preservation techniques and sample handling procedures. Technical Appendix C presents a matrix of required containers, preservation techniques,

and holding times for each parameter. Most laboratories can provide clean sample containers, preservatives, sealing, chain-of-custody forms and can advise further on sample handling and preservation.

### 3.5.1 DECONTAMINATION OF SAMPLE EQUIPMENT CONTAINERS

Storm water sample containers should be cleaned and prepared for field use according to the procedures set forth in 40 CFR Part 136. A summary of the procedures is presented below for plastic containers, any or all of which may be performed by the laboratory or container distributor:

- Nonphosphate detergent and tap water wash
- Tap water rinse
- 10 percent nitric acid rinse (only if the sample is to be analyzed for metals)
- Distilled/deionized water rinse
- Total air dry.

To clean glass containers, the same steps should be taken; but, after the distilled/deionized water rinse, the containers should be rinsed with solvent if appropriate prior to total air drying. After the decontamination procedures have been accomplished, the sample containers should be capped or sealed with foil, and the sampling device should be protected and kept clean. It is a good idea to label sample containers after cleaning. The laboratory should keep a record of the technician performing the cleaning procedure as well as the date and time. This begins the required chain-of-custody procedure for legal custody (see Section 3.10 for more information). A chain-of-custody record accompanies each sample to track all personnel handling the sample. This record is essential to trace the sample integrity in the event that quality control checks reveal problems. For this reason, as well as to avoid problems if contamination issues arise, it is suggested that the laboratory performing the analysis perform the cleaning.

**Attachment 3**  
**RWQCB January 12, 2005 Review of Technical Workplan**



# California Regional Water Quality Control Board

## Los Angeles Region



Recipient of the 2001 *Environmental Leadership Award* from *Keep California Beautiful*

Alan C. Lloyd, Ph.D.  
Agency Secretary

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Arnold Schwarzenegger  
Governor

January 12, 2005

Mr. Steve Lafflam  
The Boeing Company  
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Canoga Park, CA 91309-7922

### REVIEW OF TECHNICAL WORKPLAN FOR SANTA SUSANA FIELD LABORATORY, CANOGA PARK – EVALUATION FILTERED VERSUS NONFILTERED SAMPLES FOR RADIONUCLIDES AND EVALUATION OF GRAB VERSUS TIME-WEIGHTED AVERAGE SAMPLES

Dear Mr. Lafflam:

On August 31, 2004, Boeing submitted a workplan for the evaluation of filtered versus unfiltered samples for radionuclides and the evaluation of grab versus time-weighted average samples for the storm water samples. Regional Board staff has completed the review of the workplan and wishes to submit the following comments. The purpose of the composite versus grab sample for storm water discharges from the Perimeter Pond is to determine if the concentrations of priority pollutants in the grab sample are comparable to those detected in the time-weighted average samples collected during the same rain event from the same sample location. The purpose of the radiological filtered versus unfiltered study is to look at the potential effects on the detected concentrations of radiological components by filtering the sample.

The workplan describes the protocols for the two projects in two separate studies. Study One addresses the grab versus time-weighted average sample protocols. The Regional Board has no comments on the Study One protocol described in the Workplan. The sampling procedure, as outlined, sufficiently addresses the targeted issues.

Study Two addresses the radiological components measured in filtered versus unfiltered wastewater, and Regional Board staff has several comments on the Study Two protocol. The purpose of the study is to determine if the analyses, as currently executed, provide data to determine if radiological components are being transported from the facility in storm water runoff. The historical activities at the site have resulted in some radiological contamination. The primary mechanism for that contamination to be transported offsite is to be dissolved in water. Cesium 137 is the radionuclide with the highest possibility of being present onsite, and the targeted radionuclides (Gross Alpha, Gross Beta, Radium-226 and Radium-228, Tritium and Strontium) have historically been used as indicator species to determine if it is being transported offsite.

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California Environmental Protection Agency



Mr. Steve Laffam  
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January 12, 2005

Previously, most of the surface water samples analyzed were filtered prior to analysis. This is a minor deviation from the protocol outlined in USEPA Method 900.0, which is used when analyzing samples for Gross Alpha and Gross Beta. The method requires that samples containing 100 mg of dissolved solids or a solids density thickness of 5 mg/cm<sup>2</sup> would be the maximum concentrations of solids for that sample, when the sample is evaporated and counted for gross alpha. The method is designed for drinking water that has been through treatment and possibly filtration, and which routinely has low solids and turbidity. Since the method is being used at Santa Susana Field Laboratory as a screening tool for surface water runoff, which will likely have higher levels of suspended solids than drinking water, Boeing has been filtering samples prior to analyses.

The workplan was developed, in an effort to determine the effect of filtering the sample on the resultant concentration and hence the decision regarding whether Cesium 137 (targeted as an indication of contamination) is being transported offsite via surface water runoff. An unfiltered and a filtered sample will be analyzed for each sampling event evaluated.

Unfiltered samples require expedited analysis in the laboratory. They must be submitted in glass containers within twenty-four hours of sample collection. The samples are to be shaken well prior to analysis. Acidification of the unfiltered samples will ultimately drive constituents into solution that, under normal atmospheric conditions, would not be in solution. The acidification of the turbid water will change the detected concentrations of radiologicals in the sample. Hence, the unfiltered samples should not be acidified. Samples that will represent those being "filtered" should be filtered prior to acidification.

The filters used to filter the sample should be weighed and tared prior to filtration. The filter with the substrate is to subsequently be analyzed using Gamma Spectroscopy. Gamma Spectroscopy will be used to determine the concentration of Cesium 137 present in the particulates collected on the filter. The quantity of sample analyzed should enable analysis to detect Cesium 137 at local background levels, if possible.

If you have any further question, please contact Cassandra Owens at (213) 576-6750.

Sincerely,

*for* David A. Bacharowski, AEO  
Jonathan S. Bishop  
Executive Officer  
Los Angeles Regional Water Quality Control Board

cc: see Mailing List

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Mr. Steve Lafflam  
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January 12, 2005

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 Los Angeles and San Gabriel Rivers Watershed Council  
 Bell Creek Homeowners Association, c/o Jerry Murphy  
 Ms. Carol Henderson, Office Manager, Bell Canyon Association  
 Ms. Barbara Johnson, Susana Knolls Homeowners, Inc.  
 Ms. Gayle Demirtas, Simi Valley Library  
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Mr. William McIlvaine, Boeing  
Ms. Darlene Ruiz

**California Environmental Protection Agency**



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**Attachment 4**  
**RWQCB March 22, 2005 RWQCB Update to Protocol**





# California Regional Water Quality Control Board

## Los Angeles Region



Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

Alan C. Lloyd, Ph.D.  
Agency Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013  
Phone (213) 571-6600 FAX (213) 576-6640 - Internet Address: <http://www.waterboards.ca.gov/losangeles>

Arnold Schwarzenegger  
Governor

March 22, 2005

Mr. Steve Lafflam  
The Boeing Company  
8633 Canoga Avenue  
P.O. Box 7922  
Canoga Park, CA 91309-7922

### UPDATE TO PROTOCOL FOR SANTA SUSANA FIELD LABORATORY, CANOGA PARK - EVALUATION FILTERED VERSUS NONFILTERED SAMPLES FOR RADIONUCLIDES

Dear Mr. Lafflam:

On January 12, 2005, the Regional Board submitted our review of the proposed "Workplan for Santa Susana Field Laboratory, Canoga Park - Evaluation Filtered Versus Nonfiltered Samples For Radionuclides and Evaluation of Grab versus Time-weighted Average Samples." Since that time, the Regional Board has been researching protocols and conferring with knowledgeable agencies concerning the study and the information that it will provide. This letter further clarifies the analyses required.

The requirements stipulated previously were that a filtered and unfiltered sample would be analyzed for each of ten (10) sampling events. Each sample, both filtered and unfiltered, is to be analyzed for Gross Alpha, Gross Beta, combined Radium 226 and Radium 228 and Tritium. If the results from the Combined Radium-226 and 228 analyses exceed the stipulated effluent limits for either of the constituents, the sample must be analyzed for Strontium-90. All samples are to be analyzed for Tritium.

As stated in the January 12, 2005 letter, unfiltered samples require expedited analysis in the laboratory. They must be submitted in glass containers within twenty-four hours of sample collection. The samples are to be shaken well prior to analysis. Acidification of unfiltered samples will ultimately drive constituents into solution that, under normal atmospheric conditions, would not be in solution. The acidification of the turbid water will change the detected concentrations of radionuclides in the sample. Therefore, the unfiltered samples should not be acidified. Samples that will represent those being "filtered" should be filtered prior to acidification by the laboratory performing the analyses. No field filtering of samples is permitted.

The filters used to filter the sample should be weighed and tared prior to filtration. The filter with the residue is to subsequently be analyzed using Gamma Spectroscopy. Gamma Spectroscopy will be used to determine the concentration of Cesium 137 present in the particulates collected on the filter. The quantity of sample analyzed should enable analysis to detect Cesium 137 at local background levels, if possible.

*California Environmental Protection Agency*



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Mr. Steve Lafflam  
The Boeing Company

- 2 -

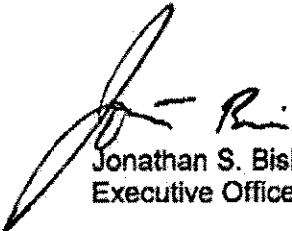
March 22, 2005

When reporting the results for the filtered samples, the filtrate and residue results are to be tabulated separately, and then tabulated as a sum. The detected concentration in the filtrate is to be compared to the Maximum Contaminant Level for each of the radionuclides. The radionuclide concentration detected of the residue collected on the filter should be compared to the USEPA Preliminary Remediation Goals (PRGs) for that radionuclide. The results for each sampling event should be included in your regular quarterly monitoring report. Within 45 days after the last parallel study sampling has been obtained, a report detailing the results must be submitted to the Regional Board.

During each sampling event a sample is to be analyzed for Tritium. The Tritium sample requires special handling. It should be collected in a glass container only. The sample should not be filtered or acidified and it must be submitted to the laboratory within twenty-four hours of sample collection.

If you have any further question, please contact Cassandra Owens at (213) 576-6750.

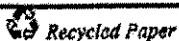
Sincerely,



Jonathan S. Bishop  
Executive Officer

cc: Honorably Sheila Kuehl, Senator, 23<sup>rd</sup> District  
Assemblymember Hannah-Beth Jackson, Assemblymember 35<sup>th</sup> District  
Environmental Protection Agency, Region 9, Permits Branch (WTR-5)  
Mr. Thomas Kelly, Environmental Protection Agency, Region 9, (WTR-5)  
Environmental Protection Agency, Region 9, Office of Radiation Programs  
Mr. Michael Lopez, U.S.D.O.E., Oakland  
Ms. Mary Gross, U.S. D. O. E., Oakland  
Mr. Dean Kunihiro, U.S. Nuclear Regulatory Commission  
U.S. Army Corps of Engineers  
NOAA, National Marine Fisheries Service  
Department of Interior, U.S. Fish and Wildlife Service  
Mr. Michael Lauffer, State Water Resources Control Board, Office of Chief Counsel  
Mr. William Paznokas, Department of Fish and Game, Region 5  
Mr. Joseph Smith, Department of Toxic Substances Control, Office of Legal Counsel  
Sacramento  
Ms. Karen Baker, Department of Toxic Substances Control  
Ms. Pauline Batarseh, Department of Toxic Substances Control, Sacramento  
Mr. Peter Bailey, Department of Toxic Substances Control, Sacramento  
Mr. Stephen Baxter, Department of Toxic Substance Control, Glendale  
California Coastal Commission, South Coast District

*California Environmental Protection Agency*



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**Attachment 5**  
**Boeing April 25, 2005 Response to RWQCB Letters**

The Boeing Company  
6523 Canoga Avenue  
P.O. Box 7922  
Canoga Park, CA 91309-7922

CERTIFIED MAIL

April 25, 2005  
In reply refer to 2005RC1191



California Regional Water Quality Control Board  
Los Angeles Region  
320 W. 4<sup>th</sup> Street, Suite 200  
Los Angeles, California 90013

Attention: Cassandra Owens  
Project Manager

Subject: Submission of Revised Technical Workplan Pursuant to Section 13267 of the California Water Code Boeing Company, Santa Susana Field Laboratory Canoga Park, California (NPDES Permit No. CA0001309)

Dear Ms. Owens:

The Boeing Company (Boeing) is submitting a Revised Technical Workplan pursuant to Section 13267 of the California Water Code and as requested by the California Regional Water Quality Control Board, Los Angeles Region (RWQCB) in a letter dated May 20, 2004. The revisions contained herein have been incorporated as requested in the Board's January 12, 2005 review of the original Workplan and the subsequent March 22<sup>nd</sup>, 2005 update. As such, this revised Technical Workplan describes the protocol for additional sampling and analyses activities at the Santa Susana Field Laboratory (SSFL). This required sampling is in conjunction with current National Pollutant Discharge Elimination System (NPDES) sampling conducted at the SSFL as required under permit number CA0001309.

If there are any questions pertaining to this Workplan, please contact Bill McIlvaine at (818) 586-9228.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul J. Costa", with a horizontal line extending to the right.

Paul J. Costa, Manager  
Environmental Protection

PJC:pj

Attachment: Technical Workplan

SHEA-101764

**The Boeing Company  
Rocketdyne Propulsion & Power**

**Technical Workplan to Investigate Surface Water Run-off Leaving the Santa Susana Field  
Laboratory**

**Overview of the Technical Study Requirements**

On May 20, 2004 The Boeing Company received a letter from the Los Angeles Regional Water Quality Control Board (Board) requiring Boeing to conduct a special study of surface water runoff at the Santa Susana Field Laboratory. This study was required pursuant to Section 13267 of the California Water Code and its intent is to provide information to the Board regarding the quality of water leaving SSFL during rain events and dry weather discharges. Specifically this letter required Boeing to conduct two special studies. The first is to compare the results of grab sampling versus flow weighted composite sampling of surface water run-off. The second is to compare the results of radiological samples that have been filtered and unfiltered prior to analysis. Boeing submitted a technical workplan (workplan) on August 31, 2004 that outlined the details of these two studies. A review of the workplan was received on January 21, 2005 and a subsequent workplan review update was received on March 24, 2005. The following revised workplan is intended to incorporate the requested changes and to meet the aforementioned requirements. The revised plan will become effective once it has been approved by Board staff.

**Study 1. Composite versus Grab Sampling**

Overview of Study:

The Board requires this study to consist of six sampling events at Perimeter Pond (Outfall 011). Three are to occur during wet weather discharges and three during dry weather discharges. Each sampling event is to include collecting a grab sample during the first 30 minutes of discharge and a flow-weighted composite sample that is to be collected over the course of the first three hours of flow or for the duration of the discharge if less than three hours. The constituents to be analyzed have been specified in the Board letter and are included in Table 1 of this workplan.

General Sampling Protocols:

Wet weather sample collection will commence at Perimeter Pond (Outfall 011) upon the first storm event that produces sufficient flow for complete analyses. Wet weather sample collection will continue for the two subsequent rain events that produce sufficient flow. The sample collection point will be located at the weir immediately downstream from Perimeter Pond and be will representative of all surface water that comes from the eastern portion of the Santa Susana Field Lab including that which flows through Perimeter Pond. Sampling will continue through the dry season(s) until three additional samples of dry weather discharge have been collected. It should be noted that as referenced on page 5 of the Fact Sheet for NPDES Permit No. CA0001309, water may be transferred from Perimeter Pond to the R-1 Pond and then up to the Skyline Tank Farm for reuse as engine test cooling water or released to Silverdale Pond as

needed. This water management program along with the reduced introduction of water from ongoing activities will reduce the frequency of both wet and dry weather discharges from this sampling location. It is therefore possible that meeting the sampling requirements for this portion of the study may take several years. It should also be noted that prior to sampling, an evaluation will take place to identify potential safety issues. Such factors considered would include the amount of ambient light, road conditions, and potential for flash flooding. Samples may not be collected within the prescribed time if it has been determined that doing so may jeopardize the safety of field personnel. In such cases, sample collection will begin as soon as it is safe to do so. If such a delay occurs, an explanation as to the reason for the delay will be noted in the technical report submission.

#### Grab Sampling Methodology:

Field personnel will collect the grab samples following methodologies outlined in Chapter 3 of the EPA's July 1992 NPDES Storm Water Sampling Guidance Document (Guidance Document). An excerpt of this document has been enclosed for your review. Samples will be stored in appropriate bottles under prescribed temperature conditions following EPA methodologies. An outside courier will transport the samples to a State Certified Analytical Laboratory for analysis using standard chain of custody forms to document proper handling.

#### Composite Sampling Methodology:

Flow weighted samples will be collected from the same location at Perimeter Pond as the grab samples. For this portion of the study, samples will be collected either manually or by utilizing an automatic sampler that is capable of refrigerating the samples until collected by field personnel. For consistency in comparing grab sample results with flow weighted composite sample results, the grab sample noted above will be collected at approximately the same time the first aliquot for the composite sample is taken. Composite samples will also be collected and stored according to methodologies outlined in the Guidance Document. Sampling will take place over a three hour period or for the duration of the flow event whichever is shorter. During this time and also in accordance with the Guidance Document, three equal aliquots of sample will be collected per hour at equal time intervals. Aliquot volumes will be sufficient to complete analyses of all required parameters. It is expected that each aliquot will contain approximately 2 gallons of liquid that will be used for flow proportioning.

The amount of sample from each aliquot that will be used to make up the composite sample will be either calculated using the formula expressed in Exhibit 3-23 and 3-24 of the Guidance Document, as applicable, or calculated based on the proportion of flow during each sampling interval to the total flow during the sampling event. Flow data from an ISCO model 4210 Ultrasonic flow meter which has been installed at the sample point will be used for determination of aliquot amount. The flow meter was calibrated in July 2004 to assure accurate measurements, and will be re-calibrated on an annual basis. The formation of the composited sample using the individual aliquots and flow data will either be performed in the field or at the laboratory depending upon environmental conditions. A courier will transport the resultant samples to a

State Certified Analytical Laboratory for analysis using standard chain of custody forms to document proper handling.

The automatic sampler will only be used for those analyses amenable to such collection techniques as noted in exhibit 3-23 of the Guidance Document. For analytes that are not amenable to collection by automatic samplers, (i.e.: VOCs) samples will be manually collected by field personnel using proper collection containers at equal intervals and will be stored per requirements for compositing either in the field or at the laboratory per Guidance Document specifications.

## **Study 2. Sampling for Radiological Components**

### Overview of Study

This second study requires the collection and analysis of ten samples for Gross Alpha, Gross Beta, combined Radium 226 & Radium 228 (if analytical results require it), Tritium, and Strontium-90. Each sample is to be split into two halves, with one portion being filtered and analyzed while the other portion is left unfiltered prior to analysis. Sampling is to be conducted using the specified EPA radiological methodologies as directed by the Board and is included in Table 1.

### Sampling Methodology:

Data for this study will include results from a total of ten sampling events. A minimum of four of the samples will be taken from the RMHF facility (Outfall 003). The other six samples will be the same samples from the first study conducted at Perimeter Pond. All will be grab samples collected in glass containers during the first hour of discharge or at the first safe opportunity. Any delays in sampling will be detailed in the final report. Samples will be expedited such that they will be received by a State Certified Analytical Laboratory within twenty-four hours of collection. Each grab sample will be shaken well then split into two equal aliquots. One aliquot will be analyzed unfiltered. As per Board direction, the unfiltered sample will not be acidified prior to analysis. The second aliquot will be filtered at the Laboratory prior to acidification and analysis. A .45 micron filter will be weighed and tarred prior to filtration. The filtered aliquot may then be acidified if indicated by the EPA method. Both the filtered and unfiltered samples will be analyzed following the EPA protocols indicated below. The filter and substrate from the filtered sample will subsequently analyzed for Cesium 137 using Gamma Spectroscopy.

Each resultant sample including the filtrate will be analyzed for the following:

- Gross Alpha (using EPA Method 900.0)
- Gross Beta (using EPA Method 900.0)
- Radium-226 (using EPA Method 903.0 or 903.1 if required)
- Radium-228 (using EPA Method 904.0 if required)
- Tritium (using EPA Method 906)
- Strontium-90 (using EPA Method 905.0)

It should be noted that the EPA Method 900.0 for Gross Alpha is designed for water with low suspended solids and turbidity. Samples with more than 100 mg/l of solids or greater than 5.0

NTU turbidity will likely raise the detection limits due to the limitations of the method. The detection limit for each sample will be included in the report.

#### **Reporting of Results**

Since these analyses are being performed on samples taken from locations regulated under NPDES Permit No. CA0001309, sampling results will be submitted in Boeing's quarterly Self Monitoring Report (SMR). Sample results from modified procedures (flow weighted, filtered, and unfiltered unpreserved samples) will be summarized in a special section that will be submitted along with the quarterly SMR. In the event there was insufficient flow to support this study in the reporting quarter, a notation will be made in the report. Boeing assumes that those samples undergoing analyses required in the NPDES permit will be subject to permit requirements including the 24-hour notification required under Section III. A. of the WDRs in the existing NPDES permit (CA0001309). Boeing also assumes that those samples which deviate from normal sampling methodologies as specified in the NPDES permit would not be used for compliance determination. This would include the flow weighted composite samples, the filtered samples and the unfiltered samples that were not acidified.

Upon completion of all required sampling and analysis, a Final Technical Report will be prepared and submitted to the RWQCB. The Technical Report will include a summary of sampling activities, summary of analytical results, and supporting laboratory data sheets. ,

Attachment: Table 1 – Section 13627 Sample Schedule



TABLE I  
SECTION 13267 SAMPLE SCHEDULE  
SANTA SUSANA FIELD LABORATORY, CANOGA PARK, CALIFORNIA

EPA Test Method	Sample Parameter	Sample Location and Discharge Event		
		Outfall 011 (Perimeter Pond)		Outfall 001 (RMHF)
		Dry Weather (1 events)	Wet Weather (3 events)	Wet Weather (4 events)
field instrument	Total waste flow	G, FW	G, FW	--
field instrument	Temperature	G, FW	G, FW	--
150.1	pH	G, FW	G, FW	--
120.1	Conductivity at 25°C	G, FW	G, FW	--
160.2	Total suspended solids	G, FW	G, FW	--
160.5	Settleable solids	G, FW	G, FW	--
405.1	BOD5	G, FW	G, FW	--
413.2	Oil and grease	G, FW	G, FW	--
190.2	Ammonia-N	G, FW	G, FW	--
180.1	Turbidity	G, FW	G, FW	--
330.5	Total residual chlorine	--	--	--
415.1	Total organic carbon	G, FW	G, FW	--
180.1	Total dissolved solids	G, FW	G, FW	--
300.0	Chloride	G, FW	G, FW	--
300.0	Sulfate	G, FW	G, FW	--
425.1	Detergents (as MBAS)	G, FW	G, FW	--
300.0	Nitrate - Nitrate-N	G, FW	G, FW	--
335.2	Cyanide	G, FW	G, FW	--
8260B	Benzene	G, FW	G, FW	--
8260B	Carbon Tetrachloride	G, FW	G, FW	--
8260B	Chloroform	G, FW	G, FW	--
8260B	1,1-Dichloroethane	G, FW	G, FW	--
8260B	1,2-Dichloroethane	G, FW	G, FW	--
8260B	1,1-Dichloroethylene	G, FW	G, FW	--
8260B	Ethylbenzene	G, FW	G, FW	--
8260B	Tetrachloroethylene	G, FW	G, FW	--
8260B	Toluene	G, FW	G, FW	--
8260B	Xylene	G, FW	G, FW	--
8260B	1,1,1-trichloroethane	G, FW	G, FW	--
8260B	1,1,2-trichloroethane	G, FW	G, FW	--
8260B	Trichloroethylene	G, FW	G, FW	--
8260B	Trichlorofluoromethane	G, FW	G, FW	--
8260B	Vinyl Chloride	G, FW	G, FW	--
6010B	Copper	G, FW	G, FW	--
6010B	Lead	G, FW	G, FW	--
7470A	Mercury	G, FW	G, FW	--
6010B	Barium	G, FW	G, FW	--
6010B	Iron	G, FW	G, FW	--
6010B	Manganese	G, FW	G, FW	--
6010B	Antimony	G, FW	G, FW	--
6010B	Arsenic	G, FW	G, FW	--
6010B	Beryllium	G, FW	G, FW	--
6010B	Cadmium	G, FW	G, FW	--
6010B	Nickel	G, FW	G, FW	--
6010B	Selenium	G, FW	G, FW	--
6010B	Silver	G, FW	G, FW	--
6010B	Thallium	G, FW	G, FW	--
6010B	Zinc	G, FW	G, FW	--
6010B	Cobalt	G, FW	G, FW	--
6010B	Vanadium	G, FW	G, FW	--
7196A	Chromium (VI)	G, FW	G, FW	--
900.0	Gross Alpha	G, G*, FW	G, G*, FW	G
900.0	Gross Beta	G, G*, FW	G, G*, FW	G
903.0/903.1	Radium 226	G, G*, FW	G, G*, FW	G
904.0	Radium 228	G, G*, FW	G, G*, FW	G
906.0	Tritium	G, G*, FW	G, G*, FW	G
905.0	Strontium-90	G, G*, FW	G, G*, FW	G
907.1	Cesium-137 (substrate only)	G**	G**	G
8082	PCBs	G, FW	G, FW	--
418.1/8013M	TPH	G, FW	G, FW	--
8315M	Monomethylhydrazine	G, FW	G, FW	--
8260B	cis-1,2-Dichloroethene	G, FW	G, FW	--
8260B	1,4-Dioxane	G, FW	G, FW	--
8260B	1,1,2-Trichloro-1,1,2,2-tetrafluoroethane	G, FW	G, FW	--
8260B	1,2-Dichloro-1,1,2,2-tetrafluoroethane	G, FW	G, FW	--
8260A/8081	Cyclohexane	G, FW	G, FW	--
EPA/821-R-03-012 and EPA/821-R-01-013	Aquatic Toxicity	G, FW	G, FW	--
EPA/821-R-02-013 and EPA/821-R-03-014	Chronic Toxicity	G, FW	G, FW	--

Notes:

- Total of 3 dry weather sampling events, when there is discharge flow from Perimeter Pond.
- Total of 3 wet weather sampling events, when there is discharge flow from Perimeter Pond: (1) First rain event; (2) Subsequent rain event; (3) Subsequent rain event.
- Total of 4 wet weather sampling events, when there is discharge flow from Outfall 003.

EPA - United States Environmental Protection Agency

FW - Flow-weighted sample

G - Grab sample

G\* - Grab sample will include analysis of filtered and unfiltered sample water, and analysis of sediment from filtered water

G\*\* - Sediment will be analyzed from filtered portion of grab sample

**Appendix A (on attached CD)**

**Analytical Summary Tables of All Data from Studies 1 and 2, Including Data  
That Did Not Satisfy 13267 Requirements**

**Analytical Laboratory Data Reports and Data Validation Reports**

**APPENDIX A**  
**TABLE OF CONTENTS**

**Tables**

Analytical Summary Tables of All Data from Studies 1 and 2, Including Data That Did Not Satisfy 13267 Requirements

**Section No.**

- 1 Outfall 003, January 04, 2005 - Del Mar Analytical Laboratory Report
- 2 Outfall 003, January 04, 2005 – MEC<sup>X</sup> Data Validation Reports
- 3 Outfall 003, February 11, 2005- Del Mar Analytical Laboratory Report
- 4 Outfall 003, February 11, 2005 - MEC<sup>X</sup> Data Validation Reports
- 5 Outfall 003, February 18, 2005 – Del Mar Analytical Laboratory Report
- 6 Outfall 003, February 18, 2005 – MEC<sup>X</sup> Data Validation Reports
- 7 Outfall 003, March 19, 2005 – Del Mar Analytical Laboratory Report
- 8 Outfall 003, March 19, 2005 – MEC<sup>X</sup> Data Validation Reports
- 9 Outfall 003, April 28, 2005 – Del Mar Analytical Laboratory Report
- 10 Outfall 003, April 28, 2005 - MEC<sup>X</sup> Data Validation Reports
- 11 Outfall 003, October 18, 2005 – Del Mar Analytical Laboratory Report
- 12 Outfall 003, October 18, 2005 – MEC<sup>X</sup> Data Validation Reports
- 13 Outfall 003, November 09, 2005 – Del Mar Analytical Laboratory Report
- 14 Outfall 003, November 09, 2005 – MEC<sup>X</sup> Data Validation Reports
- 15 Outfall 003, January 1, 2005 – Del Mar Analytical Laboratory Report
- 16 Outfall 003, January 1, 2005 - MEC<sup>X</sup> Data Validation Reports
- 17 Outfall 003, February 19, 2005 – Del Mar Analytical Laboratory Report
- 18 Outfall 003, February 19, 2005 – MEC<sup>X</sup> Data Validation Reports
- 19 Outfall 003, March 1, 2006 – Del Mar Analytical Laboratory Report
- 20 Outfall 003, March 1, 2006 – MEC<sup>X</sup> Data Validation Reports
- 21 Outfall 003, March 11, 2006 – Del Mar Analytical Laboratory Report
- 22 Outfall 003, March 11, 2006 – MEC<sup>X</sup> Data Validation Reports
- 23 Outfall 011, January 04, 2005 – Del Mar Analytical Laboratory Report
- 24 Outfall 011, January 04, 2005 – MEC<sup>X</sup> Data Validation Reports

- 25 Outfall 011, January 11, 2005 – Del Mar Analytical Laboratory Report
- 26 Outfall 011, January 11, 2005 – MEC<sup>X</sup> Data Validation Reports
- 27 Outfall 011, February 11, 2005 – Del Mar Analytical Laboratory Report
- 28 Outfall 011, February 11, 2005 – MEC<sup>X</sup> Data Validation Reports
- 29 Outfall 011, February 25, 2005 - Del Mar Analytical Laboratory Report
- 30 Outfall 011, February 25, 2005 – MEC<sup>X</sup> Data Validation Reports
- 31 Outfall 011, March 18, 2005- Del Mar Analytical Laboratory Report
- 32 Outfall 011, March 18, 2005 - MEC<sup>X</sup> Data Validation Reports
- 33 Outfall 011, March 25, 2005 – Del Mar Analytical Laboratory Report
- 34 Outfall 011, March 25, 2005 – MEC<sup>X</sup> Data Validation Reports
- 35 Outfall 011, January 04, 2005 – Del Mar Analytical Laboratory Report
- 36 Outfall 011, January 04, 2005 – MEC<sup>X</sup> Data Validation Reports
- 37 Outfall 011, January 11, 2005 – Del Mar Analytical Laboratory Report
- 38 Outfall 011, January 11, 2005 - MEC<sup>X</sup> Data Validation Reports
- 39 Outfall 011, February 11, 2005 – Del Mar Analytical Laboratory Report
- 40 Outfall 011, February 11, 2005 – MEC<sup>X</sup> Data Validation Reports
- 41 Outfall 011, February 25, 2005 – Del Mar Analytical Laboratory Report
- 42 Outfall 011, February 25, 2005 – MEC<sup>X</sup> Data Validation Reports
- 43 Outfall 011, March 18, 2005 - Del Mar Analytical Laboratory Report
- 44 Outfall 011, March 18, 2005 - MEC<sup>X</sup> Data Validation Reports
- 45 Outfall 011, March 25, 2005 – Del Mar Analytical Laboratory Report
- 46 Outfall 011, March 25, 2005 – MEC<sup>X</sup> Data Validation Reports

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	1.1	J (DNQ)	0.83	J (DNQ)
Chloride	mg/L	-/-	4.2	--	3.6	--
Specific Conductivity (Lab)	umhos/cm	-/-	100	--	94	--
Surfactants (MBAS)	mg/L	-/-	ND < 4.4	U	ND < 0.044	U
Fluoride	mg/L	-/-	0.25	J (DNQ)	ND < 0.50	UJ (B)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	2.1	--	0.91	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	14	(\$)
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.70	*	6.80	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	5.9	--	4.9	--
Temperature	deg. F	86/-	52.0	*	57.6	*
Total Cyanide	ug/L	-/-	ND < 2.2	U	ND < 2.2	U
Total Dissolved Solids	mg/L	-/-	120	--	88	--
Total Organic Carbon	mg/L	-/-	12	--	10	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	30	--	18	--
Volume Discharged	MGD	-/-	2.1548	*	5.3828	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B)	ND < 2.0	UJ (B,*3,\$)
Arsenic	ug/L	-/-	ND < 1.0	UJ (B)	1.6	--
Barium	mg/L	-/-	0.025	--	0.019	--
Beryllium	ug/L	-/-	0.14	J (DNQ)	0.063	J (*3,DNQ)
Boron	mg/L	-/-	0.060	--	0.065	--
Cadmium	ug/L	-/-	0.25	J (DNQ)	0.14	J (DNQ)
Chromium	ug/L	-/-	3.5	J (*3)	ND < 1.8	UJ (B)
Chromium VI	ug/L	-/-	ND < 1.0	UJ (H,B)	ND < 0.041	U
Cobalt	ug/L	-/-	0.59	J (DNQ)	0.71	J (DNQ)
Copper	ug/L	-/-	6.3	--	4.2	--
Iron	mg/L	-/-	1.5	J (*3,Q)	0.98	--
Lead	ug/L	-/-	1.4	--	1.0	--
Manganese	ug/L	-/-	26	--	16	--
Mercury	ug/L	-/-	0.25	--	0.13	J (DNQ)
Nickel	ug/L	-/-	3.5	--	2.3	J (*3)
Selenium	ug/L	-/-	0.63	J (DNQ)	ND < 2.0	UJ (B)
Silver	ug/L	-/-	ND < 0.089	U	ND < 1.0	UJ (B)
Thallium	ug/L	-/-	ND < 0.075	U	0.90	J (*3,DNQ)
Vanadium	ug/L	-/-	2.4	--	3.4	--
Zinc	ug/L	-/-	22	--	18	J (DNQ)
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*10)	ND < 120	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	U	ND < 2.7	UJ (C)
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	UJ (C)	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
2-Methylnaphthalene	ug/L	-/-	ND < 0.13	U	ND < 1.0	UJ (B,*5)

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	UJ (L,*5)
4,4'-DDD	ug/L	-/-	ND < 0.011	U	ND < 0.011	U
4,4'-DDE	ug/L	-/-	ND < 0.017	U	ND < 0.017	U
4,4'-DDT	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	UJ (*5)
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	UJ (C)	ND < 4.6	UJ (C)
Acrylonitrile	ug/L	-/-	ND < 5.1	UJ (C)	ND < 5.1	UJ (C)
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.029	U	ND < 0.029	U
alpha-BHC	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	UJ (*5)
Anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.067	U	ND < 0.067	U
Aroclor-1221	ug/L	-/-	ND < 0.057	U	ND < 0.057	U
Aroclor-1232	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Aroclor-1242	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Aroclor-1248	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
Aroclor-1254	ug/L	-/-	ND < 0.16	U	ND < 0.16	U
Aroclor-1260	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Benidine	ug/L	-/-	ND < 2.4	R (L)	ND < 2.4	R (L)
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	U	ND < 3.7	U
Benzyl alcohol	ug/L	-/-	0.27	J (DNQ)	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.011	U	ND < 0.011	UJ (C)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 1.1	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	UJ (C)	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.34	U

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**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*10)	ND < 120	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Diethylphthalate	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endosulfan II	ug/L	-/-	ND < 0.037	U	ND < 0.037	U
Endosulfan sulfate	ug/L	-/-	ND < 0.013	U	ND < 0.013	U
Endrin	ug/L	-/-	ND < 0.0082	U	ND < 0.0082	U
Endrin aldehyde	ug/L	-/-	ND < 0.045	U	ND < 0.045	U
Endrin ketone	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
Heptachlor epoxide	ug/L	-/-	ND < 0.012	U	ND < 0.012	U
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	UJ (*5)	ND < 1.8	U
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 1.0	U	ND < 1.0	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	0.12	J (DNQ)	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.0097	U	ND < 0.0097	U
Methoxychlor	ug/L	-/-	ND < 0.034	U	ND < 0.034	U
Methylene Chloride	ug/L	-/-	ND < 0.48	UJ (C)	ND < 0.48	U
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 5.0	U	ND < 5.0	U
Naphthalene	ug/L	-/-	ND < 0.13	U	0.21	J (DNQ,*5)
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U

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**Analytical Summary Table of Data from Studies 1 and 2,  
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OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 0.77	U	ND < 0.77	U
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 5.0	U	ND < 5.0	U

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**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	3.6	--	0.68	J (DNQ)
Chloride	mg/L	-/-	5.4	--	5.1	--
Specific Conductivity (Lab)	umhos/cm	-/-	130	--	150	--
Surfactants (MBAS)	mg/L	-/-	0.082	J (DNQ)	0.054	J (DNQ)
Fluoride	mg/L	-/-	ND < 0.50	UJ (B)	0.17	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	0.47	--	0.38	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.8	*	7.0	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	14	--	11	--
Temperature	deg. F	86/-	58.3	*	55.7	*
Total Cyanide	ug/L	-/-	ND < 2.2	U	ND < 2.2	U
Total Dissolved Solids	mg/L	-/-	110	--	100	--
Total Organic Carbon	mg/L	-/-	11	--	11	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	26	--	ND < 10	U
Turbidity	NTU	-/-	38	--	9.4	--
Volume Discharged	MGD	-/-	1.9674	*	1.4751	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,\$)	ND < 2.0	UJ (B,\$)
Arsenic	ug/L	-/-	1.0	J (*3)	1.3	J (*3)
Barium	mg/L	-/-	0.020	--	0.020	--
Beryllium	ug/L	-/-	0.052	J (DNQ)	ND < 0.037	U
Boron	mg/L	-/-	ND < 0.063	UJ (B)	ND < 0.062	UJ (B)
Cadmium	ug/L	-/-	0.11	J (DNQ)	0.10	J (DNQ)
Chromium	ug/L	-/-	ND < 1.8	UJ (B)	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ANR	ANR	ND < 0.10	U
Cobalt	ug/L	-/-	0.60	J (DNQ)	0.23	J (DNQ)
Copper	ug/L	-/-	3.4	J (*3)	3.2	--
Iron	mg/L	-/-	1.6	--	0.56	--
Lead	ug/L	-/-	1.3	--	0.57	J (B,DNQ)
Manganese	ug/L	-/-	36	--	13	--
Mercury	ug/L	-/-	0.14	J (DNQ)	ND < 0.063	U
Nickel	ug/L	-/-	1.4	J (B,*3)	1.0	J (B,DNQ)
Selenium	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	UJ (*3)
Thallium	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Vanadium	ug/L	-/-	3.7	J (B)	1.5	J (B,DNQ)
Zinc	ug/L	-/-	16	J (DNQ)	16	J (DNQ,*3)
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	*	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	UJ (C)	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	UJ (C)	ND < 0.38	U
2-Methylnaphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
4,4'-DDE	ug/L	-/-	ND < 0.020	U	ND < 0.025	U
4,4'-DDT	ug/L	-/-	ND < 0.030	UJ (C)	0.038	J (DNQ)
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	UJ (C)	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	U
Acrylonitrile	ug/L	-/-	ND < 5.1	UJ (C)	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
alpha-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Aroclor-1221	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Aroclor-1232	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1242	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1248	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (C)
Aroclor-1254	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (C)
Aroclor-1260	ug/L	-/-	ND < 0.40	U	ND < 0.40	UJ (C)
Benzidine	ug/L	-/-	ND < 2.4	UJ (*5)	ND < 3.2	UJ (*5)
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (C)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 1.1	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.34	U

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**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Diethylphthalate	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endosulfan II	ug/L	-/-	ND < 0.040	U	ND < 0.040	U
Endosulfan sulfate	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endrin	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
Endrin aldehyde	ug/L	-/-	ND < 0.045	UJ (C)	ND < 0.045	U
Endrin ketone	ug/L	-/-	ND < 0.020	UJ (C)	ND < 0.020	U
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
Heptachlor epoxide	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	U	ND < 1.8	U
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	UJ (H)
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
Methoxychlor	ug/L	-/-	ND < 0.035	UJ (C)	ND < 0.035	U
Methylene Chloride	ug/L	-/-	ND < 0.48	U	ND < 5.0	U (T)
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	UJ (H)
Naphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	UJ (*5,C)	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U

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**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	UJ (C)	ND < 0.49	UJ (C)
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	U	ND < 1.5	U
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	UJ (H)

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**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	0.56	--
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	1.6	J (DNQ)	0.91	J (DNQ)
Chloride	mg/L	-/-	15	--	8.4	--
Specific Conductivity (Lab)	umhos/cm	-/-	360	--	210	--
Surfactants (MBAS)	mg/L	-/-	0.080	J (DNQ)	ND < 0.044	U
Fluoride	mg/L	-/-	ND < 0.50	UJ (B)	0.25	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	ND < 0.072	U	0.14	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	1.6	J (DNQ)
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.73	*	6.7	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	42	--	20	--
Temperature	deg. F	86/-	60.4	*	59.7	*
Total Cyanide	ug/L	-/-	ND < 6.2	UJ (B,C,\$)	ND < 5.2	UJ (B,\$)
Total Dissolved Solids	mg/L	-/-	220	--	120	--
Total Organic Carbon	mg/L	-/-	13	--	11	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	3.1	--	4.4	--
Volume Discharged	MGD	-/-	0.2532	*	0.4749	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,*3,\$)	ND < 2.0	UJ (*3,B)
Arsenic	ug/L	-/-	2.4	--	2.7	J (I)
Barium	mg/L	-/-	0.036	--	0.023	--
Beryllium	ug/L	-/-	ND < 0.037	U	0.041	J (DNQ)
Boron	mg/L	-/-	0.090	--	ND < 0.092	UJ (B)
Cadmium	ug/L	-/-	0.085	J (DNQ)	0.22	J (DNQ)
Chromium	ug/L	-/-	1.0	J (B,DNQ)	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.35	J (DNQ)	0.29	J (DNQ)
Copper	ug/L	-/-	4.0	--	3.9	--
Iron	mg/L	-/-	0.29	--	0.43	--
Lead	ug/L	-/-	0.30	J (DNQ)	0.46	J (DNQ)
Manganese	ug/L	-/-	65	--	36	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	ND < 2.5	UJ (B)	3.4	--
Selenium	ug/L	-/-	0.55	J (DNQ)	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Thallium	ug/L	-/-	ND < 0.075	U	ND < 1.0	UJ (B)
Vanadium	ug/L	-/-	2.0	--	ND < 0.86	U
Zinc	ug/L	-/-	12	J (DNQ)	13	J (DNQ)
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

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**Analytical Summary Table of Data from Studies 1 and 2,  
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OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	UJ (C)	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	UJ (C)	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	U	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	UJ (C)	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.22	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.17	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.42	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.62	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 5.4	U	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.46	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.48	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.24	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.76	UJ (C)	ND < 0.38	UJ (C)
2-Methylnaphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U

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OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.56	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.46	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 1.9	UJ (C)	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
4,4'-DDE	ug/L	-/-	ND < 0.025	U	ND < 0.025	UJ (S)
4,4'-DDT	ug/L	-/-	0.039	J (DNQ)	ND < 0.030	UJ (S)
4-Bromophenylphenylether	ug/L	-/-	ND < 0.24	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.68	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.40	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.11	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 1.5	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	R (R)
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	U	ND < 0.030	UJ (S)
alpha-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Aniline	ug/L	-/-	ND < 5.8	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	U	ND < 0.20	UJ (S)
Aroclor-1221	ug/L	-/-	ND < 0.10	U	ND < 0.10	UJ (S)
Aroclor-1232	ug/L	-/-	ND < 0.15	U	ND < 0.15	UJ (S)
Aroclor-1242	ug/L	-/-	ND < 0.15	U	ND < 0.15	UJ (S)
Aroclor-1248	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (S)
Aroclor-1254	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (S)
Aroclor-1260	ug/L	-/-	ND < 0.40	U	ND < 0.40	UJ (S)
Benzidine	ug/L	-/-	ND < 4.8	R (L)	ND < 2.4	R (L)
Benzo(a)anthracene	ug/L	-/-	ND < 0.076	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.28	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.10	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.11	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 7.4	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.42	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.17	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 2.2	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.14	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.22	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	UJ (C)	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 10	U (B)	ND < 5.0	U (B)

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.20	U	ND < 0.20	UJ (S)
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	UJ (C)	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	UJ (C)	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.14	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Diethylphthalate	ug/L	-/-	ND < 2.0	U (B)	ND < 1.0	U (B)
Dimethylphthalate	ug/L	-/-	ND < 0.16	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.52	U	ND < 2.0	U (B)
Di-n-octylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Endosulfan II	ug/L	-/-	ND < 0.040	U	ND < 0.040	UJ (S)
Endosulfan sulfate	ug/L	-/-	ND < 0.015	U	ND < 0.015	UJ (S)
Endrin	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Endrin aldehyde	ug/L	-/-	ND < 0.045	U	ND < 0.045	UJ (S)
Endrin ketone	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Fluoranthene	ug/L	-/-	ND < 0.18	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	UJ (S)
Heptachlor epoxide	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Hexachlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.76	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 3.6	U	ND < 1.8	UJ (C)
Hexachloroethane	ug/L	-/-	ND < 1.0	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.38	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.020	U	ND < 0.020	UJ (S)
Methoxychlor	ug/L	-/-	ND < 0.035	U	ND < 0.035	UJ (S)
Methylene Chloride	ug/L	-/-	ND < 0.48	U	ND < 0.48	U
m-Nitroaniline	ug/L	-/-	ND < 0.70	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Naphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.44	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.36	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.15	U	ND < 0.077	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.36	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.40	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 1.6	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.14	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.28	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.98	U	ND < 0.49	U
Pyrene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	U	ND < 1.5	UJ (S)
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	U

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	ND < 0.30	U	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	1.3	J (DNQ)	0.96	J (DNQ)
Chloride	mg/L	-/-	4.3	--	3.6	--
Specific Conductivity (Lab)	umhos/cm	-/-	110	--	94	--
Surfactants (MBAS)	mg/L	-/-	0.46	J (DNQ)	ND < 0.044	U
Fluoride	mg/L	-/-	0.28	J (DNQ)	ND < 0.50	UJ (B)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	2.1	--	0.92	--
Oil & Grease	mg/L	-/-	0.95	J (DNQ)	42	(\$)
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.70	*	6.80	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	6.0	--	4.7	--
Temperature	deg. F	86/-	52.0	*	52.0	*
Total Cyanide	ug/L	-/-	ND < 2.2	U	ND < 2.2	R (Q)
Total Dissolved Solids	mg/L	-/-	100	--	99	--
Total Organic Carbon	mg/L	-/-	13	--	9.2	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	24	--	18	--
Volume Discharged	MGD	-/-	2.1548	*	5.3828	*
<b>METALS</b>						
Antimony	ug/L	-/-	0.42	J (DNQ)	ND < 2.0	UJ (B)
Arsenic	ug/L	-/-	ND < 1.0	UJ (B)	1.8	--
Barium	mg/L	-/-	0.015	--	0.018	--
Beryllium	ug/L	-/-	0.072	J (DNQ)	0.070	J (*3,DNQ)
Boron	mg/L	-/-	0.051	--	ND < 0.069	UJ (B)
Cadmium	ug/L	-/-	0.12	J (DNQ)	ND < 1.0	UJ (B)
Chromium	ug/L	-/-	1.9	--	ND < 2.2	UJ (B)
Chromium VI	ug/L	-/-	ND < 1.0	UJ (B)	ND < 0.041	U
Cobalt	ug/L	-/-	0.34	J (DNQ)	0.38	J (*3,DNQ)
Copper	ug/L	-/-	4.4	--	7.2	--
Iron	mg/L	-/-	0.81	--	1.0	--
Lead	ug/L	-/-	0.82	J (DNQ)	0.90	J (*3,DNQ)
Manganese	ug/L	-/-	14	--	15	--
Mercury	ug/L	-/-	0.17	J (DNQ)	0.16	J (DNQ)
Nickel	ug/L	-/-	2.1	--	2.4	--
Selenium	ug/L	-/-	ND < 2.0	UJ (B)	ND < 0.36	U
Silver	ug/L	-/-	ND < 1.0	UJ (B)	ND < 0.089	U
Thallium	ug/L	-/-	ND < 0.075	U	ND < 1.0	UJ (B)
Vanadium	ug/L	-/-	1.1	--	2.7	--
Zinc	ug/L	-/-	15	J (DNQ)	21	--
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	UJ (C)
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	UJ (C)	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*10)	ND < 2.5	NJ (*10)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	U	ND < 2.7	UJ (C)
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	UJ (C)
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
2-Methylnaphthalene	ug/L	-/-	ND < 0.13	U	9.5	--

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.011	U	ND < 0.011	U
4,4'-DDE	ug/L	-/-	ND < 0.017	U	ND < 0.017	U
4,4'-DDT	ug/L	-/-	ND < 0.015	UJ (C)	ND < 0.015	U
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	11	--
Acenaphthylene	ug/L	-/-	ND < 0.10	U	0.12	J (DNQ)
Acrolein	ug/L	-/-	ND < 4.6	U	ND < 4.6	U
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.029	U	ND < 0.029	U
alpha-BHC	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.083	U	0.14	J (DNQ)
Aroclor-1016	ug/L	-/-	ND < 0.067	U	ND < 0.067	U
Aroclor-1221	ug/L	-/-	ND < 0.057	U	ND < 0.057	U
Aroclor-1232	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Aroclor-1242	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Aroclor-1248	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
Aroclor-1254	ug/L	-/-	ND < 0.16	U	ND < 0.16	U
Aroclor-1260	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Benzidine	ug/L	-/-	ND < 2.4	R (L)	ND < 2.4	U
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	U	ND < 3.7	U
Benzyl alcohol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.011	U	ND < 0.011	UJ (C)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	1.2	J (DNQ)	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	UJ (C)
Bromomethane	ug/L	-/-	ND < 0.34	UJ (C)	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.34	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	UJ (C)	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	UJ (C)	ND < 0.30	UJ (C)
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*10)	ND < 2.5	NJ (*10)
delta-BHC	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.010	U	ND < 0.010	U
Diethylphthalate	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endosulfan II	ug/L	-/-	ND < 0.037	U	ND < 0.037	U
Endosulfan sulfate	ug/L	-/-	ND < 0.013	U	ND < 0.013	U
Endrin	ug/L	-/-	ND < 0.0082	U	ND < 0.0082	U
Endrin aldehyde	ug/L	-/-	ND < 0.045	U	ND < 0.045	U
Endrin ketone	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	4.7	--
Heptachlor	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
Heptachlor epoxide	ug/L	-/-	ND < 0.012	U	ND < 0.012	U
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	U	ND < 1.8	U
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	UJ (*5)
Hydrazine	ug/L	-/-	ND < 1.0	U	ND < 1.0	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	0.098	J (DNQ)	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.0097	U	ND < 0.0097	U
Methoxychlor	ug/L	-/-	ND < 0.034	UJ (C)	ND < 0.034	U
Methylene Chloride	ug/L	-/-	ND < 0.48	U	0.97	J (DNQ)
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 5.0	U	ND < 5.0	U
Naphthalene	ug/L	-/-	ND < 0.13	U	8.3	--
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		1/11/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	0.98	--
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	U	ND < 0.49	U
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 0.77	U	ND < 0.77	U
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 5.0	U	ND < 5.0	U



**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	0.56	--	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	3.3	--	0.76	J (DNQ)
Chloride	mg/L	-/-	5.1	--	5.1	--
Specific Conductivity (Lab)	umhos/cm	-/-	130	--	150	--
Surfactants (MBAS)	mg/L	-/-	ND < 0.088	U	0.051	J (DNQ)
Fluoride	mg/L	-/-	0.29	J (DNQ)	0.15	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	0.62	--	0.38	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	6.8	*	7.0	*
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	13	--	11	--
Temperature	deg. F	86/-	58.3	*	55.4	*
Total Cyanide	ug/L	-/-	ND < 2.2	U	ND < 2.2	U
Total Dissolved Solids	mg/L	-/-	98	--	110	--
Total Organic Carbon	mg/L	-/-	11	--	9.0	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	46	--	ND < 10	U
Turbidity	NTU	-/-	53	--	8.0	--
Volume Discharged	MGD	-/-	1.3116	*	0.9834	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,\$,*3)	ND < 2.0	UJ (B,\$)
Arsenic	ug/L	-/-	1.1	--	2.1	J (*3)
Barium	mg/L	-/-	0.024	--	0.020	--
Beryllium	ug/L	-/-	0.10	J (DNQ)	ND < 0.037	U
Boron	mg/L	-/-	ND < 0.050	UJ (B)	ND < 0.065	UJ (B)
Cadmium	ug/L	-/-	0.13	J (DNQ)	0.091	J (DNQ)
Chromium	ug/L	-/-	3.9	--	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ND < 0.045	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.84	J (DNQ)	0.19	J (DNQ)
Copper	ug/L	-/-	4.4	--	3.3	--
Iron	mg/L	-/-	2.2	--	0.46	--
Lead	ug/L	-/-	1.6	--	0.30	J (B,DNQ)
Manganese	ug/L	-/-	43	J (*3)	12	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	3.4	--	0.87	J (B,DNQ)
Selenium	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	UJ (*3)
Thallium	ug/L	-/-	ND < 0.075	UJ (*3)	ND < 0.075	U
Vanadium	ug/L	-/-	5.5	--	ND < 2.0	UJ (B)
Zinc	ug/L	-/-	17	J (DNQ)	13	J (*3,DNQ)
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

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**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	*	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	*
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.087	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.21	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.31	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 2.7	UJ (C)	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.38	UJ (C)	ND < 0.38	U
2-Methylnaphthalene	ug/L	-/-	ND < 1.0	U (B)	ND < 0.13	U

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**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.23	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 0.93	U	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
4,4'-DDE	ug/L	-/-	ND < 0.020	U	ND < 0.025	U
4,4'-DDT	ug/L	-/-	ND < 0.030	UJ (C)	ND < 0.10	UJ (B, *5)
4-Bromophenylphenylether	ug/L	-/-	ND < 0.12	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.056	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 0.73	UJ (C)	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	U
Acrylonitrile	ug/L	-/-	ND < 5.1	UJ (C)	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	U	ND < 0.030	U
alpha-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Aniline	ug/L	-/-	ND < 2.9	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Aroclor-1221	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Aroclor-1232	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1242	ug/L	-/-	ND < 0.15	U	ND < 0.15	U
Aroclor-1248	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (C)
Aroclor-1254	ug/L	-/-	ND < 0.25	U	ND < 0.25	UJ (C)
Aroclor-1260	ug/L	-/-	ND < 0.40	U	ND < 0.40	UJ (C)
Benzidine	ug/L	-/-	ND < 2.4	UJ (*5)	ND < 3.2	UJ (*5)
Benzo(a)anthracene	ug/L	-/-	ND < 0.038	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.050	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.053	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 3.7	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	0.27	J (DNQ)	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.084	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 1.1	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.11	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 0.34	U	ND < 5.0	U (B)

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OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.072	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.083	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Diethylphthalate	ug/L	-/-	ND < 0.12	U	ND < 1.0	UJ (B)
Dimethylphthalate	ug/L	-/-	ND < 0.081	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.17	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endosulfan II	ug/L	-/-	ND < 0.040	U	ND < 0.040	U
Endosulfan sulfate	ug/L	-/-	ND < 0.015	U	ND < 0.015	U
Endrin	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
Endrin aldehyde	ug/L	-/-	ND < 0.045	UJ (C)	ND < 0.045	U
Endrin ketone	ug/L	-/-	ND < 0.020	UJ (C)	ND < 0.020	U
Fluoranthene	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	UJ (C)	ND < 0.030	U
Heptachlor epoxide	ug/L	-/-	ND < 0.020	U	ND < 0.020	U
Hexachlorobenzene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.38	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 1.8	U	ND < 1.8	U
Hexachloroethane	ug/L	-/-	ND < 0.51	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	UJ (H)
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.19	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.015	U	ND < 0.020	U
Methoxychlor	ug/L	-/-	ND < 0.035	UJ (C)	ND < 0.035	U
Methylene Chloride	ug/L	-/-	ND < 0.48	U	1.1	J (DNQ)
m-Nitroaniline	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	UJ (H)
Naphthalene	ug/L	-/-	ND < 0.13	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.22	UJ (*5,C)	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.077	U	ND < 0.077	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
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OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		2/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.18	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.20	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 0.78	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.071	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.14	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.49	UJ (C)	ND < 0.49	UJ (C)
Pyrene	ug/L	-/-	ND < 0.059	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	U	ND < 1.5	U
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	UJ (H)

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OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Ammonia as Nitrogen (N)	mg/L	-/-	0.56	--	ND < 0.30	U
Biochemical Oxygen Demand (BOD 5 day)	mg/L	-/-	3.8	--	1.1	J (DNQ)
Chloride	mg/L	-/-	15	--	9.2	--
Specific Conductivity (Lab)	umhos/cm	-/-	350	--	220	--
Surfactants (MBAS)	mg/L	-/-	0.064	--	ND < 0.044	U
Fluoride	mg/L	-/-	ND < 0.50	UJ (B)	0.25	J (DNQ)
Nitrate + Nitrite as Nitrogen (N)	mg/L	-/-	ND < 0.072	U	0.15	--
Oil & Grease	mg/L	-/-	ND < 0.94	U	ND < 0.94	U
Perchlorate	ug/L	-/-	ND < 0.80	U	ND < 0.80	U
pH (Field)	pH units	6.5-8.5/-	ANR	ANR	ANR	ANR
Total Settleable Solids	ml/L	-/-	ND < 0.10	U	ND < 0.10	U
Sulfate	mg/L	-/-	41	--	22	--
Temperature	deg. F	86/-	ANR	ANR	59.7	6.7
Total Cyanide	ug/L	-/-	ND < 6.2	UJ (B,C,\$)	ND < 5.6	UJ (B,\$)
Total Dissolved Solids	mg/L	-/-	230	--	140	--
Total Organic Carbon	mg/L	-/-	13	--	10	--
Total Residual Chlorine	mg/L	-/-	ND < 0.10	U	ND < 0.10	U
Total Suspended Solids	mg/L	-/-	ND < 10	U	ND < 10	U
Turbidity	NTU	-/-	2.4	--	4.2	--
Volume Discharged	MGD	-/-	0.1688	*	0.3166	*
<b>METALS</b>						
Antimony	ug/L	-/-	ND < 2.0	UJ (B,*3,\$)	ND < 2.0	UJ (*3,B)
Arsenic	ug/L	-/-	2.1	--	2.6	J (I)
Barium	mg/L	-/-	0.036	--	0.024	--
Beryllium	ug/L	-/-	ND < 0.037	U	ND < 0.037	U
Boron	mg/L	-/-	0.090	--	ND < 0.095	UJ (B)
Cadmium	ug/L	-/-	0.079	J (DNQ)	0.20	J (DNQ)
Chromium	ug/L	-/-	0.93	J (B,DNQ)	ND < 2.0	UJ (B)
Chromium VI	ug/L	-/-	ND < 0.10	U	ND < 0.10	U
Cobalt	ug/L	-/-	0.33	J (DNQ)	0.29	J (DNQ)
Copper	ug/L	-/-	3.0	--	3.7	--
Iron	mg/L	-/-	0.27	--	0.43	--
Lead	ug/L	-/-	0.39	J (DNQ)	0.43	J (DNQ)
Manganese	ug/L	-/-	56	--	41	--
Mercury	ug/L	-/-	ND < 0.063	U	ND < 0.063	U
Nickel	ug/L	-/-	ND < 2.0	UJ (B)	3.5	--
Selenium	ug/L	-/-	0.43	J (DNQ)	ND < 0.36	U
Silver	ug/L	-/-	ND < 0.089	U	ND < 0.089	U
Thallium	ug/L	-/-	ND < 0.075	U	ND < 0.075	U
Vanadium	ug/L	-/-	1.3	J (DNQ)	1.2	J (DNQ)
Zinc	ug/L	-/-	9.8	J (DNQ)	13	J (DNQ)
<b>ORGANICS</b>						
Benzene	ug/L	-/-	ND < 0.28	U	ND < 0.28	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Carbon Tetrachloride	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Chloroform	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
1,1-Dichloroethane	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
1,2-Dichloroethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
1,1-Dichloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,4-Dioxane	ug/L	-/-	ND < 0.49	U	ND < 0.49	*
Ethylbenzene	ug/L	-/-	ND < 0.25	U	ND < 0.25	U
Tetrachloroethene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Toluene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Xylenes (Total)	ug/L	-/-	ND < 0.52	U	ND < 0.52	U
1,1,1-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
1,1,2-Trichloroethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Trichloroethene	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
Trichlorofluoromethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Trichlorotrifluoroethane (Freon 113)	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Vinyl Chloride	ug/L	-/-	ND < 0.26	U	ND < 0.26	U
<b>TPH</b>						
EFH (C13 - C22)	mg/L	-/-	ND < 0.082	U	ND < 0.082	U
GRO (C4 - C12)	mg/L	-/-	ND < 0.050	U	ND < 0.050	U
TRPH	mg/L	-/-	ND < 0.31	U	ND < 0.31	U
<b>ADDITIONAL ANALYTES</b>						
1,2-Dichloro-1,1,2-trifluoroethane	ug/L	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
2,4,5-Trichlorophenol	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
1,1,2,2-Tetrachloroethane	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
1,2,4-Trichlorobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.22	U	ND < 0.11	U
1,2-Dichlorobenzene	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
1,2-Dichloropropane	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,2-Diphenylhydrazine/Azobenzene	ug/L	-/-	ND < 0.17	U	ND < 0.087	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.35	U	ND < 0.35	U
1,3-Dichlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.37	U	ND < 0.37	U
1,4-Dichlorobenzene	ug/L	-/-	ND < 0.10	U	ND < 0.050	U
2,4,6-Trichlorophenol	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
2,4-Dichlorophenol	ug/L	-/-	ND < 0.42	U	ND < 0.21	U
2,4-Dimethylphenol	ug/L	-/-	ND < 0.62	U	ND < 0.31	U
2,4-Dinitrophenol	ug/L	-/-	ND < 5.4	U	ND < 2.7	U
2,4-Dinitrotoluene	ug/L	-/-	ND < 0.46	U	ND < 0.23	U
2,6-Dinitrotoluene	ug/L	-/-	ND < 0.48	U	ND < 0.24	U
2-Chloroethylvinylether	ug/L	-/-	ND < 1.3	U	ND < 1.3	U
2-Chloronaphthalene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
2-Chlorophenol	ug/L	-/-	ND < 0.24	U	ND < 0.12	U
2-Methyl-4,6-dinitrophenol	ug/L	-/-	ND < 0.76	UJ (C)	ND < 0.38	UJ (C)
2-Methylnaphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
2-Methylphenol	ug/L	-/-	ND < 0.56	U	ND < 0.28	U
2-Nitrophenol	ug/L	-/-	ND < 0.46	U	ND < 0.23	U
3,3'-Dichlorobenzidine	ug/L	-/-	ND < 1.9	UJ (C)	ND < 0.93	U
4,4'-DDD	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
4,4'-DDE	ug/L	-/-	ND < 0.025	UJ (S)	ND < 0.025	UJ (S)
4,4'-DDT	ug/L	-/-	0.11	J (S)	ND < 0.030	UJ (S)
4-Bromophenylphenylether	ug/L	-/-	ND < 0.24	U	ND < 0.12	U
4-Chloro-3-methylphenol	ug/L	-/-	ND < 0.68	U	ND < 0.34	U
4-Chloroaniline	ug/L	-/-	ND < 0.40	U	ND < 0.20	U
4-Chlorophenylphenylether	ug/L	-/-	ND < 0.11	U	ND < 0.056	U
4-Nitrophenol	ug/L	-/-	ND < 1.5	U	ND < 0.73	U
Acenaphthene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
Acenaphthylene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
Acrolein	ug/L	-/-	ND < 4.6	R (R)	ND < 4.6	R (R)
Acrylonitrile	ug/L	-/-	ND < 5.1	U	ND < 5.1	U
Acute Toxicity	% SURVIVAL	70-100/-	100	*	100	*
Aldrin	ug/L	-/-	ND < 0.030	UJ (S)	ND < 0.030	UJ (S)
alpha-BHC	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Aniline	ug/L	-/-	ND < 5.8	U	ND < 2.9	U
Anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.083	U
Aroclor-1016	ug/L	-/-	ND < 0.20	UJ (S)	ND < 0.20	UJ (S)
Aroclor-1221	ug/L	-/-	ND < 0.10	UJ (S)	ND < 0.10	UJ (S)
Aroclor-1232	ug/L	-/-	ND < 0.15	UJ (S)	ND < 0.15	UJ (S)
Aroclor-1242	ug/L	-/-	ND < 0.15	UJ (S)	ND < 0.15	UJ (S)
Aroclor-1248	ug/L	-/-	ND < 0.25	UJ (S)	ND < 0.25	UJ (S)
Aroclor-1254	ug/L	-/-	ND < 0.25	UJ (S)	ND < 0.25	UJ (S)
Aroclor-1260	ug/L	-/-	ND < 0.40	UJ (S)	ND < 0.40	UJ (S)
Benzidine	ug/L	-/-	ND < 4.8	R (L)	ND < 2.4	R (L)
Benzo(a)anthracene	ug/L	-/-	ND < 0.076	U	ND < 0.038	U
Benzo(a)pyrene	ug/L	-/-	ND < 0.28	U	ND < 0.14	U
Benzo(b)fluoranthene	ug/L	-/-	ND < 0.10	U	ND < 0.050	U
Benzo(g,h,i)perylene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Benzo(k)fluoranthene	ug/L	-/-	ND < 0.11	U	ND < 0.053	U
Benzoic acid	ug/L	-/-	ND < 7.4	UJ (C)	ND < 3.7	UJ (C)
Benzyl alcohol	ug/L	-/-	ND < 0.42	U	ND < 0.21	U
beta-BHC	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
bis (2-Chloroethyl) ether	ug/L	-/-	ND < 0.17	U	ND < 0.084	U
bis (2-ethylhexyl) Phthalate	ug/L	-/-	ND < 2.2	U	ND < 1.1	U
bis(2-Chloroethoxy) methane	ug/L	-/-	ND < 0.14	U	ND < 0.072	U
bis(2-Chloroisopropyl) ether	ug/L	-/-	ND < 0.22	U	ND < 0.11	U
Bromodichloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Bromoform	ug/L	-/-	ND < 0.32	U	ND < 0.32	U
Bromomethane	ug/L	-/-	ND < 0.34	U	ND < 0.34	U
Butylbenzylphthalate	ug/L	-/-	ND < 10	U (B)	ND < 5.0	U (B)

See attached notes for abbreviations, definitions and other explanations for the data presented.



**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
Chlordane	ug/L	-/-	ND < 0.20	UJ (S)	ND < 0.20	UJ (S)
Chlorobenzene	ug/L	-/-	ND < 0.36	U	ND < 0.36	U
Chloroethane	ug/L	-/-	ND < 0.33	U	ND < 0.33	U
Chloromethane	ug/L	-/-	ND < 0.30	U	ND < 0.30	U
Chronic Toxicity	TUC	1.0/-	1.0	*	1.0	*
Chrysene	ug/L	-/-	ND < 0.14	U	ND < 0.072	U
cis-1,3-Dichloropropene	ug/L	-/-	ND < 0.22	U	ND < 0.22	U
Cyclohexane	ug/l	-/-	ND < 2.5	UJ (*11)	ND < 2.5	UJ (*11)
delta-BHC	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Dibenzo(a,h)anthracene	ug/L	-/-	ND < 0.17	U	ND < 0.083	U
Dibenzofuran	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
Dibromochloromethane	ug/L	-/-	ND < 0.28	U	ND < 0.28	U
Dieldrin	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Diethylphthalate	ug/L	-/-	ND < 2.0	U (B)	ND < 1.0	U (B)
Dimethylphthalate	ug/L	-/-	ND < 0.16	U	ND < 0.081	U
Di-n-butylphthalate	ug/L	-/-	ND < 0.52	U	ND < 0.26	U
Di-n-octylphthalate	ug/L	-/-	ND < 0.34	U	ND < 0.17	U
Endosulfan I	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Endosulfan II	ug/L	-/-	ND < 0.040	UJ (S)	ND < 0.040	UJ (S)
Endosulfan sulfate	ug/L	-/-	ND < 0.015	UJ (S)	ND < 0.015	UJ (S)
Endrin	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Endrin aldehyde	ug/L	-/-	ND < 0.045	UJ (S)	ND < 0.045	UJ (S)
Endrin ketone	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Fluoranthene	ug/L	-/-	ND < 0.18	U	ND < 0.089	U
Fluorene	ug/L	-/-	ND < 0.15	U	ND < 0.075	U
Heptachlor	ug/L	-/-	ND < 0.030	UJ (S)	ND < 0.030	UJ (S)
Heptachlor epoxide	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Hexachlorobenzene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
Hexachlorobutadiene	ug/L	-/-	ND < 0.76	U	ND < 0.38	U
Hexachlorocyclopentadiene	ug/L	-/-	ND < 3.6	U	ND < 1.8	UJ (C)
Hexachloroethane	ug/L	-/-	ND < 1.0	U	ND < 0.51	U
Hydrazine	ug/L	-/-	ND < 0.39	U	ND < 0.39	U
Indeno(1,2,3-cd)pyrene	ug/L	-/-	ND < 0.38	U	ND < 0.19	U
Isophorone	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Lindane (gamma-BHC)	ug/L	-/-	ND < 0.020	UJ (S)	ND < 0.020	UJ (S)
Methoxychlor	ug/L	-/-	ND < 0.035	UJ (S)	ND < 0.035	UJ (S)
Methylene Chloride	ug/L	-/-	ND < 0.48	U	ND < 0.48	U
m-Nitroaniline	ug/L	-/-	ND < 0.70	U	ND < 0.35	U
Monomethyl Hydrazine	ug/L	-/-	ND < 1.2	U	ND < 1.2	U
Naphthalene	ug/L	-/-	ND < 0.26	U	ND < 0.13	U
Nitrobenzene	ug/L	-/-	ND < 0.20	U	ND < 0.10	U
n-Nitrosodimethylamine	ug/L	-/-	ND < 0.44	U	ND < 0.22	U
n-Nitroso-di-n-propylamine	ug/L	-/-	ND < 0.36	U	ND < 0.18	U
n-Nitrosodiphenylamine	ug/L	-/-	ND < 0.15	U	ND < 0.077	U

See attached notes for abbreviations, definitions and other explanations for the data presented.

**Analytical Summary Table of Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/18/2005		3/25/2005	
			RESULT	VALIDATION QUALIFIER	RESULT	VALIDATION QUALIFIER
o-Nitroaniline	ug/L	-/-	ND < 0.36	U	ND < 0.18	U
p-Cresol	ug/L	-/-	ND < 0.40	U	ND < 0.20	U
Pentachlorophenol	ug/L	-/-	ND < 1.6	U	ND < 0.78	U
Phenanthrene	ug/L	-/-	ND < 0.14	U	ND < 0.071	U
Phenol	ug/L	-/-	ND < 0.28	U	ND < 0.14	U
p-Nitroaniline	ug/L	-/-	ND < 0.98	U	ND < 0.49	U
Pyrene	ug/L	-/-	ND < 0.12	U	ND < 0.059	U
Toxaphene	ug/L	-/-	ND < 1.5	UJ (S)	ND < 1.5	UJ (S)
trans-1,2-Dichloroethene	ug/L	-/-	ND < 0.27	U	ND < 0.27	U
trans-1,3-Dichloropropene	ug/L	-/-	ND < 0.24	U	ND < 0.24	U
Unsymmetrical Dimethyl Hydrazine	ug/L	-/-	ND < 0.27	U	ND < 0.27	U

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 1/4/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

<b>ANALYTE</b>	<b>LAB LOD (ug/L)</b>	<b>LAB RL (ug/L)</b>	<b>LAB RESULT (ug/L)</b>	<b>VALIDATION QUALIFIER</b>	<b>WHO TEF</b>	<b>TCDD Equivalent (w/DNQ Values) (ug/L)</b>	<b>TCDD Equivalent (w/out DNQ Values) (ug/L)</b>
1,2,3,4,6,7,8-HpCDD	1.10E-06	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	2.00E-06	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	1.60E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	6.30E-07	5.00E-05	1.20E-06	J (DNQ)	0.1	1.20E-07	ND
1,2,3,6,7,8-HxCDD	1.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	8.50E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	9.60E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	9.00E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.20E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.00E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	8.30E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	8.20E-07	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	1.80E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	2.00E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	2.10E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND
OCDF	1.90E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>1.20E-07</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 1/4/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	2.20E-06	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	1.90E-06	5.00E-05	2.10E-06	J (DNQ)	0.01	2.10E-08	ND
1,2,3,4,7,8,9-HpCDF	2.90E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.30E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.70E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.50E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.50E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	2.60E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	8.70E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.20E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	3.10E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	2.30E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	2.70E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND
OCDF	2.10E-06	6.30E-06	ND	UJ (*10)	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>2.10E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

**Dioxin TCDD TEQ compliance limit established for this outfall? No TCDD TEQ PERMIT LIMIT = NA**

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 1/11/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	9.70E-07	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	7.70E-07	5.00E-05	2.40E-06	J (DNQ)	0.01	2.40E-08	ND
1,2,3,4,7,8,9-HpCDF	1.10E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	5.10E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	4.40E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	5.00E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	4.60E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	7.50E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	6.60E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	7.20E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	8.00E-07	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	5.50E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	5.30E-07	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	7.00E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	7.90E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	1.70E-06	1.00E-04	8.10E-05	J (DNQ)	0.0001	8.10E-09	ND
OCDF	1.30E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>3.21E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 1/11/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	1.40E-06	5.00E-05	ND	UJ (B)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	1.10E-06	5.00E-05	2.20E-06	J (DNQ)	0.01	2.20E-08	ND
1,2,3,4,7,8,9-HpCDF	2.10E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.20E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	9.70E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	9.70E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	9.30E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	9.30E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.10E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.10E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.40E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	7.70E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.20E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	1.20E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	8.30E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	2.30E-06	1.00E-04	6.60E-05	J (DNQ)	0.0001	6.60E-09	ND
OCDF	2.10E-06	1.00E-04	ND	UJ (B)	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>2.86E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 2/11/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

<b>ANALYTE</b>	<b>LAB LOD (ug/L)</b>	<b>LAB RL (ug/L)</b>	<b>LAB RESULT (ug/L)</b>	<b>VALIDATION QUALIFIER</b>	<b>WHO TEF</b>	<b>TCDD Equivalent (w/DNQ Values) (ug/L)</b>	<b>TCDD Equivalent (w/out DNQ Values) (ug/L)</b>
1,2,3,4,6,7,8-HpCDD	1.01E-05	5.00E-05	1.22E-05	J (DNQ)	0.01	1.22E-07	ND
1,2,3,4,6,7,8-HpCDF	2.41E-06	5.00E-05	4.04E-06	J (DNQ)	0.01	4.04E-08	ND
1,2,3,4,7,8,9-HpCDF	1.47E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.89E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.89E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.80E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.36E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	4.66E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.65E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.73E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	2.08E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	1.31E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.84E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	1.71E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	3.49E-04	1.00E-05	ND	U	0.1	ND	ND
OCDD	9.39E-06	1.00E-04	1.57E-04	--	0.0001	1.57E-08	1.57E-08
OCDF	2.53E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>1.78E-07</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>1.57E-08</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 2/11/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	9.88E-06	5.00E-05	2.08E-05	J (DNQ)	0.01	2.08E-07	ND
1,2,3,4,6,7,8-HpCDF	1.24E-05	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	3.42E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.22E-05	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.53E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.20E-05	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	6.66E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.38E-05	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	8.23E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	2.92E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	2.71E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.24E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	2.52E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	1.79E-06	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.35E-03	1.00E-05	ND	U	0.1	ND	ND
OCDD	3.13E-05	1.00E-04	2.13E-04	--	0.0001	2.13E-08	2.13E-08
OCDF	5.49E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>2.29E-07</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>2.13E-08</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.



**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 2/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	9.15E-06	J (DNQ)	0.01	9.15E-08	ND
1,2,3,4,6,7,8-HpCDF	2.06E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	2.09E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	2.84E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	1.18E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	2.65E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	1.11E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	2.73E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.81E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.26E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.91E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	1.27E-06	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.74E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	9.21E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.46E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	8.12E-05	J (DNQ)	0.0001	8.12E-09	ND
OCDF	0.00E+00	1.00E-04	3.94E-06	J (DNQ)	0.0001	3.94E-10	ND
<b>TCDD TEQ w/ DNQ Values</b>						<b>1.00E-07</b>	
<b>TCDD TEQ w/out DNQ Values</b>							<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 2/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	6.35E-06	J (DNQ)	0.01	6.35E-08	ND
1,2,3,4,6,7,8-HpCDF	2.11E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	2.23E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	3.06E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	8.22E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	3.12E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	7.51E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	3.08E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.25E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	1.11E-06	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.88E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	9.05E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.79E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	9.58E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.25E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	6.21E-05	J (DNQ)	0.0001	6.21E-09	ND
OCDF	4.47E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>6.97E-06</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 3/18/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	2.62E-06	J (DNQ)	0.01	2.62E-08	ND
1,2,3,4,6,7,8-HpCDF	9.32E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	1.07E-06	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.40E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	5.75E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.38E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	5.35E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.39E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	9.76E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	8.11E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.67E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.10E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.48E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	7.23E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	1.14E-06	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	2.23E-05	J (DNQ)	0.0001	2.23E-09	ND
OCDF	3.17E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>2.84E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 3/18/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	1.56E-06	ND	UJ (*10)	0.01	ND	ND
1,2,3,4,6,7,8-HpCDF	7.63E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	9.23E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	1.61E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	6.46E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	1.53E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	6.12E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	1.56E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	1.12E-06	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	6.58E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	1.91E-06	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	6.97E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	1.78E-06	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	6.91E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	9.79E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	1.81E-05	J (DNQ)	0.0001	1.81E-09	ND
OCDF	3.25E-06	1.00E-04	ND	U	0.0001	ND	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>1.81E-09</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-GRAB  
Sample Date 3/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

<b>ANALYTE</b>	<b>LAB LOD (ug/L)</b>	<b>LAB RL (ug/L)</b>	<b>LAB RESULT (ug/L)</b>	<b>VALIDATION QUALIFIER</b>	<b>WHO TEF</b>	<b>TCDD Equivalent (w/DNQ Values) (ug/L)</b>	<b>TCDD Equivalent (w/out DNQ Values) (ug/L)</b>
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	6.55E-06	J (DNQ)	0.01	<b>6.55E-08</b>	<b>ND</b>
1,2,3,4,6,7,8-HpCDF	0.00E+00	5.00E-05	1.85E-06	J (DNQ)	0.01	<b>1.85E-08</b>	<b>ND</b>
1,2,3,4,7,8,9-HpCDF	6.06E-07	5.00E-05	ND	U	0.01	<b>ND</b>	<b>ND</b>
1,2,3,4,7,8-HxCDD	6.22E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,4,7,8-HxCDF	2.99E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,6,7,8-HxCDD	6.21E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,6,7,8-HxCDF	2.99E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,7,8,9-HxCDD	6.15E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,7,8,9-HxCDF	5.43E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
1,2,3,7,8-PeCDD	4.55E-07	5.00E-05	ND	U	1	<b>ND</b>	<b>ND</b>
1,2,3,7,8-PeCDF	6.32E-07	5.00E-05	ND	U	0.05	<b>ND</b>	<b>ND</b>
2,3,4,6,7,8-HxCDF	3.61E-07	5.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
2,3,4,7,8-PeCDF	5.34E-07	5.00E-05	ND	U	0.5	<b>ND</b>	<b>ND</b>
2,3,7,8-TCDD	4.60E-07	1.00E-05	ND	U	1	<b>ND</b>	<b>ND</b>
2,3,7,8-TCDF	5.65E-07	1.00E-05	ND	U	0.1	<b>ND</b>	<b>ND</b>
OCDD	0.00E+00	1.00E-04	5.99E-05	J (DNQ)	0.0001	<b>5.99E-09</b>	<b>ND</b>
OCDF	0.00E+00	1.00E-04	2.90E-06	J (DNQ)	0.0001	<b>2.90E-10</b>	<b>ND</b>
<b>TCDD TEQ w/ DNQ Values</b>						<b>9.03E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>							<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011-Composite  
Sample Date 3/25/2005**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
PERMIT CA0001309**

ANALYTE	LAB LOD (ug/L)	LAB RL (ug/L)	LAB RESULT (ug/L)	VALIDATION QUALIFIER	WHO TEF	TCDD Equivalent (w/DNQ Values) (ug/L)	TCDD Equivalent (w/out DNQ Values) (ug/L)
1,2,3,4,6,7,8-HpCDD	0.00E+00	5.00E-05	7.34E-06	J (DNQ)	0.01	7.34E-08	ND
1,2,3,4,6,7,8-HpCDF	0.00E+00	9.89E-07	ND	UJ (*10)	0.01	ND	ND
1,2,3,4,7,8,9-HpCDF	5.31E-07	5.00E-05	ND	U	0.01	ND	ND
1,2,3,4,7,8-HxCDD	7.40E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,4,7,8-HxCDF	2.47E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDD	7.54E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,6,7,8-HxCDF	2.38E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDD	7.40E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8,9-HxCDF	3.91E-07	5.00E-05	ND	U	0.1	ND	ND
1,2,3,7,8-PeCDD	4.49E-07	5.00E-05	ND	U	1	ND	ND
1,2,3,7,8-PeCDF	8.50E-07	5.00E-05	ND	U	0.05	ND	ND
2,3,4,6,7,8-HxCDF	2.55E-07	5.00E-05	ND	U	0.1	ND	ND
2,3,4,7,8-PeCDF	7.79E-07	5.00E-05	ND	U	0.5	ND	ND
2,3,7,8-TCDD	5.45E-07	1.00E-05	ND	U	1	ND	ND
2,3,7,8-TCDF	4.47E-07	1.00E-05	ND	U	0.1	ND	ND
OCDD	0.00E+00	1.00E-04	6.92E-05	J (DNQ)	0.0001	6.92E-09	ND
OCDF	0.00E+00	1.00E-04	2.73E-06	J (DNQ)	0.0001	2.73E-10	ND

<b>TCDD TEQ w/ DNQ Values</b>	<b>8.06E-08</b>	
<b>TCDD TEQ w/out DNQ Values</b>		<b>ND</b>

Dioxin TCDD TEQ compliance limit established for this outfall?

No

TCDD TEQ PERMIT LIMIT = NA

See attached notes for abbreviations, definitions, and other explanations for the data presented in this table.

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	1.64 ±0.96	0.839	J (H,*2)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.65 ±1.2	1.74	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	0.188 ±0.25	0.456	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-93.0 ±170	303	UJ (*1)
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

		Comp		
		1/4/2005		
ANALYTE	UNITS	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	-0.671 ±1.0	1.99	UJ (H,*2)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.37 ±1.2	1.80	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	0.002 ±0.22	0.446	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-125 ±170	300	UJ (*1)
Cesium 137	pCi/g	ANR	ANR	ANR



**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.850 ±0.70	0.930	UJ (H,R)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.40 ±1.2	1.86	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.173 ±0.29	0.607	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	17.8 ±150	249	UJ (*1)
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Comp		
		1/11/2005		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.294 ±1.0	1.75	UJ (H,R)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.50 ±1.2	1.78	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.023 ±0.24	0.431	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-71.9 ±140	252	UJ (*1)
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		2/11/2005		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	0.681 ±0.61	0.811	UJ (H,R)
Gross Alpha (unfiltered)	pCi/L	0.895 ±0.76	1.05	UJ (R,Q,H)
Gross Beta (filtered)	pCi/L	1.33 ±1.1	1.76	UJ (H)
Gross Beta (unfiltered)	pCi/L	2.50 ±1.3	1.90	J (H)
Strontium-90 (filtered)	pCi/L	0.004 ±0.24	0.474	UJ (H)
Strontium-90 (unfiltered)	pCi/L	-0.216 ±0.23	0.519	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ND < 0.423 ± 0.358	0.423	UJ (H,Q)
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.034 ± 0.241	0.034	J (H)
Tritium (filtered)	pCi/L	-80.6 ±97	169	U
Tritium (unfiltered)	pCi/L	97.4 ±140	237	U
Cesium 137	pCi/g	ND < 29.3	29.3	U

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Comp		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	2.03 ±0.91	0.787	J (R,Q)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.30 ±1.2	1.78	--
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.060 ±0.23	0.470	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.030 ±0.31	0.027	--
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	21.1 ±140	240	U
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		2/25/2005		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	0.662 ±0.67	0.986	UJ (*1,R,H)
Gross Alpha (unfiltered)	pCi/L	1.50 ±0.89	1.05	J (R)
Gross Beta (filtered)	pCi/L	2.27 ±1.2	1.88	J (*1,H)
Gross Beta (unfiltered)	pCi/L	2.27 ±1.2	1.77	--
Strontium-90 (filtered)	pCi/L	-0.075 ±0.26	0.514	UJ (*1,H)
Strontium-90 (unfiltered)	pCi/L	0.206 ±0.25	0.451	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.930 ± 0.322	0.713	J (*1, H)
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.081 ± 0.231	0.026	--
Tritium (filtered)	pCi/L	-22.3 ±99	168	U
Tritium (unfiltered)	pCi/L	-45.7 ±150	259	U
Cesium 137	pCi/g	ND < 27.5	27.5	U

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Comp		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	1.29 ±0.80	0.947	J (R)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.12 ±1.2	1.89	--
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.059 ±0.24	0.459	U
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ND < 0.024 ±0.29	0.024	U
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-7.08 ±150	261	U
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		3/18/2005		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	0.626 ±0.83	1.28	UJ (R)
Gross Alpha (unfiltered)	pCi/L	0.067 ±0.71	1.39	UJ (R,H)
Gross Beta (filtered)	pCi/L	3.37 ±1.3	1.79	--
Gross Beta (unfiltered)	pCi/L	2.09 ±1.3	1.94	J (H)
Strontium-90 (filtered)	pCi/L	0.029 ±0.29	0.588	U
Strontium-90 (unfiltered)	pCi/L	-0.108 ±0.25	0.508	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ND < 0.450 ± 0.475	0.450	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.084 ± 0.251	0.023	J (H)
Tritium (filtered)	pCi/L	-63.2 ±96	166	U
Tritium (unfiltered)	pCi/L	-16.2 ±98	166	U
Cesium 137	pCi/g	ND < 23.0	23.0	U

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Comp		
		RESULT	MDA	VALIDATION QUALIFIER
<b>3/18/2005</b>				
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.305 ±0.81	1.20	UJ (R,H)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	1.96 ±1.1	1.80	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	0.032 ±0.22	0.442	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.063 ±0.23	0.024	J (H)
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	-31.0 ±98	166	U
Cesium 137	pCi/g	ANR	ANR	ANR



**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Grab		
		RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	-0.086 ±0.62	1.29	UJ (R)
Gross Alpha (unfiltered)	pCi/L	0.510 ±0.59	0.852	UJ (R,H)
Gross Beta (filtered)	pCi/L	-0.472 ±1.3	2.32	U
Gross Beta (unfiltered)	pCi/L	2.97 ±1.3	1.84	J (H)
Strontium-90 (filtered)	pCi/L	-0.105 ±0.26	0.535	U
Strontium-90 (unfiltered)	pCi/L	-0.052 ±0.37	0.658	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.407 ± 0.283	0.285	--
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ND < 0.396 ± 0.248	0.396	UJ (H)
Tritium (filtered)	pCi/L	129 ±170	278	U
Tritium (unfiltered)	pCi/L	-16.7 ±160	279	U
Cesium 137	pCi/g	ND < 19.4	19.4	U

**Analytical Summary Table of All Data from Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011 (Perimeter Pond Weir)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Comp		
		RESULT	MDA	VALIDATION QUALIFIER
<b>3/25/2005</b>				
<b>RADIOACTIVITY</b>				
Gross Alpha (filtered)	pCi/L	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	0.216 ±0.63	1.16	UJ (R,H)
Gross Beta (filtered)	pCi/L	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	2.35 ±1.2	1.82	J (H)
Strontium-90 (filtered)	pCi/L	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	-0.105 ±0.25	0.514	UJ (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ND < 0.477 ±0.38	0.477	UJ (H)
Tritium (filtered)	pCi/L	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	83.4 ±170	278	U
Cesium 137	pCi/g	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	0.179 ±0.6	1.15	UJ (H,*2)
Gross Alpha (unfiltered)	pCi/L	15/-	8.96 ±2.2	1.30	J (H,*2)
Gross Beta (filtered)	pCi/L	50/-	4.87 ±1.3	1.76	J (H)
Gross Beta (unfiltered)	pCi/L	50/-	10.7 ±1.6	1.78	J (H)
Strontium-90 (filtered)	pCi/L	8.0/-	0.822 ±0.33	0.420	J (*1)
Strontium-90 (unfiltered)	pCi/L	8.0/-	0.740 ±0.25	0.344	--
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	-12.7 ±180	302	UJ (*1)
Tritium (unfiltered)	pCi/L	20000/-	25.3 ±180	303	UJ (*1)
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/11/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	-0.288 ±0.45	0.969	UJ (R,Q)
Gross Alpha (unfiltered)	pCi/L	15/-	0.240 ±0.58	1.09	UJ (R,Q,H)
Gross Beta (filtered)	pCi/L	50/-	4.44 ±1.3	1.80	--
Gross Beta (unfiltered)	pCi/L	50/-	3.53 ±1.2	1.82	UJ (H)
Strontium-90 (filtered)	pCi/L	8.0/-	1.04 ±0.31	0.428	--
Strontium-90 (unfiltered)	pCi/L	8.0/-	1.10 ±0.34	0.462	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	1.426 ± 0.460	0.801	--
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.30 ± 0.370	0.756	J (H)
Tritium (filtered)	pCi/L	20000/-	138 ±150	242	U
Tritium (unfiltered)	pCi/L	20000/-	106 ±150	242	U
Cesium 137	pCi/g	-/-	ND <19.8	19.8	U

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/18/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	0.904 ±0.74	1.00	UJ (R)
Gross Alpha (unfiltered)	pCi/L	15/-	1.42 ±0.93	1.19	UJ (H,R)
Gross Beta (filtered)	pCi/L	50/-	3.32 ±1.2	1.79	--
Gross Beta (unfiltered)	pCi/L	50/-	3.75 ±1.2	1.78	J (H)
Strontium-90 (filtered)	pCi/L	8.0/-	0.901 ±0.24	0.280	--
Strontium-90 (unfiltered)	pCi/L	8.0/-	0.892 ±0.22	0.253	--
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ND < 0.039 ± 0.361	0.039	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.249 ± 0.361	0.768	J (H)
Tritium (filtered)	pCi/L	20000/-	-41.9 ±150	254	U
Tritium (unfiltered)	pCi/L	20000/-	-77.0 ±140	255	U
Cesium 137	pCi/g	-/-	ND <20.5	20.5	U

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/19/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	8.96 ±3.3	2.54	J (R)
Gross Alpha (unfiltered)	pCi/L	15/-	5.03 ±3.0	3.27	J (R,H)
Gross Beta (filtered)	pCi/L	50/-	18.0 ±3.1	3.73	--
Gross Beta (unfiltered)	pCi/L	50/-	19.0 ±3.7	4.56	J (H)
Strontium-90 (filtered)	pCi/L	8.0/-	5.49 ±0.58	0.445	--
Strontium-90 (unfiltered)	pCi/L	8.0/-	5.49 ±0.56	0.404	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	0.091 ± 0.531	0.034	--
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	0.145 ± 0.561	0.031	J (H)
Tritium (filtered)	pCi/L	20000/-	-43.7 ±96	164	U
Tritium (unfiltered)	pCi/L	20000/-	-34.3 ±99	168	U
Cesium 137	pCi/g	-/-	ND <10.9	10.9	U

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	4/28/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	2.79 ±3.7	4.35	UJ (R)
Gross Alpha (unfiltered)	pCi/L	15/-	8.85 ±5.0	5.79	J (R,H)
Gross Beta (filtered)	pCi/L	50/-	43.2 ±5.9	6.39	--
Gross Beta (unfiltered)	pCi/L	50/-	43.8 ±6.9	8.12	J (H)
Strontium-90 (filtered)	pCi/L	8.0/-	10.8 ±0.85	0.551	--
Strontium-90 (unfiltered)	pCi/L	8.0/-	11.4 ±0.82	0.457	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ND < 0.630 ± 0.895	0.630	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ND < 0.707 ± 0.723	0.707	UJ (H)
Tritium (filtered)	pCi/L	20000/-	56.8 ±110	185	U
Tritium (unfiltered)	pCi/L	20000/-	65.7 ±110	189	U
Cesium 137	pCi/g	-/-	ND <13.9	13.9	U

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	10/18/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	8.58 ±0.99	0.656	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR



**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	0.586 ±0.32	0.528	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/1/2006		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	0.659 ±0.36	0.604	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/19/2006		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	0.317 ±0.31	0.594	UJ (*1)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/1/2006		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	1.28 ±0.40	0.511	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003-Grab (RMHF)**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES PERMIT CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/11/2006		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Gross Alpha (filtered)	pCi/L	15/-	ANR	ANR	ANR
Gross Alpha (unfiltered)	pCi/L	15/-	ANR	ANR	ANR
Gross Beta (filtered)	pCi/L	50/-	ANR	ANR	ANR
Gross Beta (unfiltered)	pCi/L	50/-	ANR	ANR	ANR
Strontium-90 (filtered)	pCi/L	8.0/-	ANR	ANR	ANR
Strontium-90 (unfiltered)	pCi/L	8.0/-	1.64 ±0.47	0.580	J (H)
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR
Tritium (filtered)	pCi/L	20000/-	ANR	ANR	ANR
Tritium (unfiltered)	pCi/L	20000/-	ANR	ANR	ANR
Cesium 137	pCi/g	-/-	ANR	ANR	ANR

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	1/4/2005			2/11/2005		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>								
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR	1.426 ± 0.460	0.801	--
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR	1.318 ± 0.370	0.777	J (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/18/2005			3/19/2005		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>								
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	0.763 ± 0.361	0.815	U	0.539 ± 0.531	0.995	U
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.249 ± 0.361	0.768	J (H)	0.521 ± 0.561	0.928	UJ (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	4/28/2005			10/18/2005		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>								
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	1.530 ± 0.895	2.850	U	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	1.192 ± 0.723	2.437	UJ (H)	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$



**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	11/9/2005			1/1/2006		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>								
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	2/19/2006			3/1/2006		
			RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>								
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 003 (RMHF)**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
Permit CA0001309**

ANALYTE	UNITS	Permit Limit Daily Max/Monthly Avg	3/11/2006		
			RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>					
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	5.0/-	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	5.0/-	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		1/4/2005			1/4/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		1/11/2005			1/11/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	ANR	ANR	ANR	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	ANR	ANR	ANR	ANR	ANR	ANR

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		2/11/2005			2/11/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.235 ± 0.358	1.098	UJ (H,Q)	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.409 ± 0.241	0.646	UJ (H)	0.173 ± 0.31	0.814	U

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.930 ± 0.322	0.713	J (*1, H)	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.331 ± 0.231	0.621	U	0.504 ± 0.29	0.682	U

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		3/18/2005			3/18/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.732 ± 0.475	1.167	U	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.537 ± 0.251	0.634	UJ (H)	0.422 ± 0.23	0.600	UJ (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$



**Analytical Summary Table of All Data-Studies 1 and 2,  
Including Data That Did Not Satisfy 13267 Requirements  
OUTFALL 011**

**Total Combined Radium Addendum**

**THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY  
NPDES Permit CA0001309**

ANALYTE	UNITS	Grab			Comp		
		3/25/2005			3/25/2005		
		RESULT	MDA	VALIDATION QUALIFIER	RESULT	MDA	VALIDATION QUALIFIER
<b>RADIOACTIVITY</b>							
Total Combined Radium-226 & Radium 228 (filtered)	pCi/L	0.663 ± 0.283	0.786	U	ANR	ANR	ANR
Total Combined Radium-226 & Radium 228 (unfiltered)	pCi/L	0.099 ± 0.248	0.799	UJ (H)	0.585 ± 0.38	1.021	UJ (H)

Note:

Total Combined Radium values were calculated specifically for this report following the procedures outlined in the text and below. Any of these data used for NPDES permit compliance purposes may have appeared different in previously reported documents. Neither method of calculation results in potential permit limit exceedances.

Irrespective of whether or not one or more radium-226 or radium-228 measured values are non-detect, the following rules were followed in calculating total combined radium (TCR) data.

**Measure Value (MV)**

$$MV_{Ra-226+Ra-228} = MV_{Ra-226} + MV_{Ra-228}$$

**Minimum Detectable Activity (MDA)**

$$MDA_{Ra-226+Ra-228} = MDA_{Ra-226} + MDA_{Ra-228}$$

**2-Sigma Error (2σ)**

$$2\sigma_{Ra-226+Ra-228} = 2 * ( (2\sigma_{Ra-226}/2)^2 + (2\sigma_{Ra-228}/2)^2 )^{0.5}$$

# **APPENDIX A**

## **Section 1**

Outfall 003, January 4, 2005

Del Mar Analytical Laboratory Report



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

February 22, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, Ca.91101

Attention: Bronwyn Kelly  
Project: 13267 (Study 2)  
Sampled: 01/04/05  
Del Mar Analytical Number: IOA0115

Dear Ms. Kelly:

Eberline Services performed the Gross Alpha and Gross Beta analysis by EPA 900.0, the Tritium analysis by EPA 906.0, and the Strontium-90 analysis by EPA 905.0 for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	Eberline ID
Outfall 003 unfiltered	IOA0115-01	8149-001
Outfall 003 filtered	IOA0115-02	8149-002

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

Michele Harper  
Project Manager



February 14, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOA0115  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R501015-8149

Dear Ms. Harper:

Enclosed are results from the analyses of two water samples received at Eberline Services on January 6, 2005. The samples were analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8149</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501015-01</u>	Contract <u>PROJECT# IOA0115</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client Sample ID	Lab Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
IOA0115-01	8149-001	01/04/05	01/26/05	GrossAlpha	8.96 ± 2.2	pCi/L	1.30
			01/26/05	Gross Beta	10.7 ± 1.6	pCi/L	1.78
			01/27/05	H3	25.3 ± 180	pCi/L	303
			01/14/05	Sr90	0.740 ± 0.25	pCi/L	0.344
IOA0115-02	8149-002	01/04/05	01/26/05	GrossAlpha	0.179 ± 0.60	pCi/L	1.15
			01/26/05	Gross Beta	4.87 ± 1.3	pCi/L	1.76
			01/27/05	H3	-12.7 ± 180	pCi/L	302
			01/14/05	Sr90	0.822 ± 0.33	pCi/L	0.420

Certified by *[Signature]*  
 Report Date 02/13/05  
 Page 1

# Eberline Services

## QC RESULTS

SDG <u>8149</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501015-01</u>	Contract <u>PROJECT# 10A0115</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

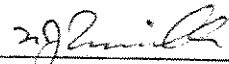
Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8147-002	GrossAlpha	11.7 ± 1.3	pCi/Smpl	11.2	0.522	104% recovery
		Gross Beta	11.8 ± 0.84	pCi/Smpl	12.1	0.607	98% recovery
		H3	264 ± 18	pCi/Smpl	260	15.8	102% recovery
		Sr90	11.7 ± 0.57	pCi/Smpl	11.1	0.229	105% recovery
<u>BLANK</u>							
	8147-003	GrossAlpha	0.122 ± 0.23	pCi/Smpl	NA	0.411	<MDA
		Gross Beta	0.050 ± 0.34	pCi/Smpl	NA	0.577	<MDA
		H3	-3.80 ± 17	pCi/Smpl	NA	30.2	<MDA
		Sr90	-0.041 ± 0.12	pCi/Smpl	NA	0.243	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-004	GrossAlpha	1.13 ± 0.74	0.963
	Gross Beta	2.74 ± 1.1	1.71
	H3	-62.6 ± 170	299
	Sr90	0.058 ± 0.35	0.608

<u>ORIGINALS</u>			
Sample ID	Results ± 2σ	MDA	3σ
			RPD (Tot) Eval
8147-001	-0.671 ± 1.0	1.99	200 212 satis.
	2.37 ± 1.2	1.80	14 101 satis.
	-125 ± 170	300	- 0 satis.
	0.002 ± 0.22	0.446	- 0 satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-005	GrossAlpha	76.1 ± 4.9	1.11
	Gross Beta	79.6 ± 3.6	1.75
	H3	18900 ± 610	311

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recy	
8147-001	-0.671 ± 1.0	1.99	76.6	100	
	2.37 ± 1.2	1.80	74.1	104	
	-125 ± 170	300	19000	100	

Certified by <u></u> Report Date <u>02/13/05</u> Page 2
--



### SUBCONTRACT ORDER - PROJECT # IOA0115

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Eberline Services  
 2050 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438

*Revised*  
 MHT  
 1/6/05

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0115-01	Water	Sampled: 01/04/05 14:50
EDD + Level 4	02/01/05 14:50	*on entire <del>work</del> project
Gross Alpha-O	01/04/06 14:50	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/04/06 14:50	900.0, IF RESULT > 50 pCi/L, run Radium 226 & 228
Radium, Combined-O	01/04/06 14:50	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/04/06 14:50	905.0
Tritium-O	01/04/06 14:50	906

Containers Supplied:  
1 gal Poly (IOA0115-01A) *Unfiltered*

Sample ID: IOA0115-02	Water	Sampled: 01/04/05 14:50
Gross Alpha-O	01/04/06 14:50	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/04/06 14:50	900.0, IF RESULT > 50 pCi/L, run Radium 226 & 228
Radium, Combined-O	01/04/06 14:50	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/04/06 14:50	905.0
Tritium-O	01/04/06 14:50	906

Containers Supplied:  
1 gal Poly (IOA0115-02A) *Filtered*

\* ~~Container~~ container labelled IOA0115-01B \*

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

*Fed Ex*      *1/6/05*      *10:00*      *T.H. Noyes*      *1/6/05*      *10:00*  
 Released By      Date      Time      Received By      Date      Time

Released By      Date      Time      Received By      Date      Time



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar Analytical City Irvine State CA

Date/Time received 1-06-05 10:00 CoC No. IOA 0115

Container I.D. No. Styrofoam in Cardboard Requested TAT (Days) 14 P.O. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [X]
- 2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [X]
- 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]
- 5. Packing material is: Wet [X] Dry [ ]
- 6. Number of samples in shipping container: 2 Sample Matrix Water
- 7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [X] No [ ]
- 9. Paperwork agrees with samples? Yes [X] No [X]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
- 11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [ ] Not preserved [X] pH 7 Preservative \_\_\_\_\_
- 13. Describe any anomalies: Sample container received wet, but no sample lost. Styrofoam cooler broke apart during shipment and wetness was due only to melted ice.
- 14. Was P.M. notified of any anomalies? Yes [X] No [ ] Date 1-06-05
- 15. Inspected by F.H. Kuegel Date: 1-06-05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe
---------------------	-----	-------	------	---------------------	-----	-------	------

<del>Also CoC indicates samples collected in 2006</del>							

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



Client Name/Address:				Project:				ANALYSIS REQUIRED						Field readings:		
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101				Boeing-SSFL NPDES Routine Outfall 003 Stormwater at RMHF										Temp = <u>52.0</u> <del>52.0</del> <u>52.0</u> pH =		
Project Manager: Bronwyn Kelly				Phone Number: (626) 568-6691 Fax Number: (626) 568-6515										Comments		
Sampler: <u>Palocz</u>																
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl-, SO4, NO3+NO2-N	TDS	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90	Radium 226 & Radium 228			
Outfall 003	W	1L Poly	1	1/4/05	HNO3	1A	X									
Outfall 003 Dup	W	1L Poly	1	1/4/05	HNO3	1B	X									
Outfall 003	W	1L Amber	1	1/4/05	None	2A, 2B		X								
Outfall 003	W	1L Amber	1	1/4/05	HCl	3A, 3B		X								
Outfall 003	W	Poly-500 ml	1	1/4/05	None	4A, 4B			X							
Outfall 003	W	Poly-500 ml	1	1/4/05	None	5A, 5B				X						
Outfall 003	W	Poly-1 gal	2	1-4-05 14:50	None						X			Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L		
Relinquished By: <u>[Signature]</u>	Date/Time: <u>1-4-05 15:22</u>	Received By: <u>[Signature]</u>	Date/Time: <u>1/4/05 15:22</u>													Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal <input checked="" type="checkbox"/>
Relinquished By: <u>[Signature]</u>	Date/Time: <u>1/4/05 18:25</u>	Received By: <u>[Signature]</u>	Date/Time: <u>1/4/05 18:25</u>													Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity (Check) <input checked="" type="checkbox"/> On Ice: <u>5°C</u>

# **APPENDIX A**

## **Section 2**

Outfall 003, January 4, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA2  
 Task Order 313150010  
 SDG No. IOA0115, 0121, 0131

Laboratory Del Mar

No. of Analyses 1

Reviewer P. Meeks

Date: 03/03/05

Analysis/Method Radionuclides

Reviewer's Signature

*P. Meeks*

**ACTION ITEMS\***

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**

Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: 1. Exceeded holding time 2. Lack of preservation 3. Incorrect sample container 4. Detector efficiencies less than 20%
--	---

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOA0115, IOA0121, IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0115, IOA0121, IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 03, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID <sup>a</sup>	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003 Unfiltered	IOA0115-01	8149-01	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOA0115-02	8149-02	water	900.0, 905.0, 906.0
Outfall 011	IOA0121-01	8148-01	water	900.0, 905.0, 906.0
Outfall 011 - Composite	IOA0131-01	8147-01	water	900.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were intact and in good condition.

According to the Eberline login sheet, none of the samples were received preserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As the strontium aliquot for Outfall 003 Filtered was not preserved; the nondetect strontium result was qualified as estimated, "UJ." Additionally, according to the 01/12/05 LARWQCB guidance letter, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As none of the tritium samples were submitted on glass containers, all nondetect tritium results were qualified as estimated, "UJ." No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. The original COCs for Outfall 003 did not request that an aliquot of each sample be filtered; however, the Del Mar project manager confirmed in a telephone conversation dated 1/31/05, that this was required by MWH. The original COC for Outfall 011 (SDG IOA0121) did not request that the sample containers received be analyzed for radionuclides. A memo from MWH personnel dated 2/17/05 requested these analyses. The transfer COCs accounted for all samples. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium and strontium samples were analyzed within 180 days of collection. The gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, the gross alpha and gross beta results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the nondetected alpha results were qualified as estimated, "UJ," for nondetects and "J," for detects.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable.

### Gross Beta and Strontium-90

The initial calibrations were performed in June 1997. All detector efficiencies were at least 20% and were considered acceptable. All continuing calibration results were within the laboratory control limits; therefore, no qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One blank spike (8147-002) was analyzed in association with the samples in these SDGs. All recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed a duplicate analysis on Outfall 011 Composite. The RPDs for gross beta, tritium, and strontium were  $\leq 20\%$ . The RPD for gross alpha was  $>20\%$ ; however, as the results were within the 3 sigma limit, no qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 Composite for gross alpha, gross beta and tritium. The recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs:

Eberline Services

ANALYSIS RESULTS

SDG <u>8149</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501015-01</u>	Contract <u>PROJECT# 10A0115</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Unfiltered 10A0115-01	8149-001		01/04/05	01/26/05	GrossAlpha	8.96 ± 2.2	pCi/L	1.30	J	H, *2
				01/26/05	Gross Beta	10.7 ± 1.6	pCi/L	1.78	J	H
				01/27/05	H3	25.3 ± 180	pCi/L	303	US	*1
				01/14/05	Sr90	0.740 ± 0.25	pCi/L	0.344		
Outfall 003 Filtered 10A0115-02	8149-002		01/04/05	01/26/05	GrossAlpha	0.179 ± 0.60	pCi/L	1.15	US	H, *2
				01/26/05	Gross Beta	4.87 ± 1.3	pCi/L	1.76	US	H
				01/27/05	H3	-12.7 ± 180	pCi/L	302	US	*1
				01/14/05	Sr90	0.822 ± 0.33	pCi/L	0.420	J	*1

pm 3/4/05

**AMEC VALIDATED**  
**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>02/13/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8148</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501014-01</u>	Contract <u>PROJECT# IOA0121</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 011	8148-001	IOA0121-01	01/04/05	01/26/05	GrossAlpha	1.64 ± 0.96	pCi/L	0.839	J	H, *2
				01/26/05	Gross Beta	2.65 ± 1.2	pCi/L	1.74	J	H
				01/27/05	H3	-93.0 ± 170	pCi/L	303	UJ	*1
				01/14/05	Sr-90	0.188 ± 0.25	pCi/L	0.456	U	

pm 3/4/05

**AMEC VALIDATED  
LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>02/13/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8147</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501013-01</u>	Contract <u>PROJECT# 10A0131</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code
Sample ID	Sample ID								
<u>outfall oil composite</u>									
10A0131-01	8147-001	01/05/05	01/22/05	GrossAlpha	-0.671 ± 1.0	pCi/L	1.99	UJ	H, #2
			01/22/05	Gross Beta	2.37 ± 1.2	pCi/L	1.80	J	H
			01/26/05	H3	-125 ± 170	pCi/L	300	UJ	*1
			01/14/05	Sr90	0.002 ± 0.22	pCi/L	0.446	U	

pm 3/4/05

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>02/13/05</u>
Page 1





# **APPENDIX A**

## **Section 3**

Outfall 003, February 11, 2005

Del Mar Analytical Laboratory Report



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1238  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Projects: 13267 (Study 2) / Routine Outfall 003  
Sampled: 2/11/05  
Del Mar Analytical Number: IOB1069

Dear Ms. Kelly:

Eberline Services performed the Gross Alpha/Beta (EPA 900.0), Tritium (EPA 906.0), Strontium-90 (EPA 905.0), Radium-226 (Ra-226, EPA 903.1), Radium-228 (Ra-228, EPA 904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1) analyses for the projects referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	EBERLINE ID
Outfall 003 Filtered	IOB1069-01	R502139-01 / 8268-001
Outfall 003 Unfiltered	IOB1069-02	R502139-01 / 8268-002
Outfall 003 Substrate	IOB1069-03	R502140-01 / 8269-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

  
Michele Harper  
Project Manager



**EBERLINE**  
SERVICES

May 10, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1069  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502139-8268

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 15, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0); results for those analyses were reported on March 8. This report contains the analytical results for Ra-226 (EPA903.1) and Ra-228 (EPA904.0). The Ra-226 QC samples are 8368-005, 006, and 007, and the Ra-228 QC samples are 8263-002, 003, and 004. The QC LCS, blank analyses, and sample duplicates for both the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed. Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/mjv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

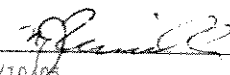
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8258</u> Work Order <u>R502139-01</u> Received Date <u>02/15/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB1069</u> Matrix <u>WATER</u>
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Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1069-01	8268-001	02/11/05	03/01/05	GrossAlpha	-0.288 ± 0.45	pCi/L	0.969
			03/01/05	Gross Beta	4.44 ± 1.3	pCi/L	1.80
			04/22/05	Ra228	1.37 ± 0.46	pCi/L	0.772
			03/03/05	H3	138 ± 150	pCi/L	242
			05/05/05	Ra226	0.056 ± 0.021	pCi/L	0.029
			02/25/05	Sr90	1.04 ± 0.31	pCi/L	0.428
IOB1069-02	8268-002	02/11/05	03/01/05	GrossAlpha	0.240 ± 0.58	pCi/L	1.09
			03/01/05	Gross Beta	3.53 ± 1.2	pCi/L	1.82
			04/22/05	Ra228	1.30 ± 0.37	pCi/L	0.756
			03/03/05	H3	106 ± 150	pCi/L	242
			05/05/05	Ra226	0.018 ± 0.019	pCi/L	0.031
			02/25/05	Sr90	1.10 ± 0.34	pCi/L	0.462

Certified by <u></u> Report Date <u>05/10/05</u> Page 1
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# Eberline Services

## QC RESULTS

SDG <u>8268</u> Work Order <u>R502139-01</u> Received Date <u>02/15/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB1069</u> Matrix <u>WATER</u>
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Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8261-002	GrossAlpha	8.92 ± 1.1	pCi/Smpl	11.2	0.403	80% recovery
		Gross Beta	10.6 ± 0.77	pCi/Smpl	12.1	0.556	88% recovery
		H3	281 ± 24	pCi/Smpl	259	23.4	108% recovery
		Sr90	12.0 ± 0.59	pCi/Smpl	11.1	0.238	108% recovery
<u>BLANK</u>							
	8261-003	GrossAlpha	-0.032 ± 0.15	pCi/Smpl	NA	0.374	<MDA
		Gross Beta	-0.073 ± 0.30	pCi/Smpl	NA	0.554	<MDA
		H3	13.6 ± 15	pCi/Smpl	NA	23.9	<MDA
		Sr90	-0.091 ± 0.10	pCi/Smpl	NA	0.234	<MDA
<u>LCS</u>							
	8263-002	Ra228	12.7 ± 0.80	pCi/Smpl	10.2	1.07	125% recovery
<u>BLANK</u>							
	8263-003	Ra228	-0.465 ± 0.43	pCi/Smpl	NA	1.19	<MDA
<u>LCS</u>							
	8368-005	GrossAlpha	13.0 ± 1.4	pCi/Smpl	11.2	0.420	116% recovery
		Gross Beta	12.4 ± 0.85	pCi/Smpl	12.1	0.581	102% recovery
		Ra226	5.45 ± 0.18	pCi/Smpl	5.59	0.056	97% recovery
<u>BLANK</u>							
	8368-006	GrossAlpha	-0.051 ± 0.14	pCi/Smpl	NA	0.355	<MDA
		Gross Beta	-0.190 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		Ra226	-0.014 ± 0.011	pCi/Smpl	NA	0.021	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-004	GrossAlpha	3.40 ± 1.4	0.926
	Gross Beta	6.02 ± 1.4	1.80
	H3	393 ± 160	242
	Sr90	-0.186 ± 0.19	0.431
8263-004	Ra228	0.245 ± 0.27	0.716
8368-007	GrossAlpha	5.26 ± 5.8	8.58
	Gross Beta	11.2 ± 7.5	11.8

<u>ORIGINALS</u>						
Sample ID	Results ± 2σ	MDA	3σ	RPD (Tot)	Eval	
8261-001	1.64 ± 1.0	0.936	70	112	satis.	
	5.18 ± 1.3	1.80	15	60	satis.	
	71.9 ± 150	246	138	144	satis.	
	-0.077 ± 0.25	0.499	-	0	satis.	
8263-001	0.143 ± 0.31	0.787	-	0	satis.	
8368-001	8.78 ± 6.2	7.52	50	187	satis.	
	16.6 ± 7.3	10.8	39	118	satis.	

Certified by *R. J. Smith*  
 Report Date 05/10/05  
 Page 2

# Eberline Services

## QC RESULTS

SDG <u>8268</u> Work Order <u>R502139-01</u> Received Date <u>02/15/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB1069</u> Matrix <u>WATER</u>
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DUPLICATES			ORIGINALS						
Sample ID	Nuclide	Results + 2σ	MDA	Sample ID	Results + 2σ	MDA	3σ	RPD (Tot)	Eval
Ra226		0.011 ± 0.27	0.488		-0.198 ± 0.13	0.241	-		0 satis.

SPIKED SAMPLE				ORIGINAL SAMPLE					
Sample ID	Nuclide	Results + 2σ	MDA	Sample ID	Results + 2σ	MDA	Added	%Recv	
8261-005	GrossAlpha	81.8 ± 5.3	1.04	8261-001	1.64 ± 1.0	0.936	76.6	105	
	Gross Beta	82.0 ± 3.7	1.81		5.18 ± 1.3	1.80	73.9	104	
	H3	17800 ± 520	243		71.9 ± 150	246	18900	94	
8368-008	GrossAlpha	1560 ± 120	21.4	8368-002	26.5 ± 18	22.4	1530	100	
	Gross Beta	1490 ± 72	35.5		50.6 ± 24	36.5	1480	97	

Certified by *[Signature]*  
 Report Date 05/10/05  
 Page 3



July 6, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/06)

Dear Ms. Harper:

Enclosed are revised gamma Cs-137 reports for various projects, the project numbers and Eberline Services report numbers are given below. The results were previously reported in the units of pCi/sample; the enclosed reports present the results in the recalculated units of pCi/g.

<u>Del Mar Project</u>	<u>Eberline Services Report</u>
IOB1069-03	R502140-8269
IOB1576-03	R502216-8295
IOB2065-04	R503156-8346
IOB1014-04	R503158-8348
IOC1523-04	R503160-8350
IOC1562-03	R503162-8352
IOC2063-04	R503231-8382
IOD2061-03	R505003-8443

Please call me if you have any questions concerning the enclosed reports.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/njv*

Enclosure: Reports  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2833 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8269</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502140-01</u>	Contract <u>PROJECT# 1081069</u>
Received Date <u>02/15/05</u>	Matrix <u>SOLID</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
1081069-03	8269-001	02/11/05	02/22/05	Cs137 (G)	U	pCi/G	19.8

Certified by <u><i>[Signature]</i></u>
Report Date <u>07/06/05</u>
Page 1



# Eberline Services

## QC RESULTS

SDG <u>8269</u> Work Order <u>R502140-01</u> Received Date <u>02/15/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# 1081069</u> Matrix <u>SOLID</u>
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Lab	<u>Sample ID</u>	<u>Nuclide</u>	<u>Results</u>	<u>Units</u>	<u>Amount Added</u>	<u>MDA</u>	<u>Evaluation</u>
<u>LCS</u>							
	8269-002	Cs137 (G)	203 ± 9.4	pCi/Smpl	223	8.13	91% recovery
<u>BLANK</u>							
	8269-003	Cs137 (G)	U	pCi/Smpl	NA	12.8	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>RPD (Tot) Eval</u>
8269-004	Cs137 (G)	U	20.9	8269-001	U	19.8	3σ - 0 satis.

Certified by <u><i>n. J. Smith</i></u> Report Date <u>07/06/05</u> Page 2
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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-8586 Fax (619) 505-8689  
 8830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #5, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1069

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Work Order Comments: Level IV Data, include std logs

Standard TAT is requested unless specific due date is requested => Due Date: A WKTAT Initials: MH

Analysis	Expiration	Comments
Sample ID: IOB1069-01 Water	Sampled: 02/11/05 14:00	Filter w/ preweighed .45 um & preserve (except Hr)
EDD + Level 4-OUT	03/11/05 14:00	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	02/11/06 14:00	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 14:00	900.0, IF RESULT > 50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/11/06 14:00	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 14:00	905.0
Tritium-O	02/11/06 14:00	906

- Containers Supplied:
- 1 L Amber (IOB1069-01A)
  - 1 L Amber (IOB1069-01B)
  - 1 L Amber (IOB1069-01C)
  - 1 L Amber (IOB1069-01D)

Sample ID: IOB1069-02 Water	Sampled: 02/11/05 14:00	Analyze as received, do not preserve
Gross Alpha-O	02/11/06 14:00	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 14:00	900.0, IF RESULT > 50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/11/06 14:00	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 14:00	905.0
Tritium-O	02/11/06 14:00	906

- Containers Supplied:
- 1 L Amber (IOB1069-02A)
  - 1 L Amber (IOB1069-02B)
  - 1 L Amber (IOB1069-02C)
  - 1 L Amber (IOB1069-02D)
  - 40 ml Voa Vial (IOB1069-02E)
  - 40 ml Voa Vial (IOB1069-02F)

Sample ID: IOB1069-03 <del>Soil</del> Solid	Sampled: 02/11/05 00:00	Analyze substrate on filter from IOB1069-01
Gamma Scan-O	02/11/06 00:00	Cesium 137, EPA 901.1, 20 pci/sample RL

	2/11/05	Time		2/15/05	10:00
Released By	Date	Time	Received By	Date	Time

Released By	Date	Time	Received By	Date	Time
-------------	------	------	-------------	------	------



**RICHMOND, CA LABORATORY**

**SAMPLE RECEIPT CHECKLIST**

Client: Dell Mar City: Irvine State: CA

Date/Time received: 2/15/05 10:00 CoC No.: FOB1069  
Sample # -011A

Container I.D. No.: Bed Cooler SJ #06 Requested TAT (Days): 21 P.O. Received Yes  No

**INSPECTION**

1. Custody seals on shipping container intact? Yes  No  N/A

2. Custody seals on shipping container dated & signed? Yes  No  N/A

3. Custody seals on sample containers intact? Yes  No  N/A

4. Custody seals on sample containers dated & signed? Yes  No  N/A

5. Packing material is: Wet  Dry

6. Number of samples in shipping container: 2 Sample Matrix: Water

7. Number of containers ~~sample~~: 10 (Or see CoC \_\_\_\_\_)

8. Samples are in correct container Yes  No

9. Paperwork agrees with samples? Yes  No

10. Samples have: Tape  Hazard labels  Rad labels  Appropriate sample labels

11. Samples are: In good condition  Leaking  Broken Container  Missing

12. Samples are: Preserved  Not preserved  pH 7 Preservative \_\_\_\_\_

13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes  No  Date: \_\_\_\_\_

15. Inspected by: Z/K Date: 2/15/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 4**

Outfall 003, February 11, 2005

MEC<sup>X</sup> Data Validation Reports

## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA4  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 11

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Radionuclides

Date: 03/24/05

Reviewer's Signature  
P. Meeks

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications applied for:
Holding Times	<u>1. Exceeded holding times.</u>
GC/MS Tune/Inst. Performance	<u>2. Matrix spike recovery outlier.</u>
Calibrations	<u>3. Laboratory duplicate RPD outlier.</u>
Blanks	<u>4. Incorrect sample container.</u>
Surrogates	<u>5. Detector efficiency outliers.</u>
Matrix Spike/Dup LCS	<u>6. Incorrect sample preservation.</u>
Field QC	<u>7. Reanalysis rejected in favor of original result</u>
Internal Standard Performance	<u>Three tritium results rejected due to incorrect sample preservation.</u>
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 11  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 23, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 002	IOB0418-01	8237-001	water	900.0, 905.0, 906.0
Outfall 001	IOB0980-01	8265-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 001RE1	IOB0980-01RE1	8265-001	water	900.0
Outfall 007	IOB0993-01	8261-001	water	900.0, 905.0, 906.0
Outfall 007 RE1	IOB0993-01 RE1	8377-001	water	906.0
Outfall 009	IOB0996-01	8262-001	water	900.0, 905.0, 906.0
Outfall 009 RE1	IOB0996-01 RE1	8378-001	water	906.0
Outfall 008	IOB0997-01	8266-001	water	900.0, 905.0, 906.0
Outfall 008 RE1	IOB0997-01 RE1	8379-001	water	906.0
Outfall 010	IOB1001-01	8267-001	water	900.0, 905.0, 906.0
Outfall 010 RE1	IOB1001-01 RE1	8380-001	water	906.0
Outfall 011	IOB1004-01	8263-001	water	900.0, 905.0, 906.0
Outfall 011	IOB1014-01	8264-001	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOB1069-01	8268-001	water	900.0, 905.0, 906.0
Outfall 003 Unfiltered	IOB1069-02	8268-002	water	900.0, 905.0, 906.0
Outfall 003 Substrate	IOB1069-03	8269-001	water	901.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Most samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

According to the Eberline login sheet, Outfall 002 was received unpreserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt; therefore, the nondetected strontium result for Outfall 002 was qualified as estimated, "UJ." The gross alpha and gross beta results were not qualified for lack of preservation, as the method also specifies a five-day holding time for unpreserved samples.

Eberline noted on their login sheets that Outfall 007, Outfall 008, Outfall 009 and Outfall 010 were received preserved, in plastic containers. The method states that tritium samples should not be preserved. Per a telephone conversation with M. Mannion of Eberline, these samples were adjusted back to a pH of about 7 upon receipt at Eberline. Due to the improper pH adjustments, the tritium results for Outfall 007, Outfall 008, Outfall 009, and Outfall 010 were rejected, "R." Del Mar Analytical sent additional aliquots of Outfall 007, Outfall 008, Outfall 009, and Outfall 010 for tritium reanalyses. These samples were received in the proper containers and were not preserved.

Additionally, according to the Los Angeles Regional Water Quality Control Board's guidance letter dated 01/12/05, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As the Outfall 007, Outfall 008, Outfall 009 and Outfall 010 tritium samples were previously rejected, no further qualifications were required.

After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 001 to Eberline for gross alpha reanalysis and radium-228 and radium-226 analyses. These aliquots were received properly preserved. No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. Filtered, unfiltered, and substrate analyses were requested for Outfall 011 (IOB1014) on the original COC from the field to Del Mar. These instructions did not appear on the transfer COC to Eberline and subsequently only unfiltered analyses were performed. The remaining original and transfer COCs accounted for the samples and analyses presented in this data package. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. A gross alpha reanalysis was requested for Outfall 001, and tritium reanalyses were requested for Outfall 007, Outfall 008, Outfall 009, and Outfall 010. To distinguish between the original and reanalysis results, the reviewer added "RE1," suffices to the original MWH and Del Mar Analytical IDs. No qualifications were required.

### 2.1.3 Holding Times

The tritium, radium, and strontium samples were analyzed within 180 days of collection. The Outfall 002 and Outfall 003 Unfiltered gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, these gross alpha and gross beta results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects, unless otherwise rejected (see section 2.10).

### Gross Beta

The initial calibrations were performed in June 1997. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in June 2003. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 90%. And the actinium chemical yields were greater than 65%. No qualifications were necessary.

### 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Six blank spikes (8261-002, 8237-002, 8269-002, 2008-002, 9479-004, 8377-002) were analyzed in association with the samples in these SDGs. The gross alpha, gross beta, and strontium recoveries for 8261-002 were outside of the 3-sigma limits, but all had acceptable recoveries of 80%, 88%, and 108%, respectively. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

### 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 002, Outfall 007, and Outfall 003 Substrate, and for tritium on Outfall 007 RE1. The gross alpha and tritium RPDs were greater than 20% for Outfall 007. The gross alpha results were within 3-sigma and were considered acceptable, but the tritium result was just above 3-sigma; however, as no associated tritium detects were retained (see section 2.1.1), no qualifications were required. The remaining RPD were  $\leq 20\%$ . No further qualifications were necessary.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 002 and Outfall 007 and for tritium on Outfall 007 RE1. The Outfall 002 recovery for gross alpha was below 3-sigma; therefore, the gross alpha results in all samples except Outfall 007 were qualified as estimated, "J," for detects and, "UJ," for nondetects. As Outfall 007 had an acceptable recovery for gross alpha, no qualifications were applied. The remaining recoveries were within the 3-sigma limits. No further qualifications were necessary.

### 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted.

The original planchet for gross alpha in Outfall 001 was recounted once per a request from MWH personnel. The recount yielded an equivalent result as the original count and was not reported. The sample was later reanalyzed from extra sample volume provided by Del Mar Analytical, and was reported as Outfall 001 RE1. As the two gross alpha results were similar, the reviewer rejected, "R," the reanalysis, Outfall 001 RE1, in favor of the original result, Outfall 001. No further qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8237</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502073-01</u>	Contract <u>PROJECT# 10B0418</u>
Received Date <u>02/08/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
<u>Sample ID</u> Outfall 002 1080418-01	<u>Sample ID</u> 8237-001	02/04/05	03/02/05	Gross Alpha	0.865 ± 2.9	pCi/L	4.35	UJ	H, R, Q
			03/02/05	Gross Beta	4.17 ± 3.4	pCi/L	5.53	UJ	H
			02/28/05	H3	5.86 ± 94	pCi/L	158	UJ	*1
			02/25/05	Sr-90	0.010 ± 0.22	pCi/L	0.420	UJ	*1

mm 3/24/05

**AMEC VALIDATED**

Certified by <u>[Signature]</u>
Report Date <u>03/08/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8265</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS02136-01</u>	Contract <u>PROJECT# IOB0980</u>
Received Date <u>02/19/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 001 IOB0980-01	8265-001		02/11/05	03/01/05	GrossAlpha	17.3 ± 4.5	pCi/L	2.78	J	R, a
				03/01/05	Gross Beta	20.0 ± 3.4	pCi/L	3.94		
				03/29/05	Ra-228	0.904 ± 0.20	pCi/L	0.449		
				03/03/05	Tritium	157 ± 150	pCi/L	244	U	
				04/04/05	Ra-226	0.660 ± 0.32	pCi/L	0.423		
				02/25/05	Sr-90	0.034 ± 0.20	pCi/L	0.392	U	

Am 3/19/05

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LEVEL IV

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Report Date <u>04/11/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8384</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503234-01</u>	Contract <u>PROJECT# IOB0980</u>
Received Date <u>03/30/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
<u>Sample ID</u> Outfall 001 RE1 IOB0980-01 RE1 pm 4/14/05	<u>Sample ID</u> 8384-001	02/11/05	04/04/05	GrossAlpha	18.1 ± 4.3	pCi/L	2.40	R	D

**AMEC VALIDATED  
LEVEL IV**

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Report Date <u>04/06/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> Outfall 011 IOB1014-01	Lab 8264-001	02/11/05	03/01/05	GrossAlpha	0.895 ± 0.76	pCi/L	1.05	UJ	R,Q	
			03/01/05	Gross Beta	2.50 ± 1.3	pCi/L	1.90			
			03/02/05	H3	97.4 ± 140	pCi/L	237	U		
			02/25/05	Sr90	-0.216 ± 0.23	pCi/L	0.519	U		

pm 3/24/05

**AMEC VALIDATED**

*[Faint, illegible text]*

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/08/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8261</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502132-01</u>	Contract <u>PROJECT# IOR0993</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results - 2σ	Units	MDA	Qual	Code
Outfall 007 IOB0993-01	8261-001		02/11/05	03/01/05	GrossAlpha	1.64 ± 1.0	pCi/L	0.936	J	R
				03/01/05	Gross Beta	5.18 ± 1.3	pCi/L	1.80		
				03/02/05	H3	71.9 ± 150	pCi/L	246		
				02/25/05	Sr90	-0.077 ± 0.25	pCi/L	0.499	CR	*1

mm 3/24/05

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/08/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8377</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503226-01</u>	Contract <u>PROJECT# IOB0993</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code	
Outfall 007 RE1		IOB0993-01 RE1	8377-001	02/11/05	04/08/05	H3	-86.2 ± 99	pCi/L	171	U	

mm 4/20/05

**AMEC VALIDATED**  
**I LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>04/14/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8262</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502133-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> Out Fall 009 IOB0996-01  pm 3/24/05	8262-001		02/11/05	03/01/05	GrossAlpha	0.812 ± 0.63	pCi/L	0.864	U	R,Q *1
				03/01/05	Gross Beta	1.76 ± 1.1	pCi/L	1.79	U	
				03/02/05	H3	59.8 ± 140	pCi/L	240	R	
				02/25/05	Sr90	0.078 ± 0.25	pCi/L	0.470	U	

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/08/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8378</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503227-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 009 RE1										
IOB0996-01 RE1	8378-001	02/11/05	04/09/05	H3	-129 ± 98	pCi/L	172		U	

AM 4/20/05

AMEC VALIDATED

LEVEL IV

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Report Date <u>04/14/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>S263</u>	Client <u>DEL MAP ANAL</u>
Work Order <u>R902114-01</u>	Contract <u>PROJECT# IOB1004</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 011 IOB1004-01		8263-001	02/11/05	03/01/05	GrossAlpha	2.03 ± 0.91	pCi/L	0.787	J	R, Q
				03/01/05	Gross Beta	2.30 ± 1.2	pCi/L	1.78		
				03/02/05	H3	21.1 ± 140	pCi/L	240	U	
				02/25/05	Sr90	-0.060 ± 0.23	pCi/L	0.470	U	

mm 3/24/05

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Eberline Services

ANALYSIS RESULTS

SDG <u>8266</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502137-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 008		8266-001	02/11/05	03/01/05	GrossAlpha	6.07 ± 1.7	pCi/L	1.06	J	R, Q
IOB0997-01				03/01/05	Gross Beta	7.48 ± 1.5	pCi/L	1.88		
				03/03/05	H3	110 ± 150	pCi/L	242	R	*1
				02/25/05	Sr90	-0.107 ± 0.22	pCi/L	0.458	U	

*pm 3/24/05*

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**LEVEL III**

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Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8379</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503228-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>01/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 008 RE1</u>								
IOB0997-01 <u>RE1</u>	8379-001	02/11/05	04/09/05	H3	-76.3 ± 100	pCi/L	172		U	

mm 4/20/05

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LEVEL IV

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Report Date <u>04/14/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8267</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502138-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev	Qual	Qual
Sample ID											Code
Outfall 010		8267-001	02/11/05	03/01/05	Gross Alpha	4.98 ± 1.5	pCi/L	1.06	J		R, Q
IOB1001-01				03/01/05	Gross Beta	8.16 ± 1.6	pCi/L	1.92			
				03/03/05	H3	271 ± 150	pCi/L	240			
				02/25/05	Sr90	-0.061 ± 0.24	pCi/L	0.485	RA		<del>RA</del>
									C		

PM 3/24/05

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**LEVEL IV**

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Report Date <u>03/08/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8380</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503229-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 010 RE1										
IOB1001-01 RE1	8380-001		02/11/05	04/09/05	H3	-59.6 ± 100	pCi/L	175	U	

pm 4/20/05

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Report Date <u>04/14/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8268</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502139-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Filtered IOB1069-01	8268-001		02/11/05	03/01/05	GrossAlpha	-0.288 ± 0.45	pCi/L	0.969	UJ	R,Q
				03/01/05	Gross Beta	4.44 ± 1.3	pCi/L	1.80		
				03/03/05	H3	138 ± 150	pCi/L	242		
				02/25/05	Sr90	1.04 ± 0.31	pCi/L	0.428		
Outfall 003 Unfiltered IOB1069-02	8268-002		02/11/05	03/01/05	GrossAlpha	0.240 ± 0.58	pCi/L	1.09	UJ	R,Q,H
				03/01/05	Gross Beta	3.53 ± 1.2	pCi/L	1.82		
				03/03/05	H3	106 ± 150	pCi/L	242		
				02/25/05	Sr90	1.10 ± 0.34	pCi/L	0.462		

pm 3/24/05

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*[Faint signature and stamp]*

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Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8269</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502140-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results - 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Substrate		IOB1069-03	02/11/05	02/22/05	Cs137 (G)	U	pCi/Smpl	11.6	U	

pm 3/24/05

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Page 1



# **APPENDIX A**

## **Section 5**

Outfall 003, February 18, 2005

Del Mar Analytical Laboratory Report





LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Annual Outfall 003

Sampled: 02/18/05  
Received: 02/18/05  
Issued: 04/06/05 09:42

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOB1571-01	Outfall 003	Water
IOB1571-02	Trip Blank	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

### CORRECTIVE ACTION REPORT

Department: Extractions

Date: 02/28/2005

Method: EPA 625

Matrix: Water

QC Batch: 5B22043

**Identification and Definition of Problem:**

The percent recovery for benzidine in the BSD was below method acceptance limits.

**Determination of the Cause of the Problem:**

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

**Corrective Action Taken:**

The percent recovery in the BS was within the acceptance limits. All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

Rima Angkasa

Date: 03/02/2005 08:43 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5B19020	0.28	1.0	ND	1	02/19/05	02/19/05	
Bromodichloromethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
Bromoform	EPA 624	5B19020	0.32	5.0	ND	1	02/19/05	02/19/05	
Bromomethane	EPA 624	5B19020	0.34	5.0	ND	1	02/19/05	02/19/05	
Carbon tetrachloride	EPA 624	5B19020	0.28	0.50	ND	1	02/19/05	02/19/05	
Chlorobenzene	EPA 624	5B19020	0.36	2.0	ND	1	02/19/05	02/19/05	
Chloroethane	EPA 624	5B19020	0.33	5.0	ND	1	02/19/05	02/19/05	
Chloroform	EPA 624	5B19020	0.33	2.0	ND	1	02/19/05	02/19/05	
Chloromethane	EPA 624	5B19020	0.30	5.0	ND	1	02/19/05	02/19/05	
Dibromochloromethane	EPA 624	5B19020	0.28	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichlorobenzene	EPA 624	5B19020	0.32	2.0	ND	1	02/19/05	02/19/05	
1,3-Dichlorobenzene	EPA 624	5B19020	0.35	2.0	ND	1	02/19/05	02/19/05	
1,4-Dichlorobenzene	EPA 624	5B19020	0.37	2.0	ND	1	02/19/05	02/19/05	
1,1-Dichloroethane	EPA 624	5B19020	0.27	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichloroethane	EPA 624	5B19020	0.28	0.50	ND	1	02/19/05	02/19/05	
1,1-Dichloroethene	EPA 624	5B19020	0.32	5.0	ND	1	02/19/05	02/19/05	
trans-1,2-Dichloroethene	EPA 624	5B19020	0.27	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichloropropane	EPA 624	5B19020	0.35	2.0	ND	1	02/19/05	02/19/05	
cis-1,3-Dichloropropene	EPA 624	5B19020	0.22	2.0	ND	1	02/19/05	02/19/05	
trans-1,3-Dichloropropene	EPA 624	5B19020	0.24	2.0	ND	1	02/19/05	02/19/05	
Ethylbenzene	EPA 624	5B19020	0.25	2.0	ND	1	02/19/05	02/19/05	
<b>Methylene chloride</b>	EPA 624	5B19020	0.48	5.0	<b>0.85</b>	1	02/19/05	02/19/05	J
1,1,2,2-Tetrachloroethane	EPA 624	5B19020	0.24	2.0	ND	1	02/19/05	02/19/05	
Tetrachloroethene	EPA 624	5B19020	0.32	2.0	ND	1	02/19/05	02/19/05	
Toluene	EPA 624	5B19020	0.36	2.0	ND	1	02/19/05	02/19/05	
1,1,1-Trichloroethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
1,1,2-Trichloroethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
Trichloroethene	EPA 624	5B19020	0.26	2.0	ND	1	02/19/05	02/19/05	
Trichlorofluoromethane	EPA 624	5B19020	0.34	5.0	ND	1	02/19/05	02/19/05	
Vinyl chloride	EPA 624	5B19020	0.26	0.50	ND	1	02/19/05	02/19/05	
Xylenes, Total	EPA 624	5B19020	0.52	4.0	ND	1	02/19/05	02/19/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					105 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					104 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					96 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5B19020	0.28	1.0	ND	1	02/19/05	02/19/05	
Bromodichloromethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
Bromoform	EPA 624	5B19020	0.32	5.0	ND	1	02/19/05	02/19/05	
Bromomethane	EPA 624	5B19020	0.34	5.0	ND	1	02/19/05	02/19/05	
Carbon tetrachloride	EPA 624	5B19020	0.28	0.50	ND	1	02/19/05	02/19/05	
Chlorobenzene	EPA 624	5B19020	0.36	2.0	ND	1	02/19/05	02/19/05	
Chloroethane	EPA 624	5B19020	0.33	5.0	ND	1	02/19/05	02/19/05	
Chloroform	EPA 624	5B19020	0.33	2.0	ND	1	02/19/05	02/19/05	
Chloromethane	EPA 624	5B19020	0.30	5.0	ND	1	02/19/05	02/19/05	
Dibromochloromethane	EPA 624	5B19020	0.28	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichlorobenzene	EPA 624	5B19020	0.32	2.0	ND	1	02/19/05	02/19/05	
1,3-Dichlorobenzene	EPA 624	5B19020	0.35	2.0	ND	1	02/19/05	02/19/05	
1,4-Dichlorobenzene	EPA 624	5B19020	0.37	2.0	ND	1	02/19/05	02/19/05	
1,1-Dichloroethane	EPA 624	5B19020	0.27	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichloroethane	EPA 624	5B19020	0.28	0.50	ND	1	02/19/05	02/19/05	
1,1-Dichloroethene	EPA 624	5B19020	0.32	5.0	ND	1	02/19/05	02/19/05	
trans-1,2-Dichloroethene	EPA 624	5B19020	0.27	2.0	ND	1	02/19/05	02/19/05	
1,2-Dichloropropane	EPA 624	5B19020	0.35	2.0	ND	1	02/19/05	02/19/05	
cis-1,3-Dichloropropene	EPA 624	5B19020	0.22	2.0	ND	1	02/19/05	02/19/05	
trans-1,3-Dichloropropene	EPA 624	5B19020	0.24	2.0	ND	1	02/19/05	02/19/05	
Ethylbenzene	EPA 624	5B19020	0.25	2.0	ND	1	02/19/05	02/19/05	
<b>Methylene chloride</b>	EPA 624	5B19020	0.48	5.0	<b>1.5</b>	1	02/19/05	02/19/05	J
1,1,2,2-Tetrachloroethane	EPA 624	5B19020	0.24	2.0	ND	1	02/19/05	02/19/05	
Tetrachloroethene	EPA 624	5B19020	0.32	2.0	ND	1	02/19/05	02/19/05	
Toluene	EPA 624	5B19020	0.36	2.0	ND	1	02/19/05	02/19/05	
1,1,1-Trichloroethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
1,1,2-Trichloroethane	EPA 624	5B19020	0.30	2.0	ND	1	02/19/05	02/19/05	
Trichloroethene	EPA 624	5B19020	0.26	2.0	ND	1	02/19/05	02/19/05	
Trichlorofluoromethane	EPA 624	5B19020	0.34	5.0	ND	1	02/19/05	02/19/05	
Vinyl chloride	EPA 624	5B19020	0.26	0.50	ND	1	02/19/05	02/19/05	
Xylenes, Total	EPA 624	5B19020	0.52	4.0	ND	1	02/19/05	02/19/05	
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B19020	4.6	50	ND	1	02/19/05	02/19/05	
Acrylonitrile	EPA 624	5B19020	5.1	50	ND	1	02/19/05	02/19/05	
2-Chloroethyl vinyl ether	EPA 624	5B19020	1.3	5.0	ND	1	02/19/05	02/19/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				
<b>Sample ID: IOB1571-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B19020	4.6	50	ND	1	02/19/05	02/19/05	
Acrylonitrile	EPA 624	5B19020	5.1	50	ND	1	02/19/05	02/19/05	
2-Chloroethyl vinyl ether	EPA 624	5B19020	1.3	5.0	ND	1	02/19/05	02/19/05	
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5B22043	4.3	10	ND	0.971	02/22/05	02/25/05	
Acenaphthylene	EPA 625	5B22043	3.2	10	ND	0.971	02/22/05	02/25/05	
Aniline	EPA 625	5B22043	2.9	10	ND	0.971	02/22/05	02/25/05	
Anthracene	EPA 625	5B22043	3.2	10	ND	0.971	02/22/05	02/25/05	
Benzidine	EPA 625	5B22043	5.2	20	ND	0.971	02/22/05	02/25/05	
Benzoic acid	EPA 625	5B22043	2.6	20	ND	0.971	02/22/05	02/25/05	L2
Benzo(a)anthracene	EPA 625	5B22043	3.7	10	ND	0.971	02/22/05	02/25/05	
Benzo(b)fluoranthene	EPA 625	5B22043	2.7	10	ND	0.971	02/22/05	02/25/05	
Benzo(k)fluoranthene	EPA 625	5B22043	3.4	10	ND	0.971	02/22/05	02/25/05	
Benzo(g,h,i)perylene	EPA 625	5B22043	5.3	10	ND	0.971	02/22/05	02/25/05	
Benzo(a)pyrene	EPA 625	5B22043	3.5	10	ND	0.971	02/22/05	02/25/05	
Benzyl alcohol	EPA 625	5B22043	2.5	20	ND	0.971	02/22/05	02/25/05	
Bis(2-chloroethoxy)methane	EPA 625	5B22043	3.9	10	ND	0.971	02/22/05	02/25/05	
Bis(2-chloroethyl)ether	EPA 625	5B22043	4.4	10	ND	0.971	02/22/05	02/25/05	
Bis(2-chloroisopropyl)ether	EPA 625	5B22043	4.6	10	ND	0.971	02/22/05	02/25/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5B22043	5.2	50	ND	0.971	02/22/05	02/25/05	
4-Bromophenyl phenyl ether	EPA 625	5B22043	4.6	10	ND	0.971	02/22/05	02/25/05	
Butyl benzyl phthalate	EPA 625	5B22043	3.5	20	ND	0.971	02/22/05	02/25/05	
4-Chloroaniline	EPA 625	5B22043	6.0	10	ND	0.971	02/22/05	02/25/05	
2-Chloronaphthalene	EPA 625	5B22043	4.0	10	ND	0.971	02/22/05	02/25/05	
4-Chloro-3-methylphenol	EPA 625	5B22043	3.5	20	ND	0.971	02/22/05	02/25/05	
2-Chlorophenol	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	
4-Chlorophenyl phenyl ether	EPA 625	5B22043	3.0	10	ND	0.971	02/22/05	02/25/05	
Chrysene	EPA 625	5B22043	2.8	10	ND	0.971	02/22/05	02/25/05	
Dibenz(a,h)anthracene	EPA 625	5B22043	4.7	20	ND	0.971	02/22/05	02/25/05	
Dibenzofuran	EPA 625	5B22043	2.6	10	ND	0.971	02/22/05	02/25/05	
Di-n-butyl phthalate	EPA 625	5B22043	2.8	20	ND	0.971	02/22/05	02/25/05	
1,3-Dichlorobenzene	EPA 625	5B22043	4.1	10	ND	0.971	02/22/05	02/25/05	
1,4-Dichlorobenzene	EPA 625	5B22043	3.9	10	ND	0.971	02/22/05	02/25/05	
1,2-Dichlorobenzene	EPA 625	5B22043	4.5	10	ND	0.971	02/22/05	02/25/05	
3,3-Dichlorobenzidine	EPA 625	5B22043	11	20	ND	0.971	02/22/05	02/25/05	
2,4-Dichlorophenol	EPA 625	5B22043	4.1	10	ND	0.971	02/22/05	02/25/05	
Diethyl phthalate	EPA 625	5B22043	3.1	10	ND	0.971	02/22/05	02/25/05	
2,4-Dimethylphenol	EPA 625	5B22043	4.4	20	ND	0.971	02/22/05	02/25/05	
Dimethyl phthalate	EPA 625	5B22043	3.6	10	ND	0.971	02/22/05	02/25/05	
4,6-Dinitro-2-methylphenol	EPA 625	5B22043	5.1	20	ND	0.971	02/22/05	02/25/05	
2,4-Dinitrophenol	EPA 625	5B22043	5.3	20	ND	0.971	02/22/05	02/25/05	
2,4-Dinitrotoluene	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	
2,6-Dinitrotoluene	EPA 625	5B22043	3.2	10	ND	0.971	02/22/05	02/25/05	
Di-n-octyl phthalate	EPA 625	5B22043	4.7	20	ND	0.971	02/22/05	02/25/05	
Fluoranthene	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Fluorene	EPA 625	5B22043	3.9	10	ND	0.971	02/22/05	02/25/05	
Hexachlorobenzene	EPA 625	5B22043	4.8	10	ND	0.971	02/22/05	02/25/05	
Hexachlorobutadiene	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	
Hexachlorocyclopentadiene	EPA 625	5B22043	3.4	20	ND	0.971	02/22/05	02/25/05	
Hexachloroethane	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5B22043	5.4	20	ND	0.971	02/22/05	02/25/05	
Isophorone	EPA 625	5B22043	3.7	10	ND	0.971	02/22/05	02/25/05	
2-Methylnaphthalene	EPA 625	5B22043	3.0	10	ND	0.971	02/22/05	02/25/05	
2-Methylphenol	EPA 625	5B22043	3.7	10	ND	0.971	02/22/05	02/25/05	
4-Methylphenol	EPA 625	5B22043	3.8	10	ND	0.971	02/22/05	02/25/05	
Naphthalene	EPA 625	5B22043	4.5	10	ND	0.971	02/22/05	02/25/05	
2-Nitroaniline	EPA 625	5B22043	3.9	20	ND	0.971	02/22/05	02/25/05	
3-Nitroaniline	EPA 625	5B22043	4.5	20	ND	0.971	02/22/05	02/25/05	
4-Nitroaniline	EPA 625	5B22043	4.9	20	ND	0.971	02/22/05	02/25/05	
Nitrobenzene	EPA 625	5B22043	4.2	20	ND	0.971	02/22/05	02/25/05	
2-Nitrophenol	EPA 625	5B22043	4.2	10	ND	0.971	02/22/05	02/25/05	
4-Nitrophenol	EPA 625	5B22043	6.6	20	ND	0.971	02/22/05	02/25/05	
N-Nitrosodiphenylamine	EPA 625	5B22043	4.0	10	ND	0.971	02/22/05	02/25/05	
N-Nitroso-di-n-propylamine	EPA 625	5B22043	3.6	10	ND	0.971	02/22/05	02/25/05	
Pentachlorophenol	EPA 625	5B22043	4.0	20	ND	0.971	02/22/05	02/25/05	
Phenanthrene	EPA 625	5B22043	3.3	10	ND	0.971	02/22/05	02/25/05	
Phenol	EPA 625	5B22043	4.0	10	ND	0.971	02/22/05	02/25/05	
Pyrene	EPA 625	5B22043	3.9	10	ND	0.971	02/22/05	02/25/05	
1,2,4-Trichlorobenzene	EPA 625	5B22043	4.4	10	ND	0.971	02/22/05	02/25/05	
2,4,5-Trichlorophenol	EPA 625	5B22043	3.6	20	ND	0.971	02/22/05	02/25/05	
2,4,6-Trichlorophenol	EPA 625	5B22043	4.1	20	ND	0.971	02/22/05	02/25/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B22043	5.0	20	ND	0.971	02/22/05	02/25/05	
N-Nitrosodimethylamine	EPA 625	5B22043	3.7	20	ND	0.971	02/22/05	02/25/05	
Surrogate: 2-Fluorophenol (35-120%)					58 %				
Surrogate: Phenol-d6 (45-120%)					65 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					83 %				
Surrogate: Nitrobenzene-d5 (45-120%)					66 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					70 %				
Surrogate: Terphenyl-d14 (45-135%)					126 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	5B22041	0.030	0.10	ND	0.99	02/22/05	02/23/05	
alpha-BHC	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
beta-BHC	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
delta-BHC	EPA 608	5B22041	0.020	0.20	ND	0.99	02/22/05	02/23/05	
gamma-BHC (Lindane)	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
Chlordane	EPA 608	5B22041	0.20	1.0	ND	0.99	02/22/05	02/23/05	
4,4'-DDD	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
4,4'-DDE	EPA 608	5B22041	0.020	0.10	ND	0.99	02/22/05	02/23/05	
4,4'-DDT	EPA 608	5B22041	0.030	0.10	ND	0.99	02/22/05	02/23/05	
Dieldrin	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
Endosulfan I	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
Endosulfan II	EPA 608	5B22041	0.040	0.10	ND	0.99	02/22/05	02/23/05	
Endosulfan sulfate	EPA 608	5B22041	0.015	0.20	ND	0.99	02/22/05	02/23/05	
Endrin	EPA 608	5B22041	0.015	0.10	ND	0.99	02/22/05	02/23/05	
Endrin aldehyde	EPA 608	5B22041	0.045	0.10	ND	0.99	02/22/05	02/23/05	
Endrin ketone	EPA 608	5B22041	0.020	0.10	ND	0.99	02/22/05	02/23/05	
Heptachlor	EPA 608	5B22041	0.030	0.10	ND	0.99	02/22/05	02/23/05	
Heptachlor epoxide	EPA 608	5B22041	0.020	0.10	ND	0.99	02/22/05	02/23/05	
Methoxychlor	EPA 608	5B22041	0.035	0.10	ND	0.99	02/22/05	02/23/05	
Toxaphene	EPA 608	5B22041	1.5	5.0	ND	0.99	02/22/05	02/23/05	
Surrogate: Tetrachloro-m-xylene (35-120%)									47 %
Surrogate: Decachlorobiphenyl (45-120%)									72 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5B22041	0.20	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1221	EPA 608	5B22041	0.10	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1232	EPA 608	5B22041	0.15	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1242	EPA 608	5B22041	0.15	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1248	EPA 608	5B22041	0.25	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1254	EPA 608	5B22041	0.25	1.0	ND	0.99	02/22/05	02/23/05	
Aroclor 1260	EPA 608	5B22041	0.40	1.0	ND	0.99	02/22/05	02/23/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					69 %				

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Project ID: Annual Outfall 003

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Sampled: 02/18/05  
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Boron	EPA 200.7	5B24093	0.0074	0.050	0.045	1	02/24/05	02/25/05	J

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Sampled: 02/18/05  
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aluminum	EPA 200.7	5B24093	47	50	360	1	02/24/05	02/26/05	
Antimony	EPA 200.8	5B24099	0.18	2.0	0.20	1	02/24/05	02/25/05	J
Arsenic	EPA 200.7	5B24093	3.8	5.0	ND	1	02/24/05	02/25/05	
Beryllium	EPA 200.7	5B24093	0.62	2.0	ND	1	02/24/05	02/25/05	
Cadmium	EPA 200.8	5B24099	0.015	1.0	0.019	1	02/24/05	02/25/05	J
Chromium	EPA 200.7	5B24093	0.68	5.0	2.0	1	02/24/05	02/25/05	J
Copper	EPA 200.8	5B24099	0.49	2.0	3.3	1	02/24/05	02/25/05	
Lead	EPA 200.8	5B24099	0.13	1.0	0.32	1	02/24/05	02/25/05	J
Mercury	EPA 245.1	5B22063	0.063	0.20	ND	1	02/22/05	02/22/05	
Nickel	EPA 200.7	5B24093	2.0	10	2.2	1	02/24/05	02/25/05	J
Selenium	EPA 200.7	5B24093	4.6	5.0	ND	1	02/24/05	02/26/05	
Silver	EPA 200.7	5B24093	1.3	10	ND	1	02/24/05	02/26/05	
Thallium	EPA 200.8	5B24099	0.075	1.0	ND	1	02/24/05	02/25/05	
Vanadium	EPA 200.7	5B24093	1.4	10	1.7	1	02/24/05	02/25/05	J
Zinc	EPA 200.7	5B24093	3.7	20	7.0	1	02/24/05	02/25/05	B, J

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5B18129	0.26	0.50	<b>4.9</b>	1	02/18/05	02/19/05	
Total Cyanide	EPA 335.2	5B23086	0.0022	0.0050	ND	1	02/23/05	02/25/05	
Nitrate/Nitrite-N	EPA 300.0	5B18129	0.072	0.11	<b>0.22</b>	1	02/18/05	02/19/05	
Oil & Grease	EPA 413.1	5B23082	0.94	5.0	<b>1.2</b>	1	02/23/05	02/23/05	J
Sulfate	EPA 300.0	5B18129	0.18	0.50	<b>9.7</b>	1	02/18/05	02/19/05	
Total Dissolved Solids	SM2540C	5B24111	10	10	<b>130</b>	1	02/24/05	02/24/05	
Total Suspended Solids	EPA 160.2	5B25089	10	10	ND	1	02/25/05	02/25/05	

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 Received: 02/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1571-01 (Outfall 003 - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5B25064	0.80	4.0	ND	1	02/25/05	02/26/05	

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 Michele Harper  
 Project Manager

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# Del Mar Analytical

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 9850 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 003 (IOB1571-01) - Water</b>					
EPA 300.0	2	02/18/2005 12:25	02/18/2005 18:30	02/18/2005 22:00	02/19/2005 01:07
EPA 624	3	02/18/2005 12:25	02/18/2005 18:30	02/19/2005 00:00	02/19/2005 19:00
<b>Sample ID: Trip Blank (IOB1571-02) - Water</b>					
EPA 624	3	02/18/2005 14:50	02/18/2005 18:30	02/19/2005 00:00	02/19/2005 16:57

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B19020 Extracted: 02/19/05</b>											
<b>Blank Analyzed: 02/19/2005 (5B19020-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.48	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Surrogate: Dibromofluoromethane	24.9			ug/l	25.0		100	80-120			
Surrogate: Toluene-d8	26.8			ug/l	25.0		107	80-120			
Surrogate: 4-Bromofluorobenzene	25.2			ug/l	25.0		101	80-120			

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B19020 Extracted: 02/19/05</b>											
<b>LCS Analyzed: 02/19/2005 (5B19020-BS1)</b>											
Benzene	25.3	1.0	0.28	ug/l	25.0		101	70-120			
Bromodichloromethane	22.8	2.0	0.30	ug/l	25.0		91	70-140			
Bromoform	24.9	5.0	0.32	ug/l	25.0		100	55-135			
Bromomethane	26.0	5.0	0.34	ug/l	25.0		104	60-140			
Carbon tetrachloride	22.7	0.50	0.28	ug/l	25.0		91	70-140			
Chlorobenzene	24.2	2.0	0.36	ug/l	25.0		97	80-125			
Chloroethane	25.4	5.0	0.33	ug/l	25.0		102	60-145			
Chloroform	23.2	2.0	0.33	ug/l	25.0		93	75-130			
Chloromethane	25.1	5.0	0.30	ug/l	25.0		100	40-145			
Dibromochloromethane	24.2	2.0	0.28	ug/l	25.0		97	65-145			
1,2-Dichlorobenzene	24.5	2.0	0.32	ug/l	25.0		98	80-120			
1,3-Dichlorobenzene	23.7	2.0	0.35	ug/l	25.0		95	80-120			
1,4-Dichlorobenzene	23.9	2.0	0.37	ug/l	25.0		96	80-120			
1,1-Dichloroethane	23.4	2.0	0.27	ug/l	25.0		94	70-135			
1,2-Dichloroethane	22.7	0.50	0.28	ug/l	25.0		91	60-150			
1,1-Dichloroethene	25.6	5.0	0.32	ug/l	25.0		102	75-135			
trans-1,2-Dichloroethene	24.9	2.0	0.27	ug/l	25.0		100	70-130			
1,2-Dichloropropane	25.2	2.0	0.35	ug/l	25.0		101	70-120			
cis-1,3-Dichloropropene	25.2	2.0	0.22	ug/l	25.0		101	75-130			
trans-1,3-Dichloropropene	25.6	2.0	0.24	ug/l	25.0		102	75-135			
Ethylbenzene	25.2	2.0	0.25	ug/l	25.0		101	80-120			
Methylene chloride	24.7	5.0	0.48	ug/l	25.0		99	60-135			
1,1,2,2-Tetrachloroethane	27.6	2.0	0.24	ug/l	25.0		110	60-135			
Tetrachloroethene	23.8	2.0	0.32	ug/l	25.0		95	75-125			
Toluene	25.0	2.0	0.36	ug/l	25.0		100	75-120			
1,1,1-Trichloroethane	21.8	2.0	0.30	ug/l	25.0		87	75-140			
1,1,2-Trichloroethane	25.2	2.0	0.30	ug/l	25.0		101	70-125			
Trichloroethene	24.4	2.0	0.26	ug/l	25.0		98	80-120			
Trichlorofluoromethane	21.9	5.0	0.34	ug/l	25.0		88	65-145			
Vinyl chloride	24.1	0.50	0.26	ug/l	25.0		96	50-130			
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120			
Surrogate: Toluene-d8	27.1			ug/l	25.0		108	80-120			
Surrogate: 4-Bromofluorobenzene	25.9			ug/l	25.0		104	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B19020 Extracted: 02/19/05</b>											
<b>Matrix Spike Analyzed: 02/19/2005 (5B19020-MS1)</b>											
<b>Source: IOB1556-01</b>											
Benzene	22.7	1.0	0.28	ug/l	25.0	ND	91	70-120			
Bromodichloromethane	20.2	2.0	0.30	ug/l	25.0	ND	81	70-140			
Bromoform	20.2	5.0	0.32	ug/l	25.0	ND	81	55-140			
Bromomethane	23.0	5.0	0.34	ug/l	25.0	ND	92	50-145			
Carbon tetrachloride	20.8	0.50	0.28	ug/l	25.0	ND	83	70-145			
Chlorobenzene	21.9	2.0	0.36	ug/l	25.0	ND	88	80-125			
Chloroethane	22.3	5.0	0.33	ug/l	25.0	ND	89	50-145			
Chloroform	21.0	2.0	0.33	ug/l	25.0	ND	84	70-135			
Chloromethane	21.8	5.0	0.30	ug/l	25.0	ND	87	35-145			
Dibromochloromethane	21.0	2.0	0.28	ug/l	25.0	ND	84	65-145			
1,2-Dichlorobenzene	22.2	2.0	0.32	ug/l	25.0	ND	89	75-130			
1,3-Dichlorobenzene	22.0	2.0	0.35	ug/l	25.0	ND	88	75-130			
1,4-Dichlorobenzene	22.0	2.0	0.37	ug/l	25.0	ND	88	80-120			
1,1-Dichloroethane	21.3	2.0	0.27	ug/l	25.0	ND	85	65-135			
1,2-Dichloroethane	19.6	0.50	0.28	ug/l	25.0	ND	78	60-150			
1,1-Dichloroethene	22.6	5.0	0.32	ug/l	25.0	ND	90	65-140			
trans-1,2-Dichloroethene	22.5	2.0	0.27	ug/l	25.0	ND	90	65-135			
1,2-Dichloropropane	22.1	2.0	0.35	ug/l	25.0	ND	88	65-130			
cis-1,3-Dichloropropene	22.2	2.0	0.22	ug/l	25.0	ND	89	70-140			
trans-1,3-Dichloropropene	21.7	2.0	0.24	ug/l	25.0	ND	87	70-140			
Ethylbenzene	23.3	2.0	0.25	ug/l	25.0	ND	93	70-130			
Methylene chloride	22.7	5.0	0.48	ug/l	25.0	0.95	87	60-135			
1,1,2,2-Tetrachloroethane	22.8	2.0	0.24	ug/l	25.0	ND	91	60-145			
Tetrachloroethene	21.3	2.0	0.32	ug/l	25.0	ND	85	70-130			
Toluene	22.5	2.0	0.36	ug/l	25.0	ND	90	70-120			
1,1,1-Trichloroethane	20.3	2.0	0.30	ug/l	25.0	0.76	78	75-140			
1,1,2-Trichloroethane	20.9	2.0	0.30	ug/l	25.0	ND	84	60-135			
Trichloroethene	22.1	2.0	0.26	ug/l	25.0	0.66	86	70-125			
Trichlorofluoromethane	19.6	5.0	0.34	ug/l	25.0	ND	78	55-145			
Vinyl chloride	21.6	0.50	0.26	ug/l	25.0	ND	86	40-135			
Surrogate: Dibromofluoromethane	24.1			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	25.9			ug/l	25.0		104	80-120			
Surrogate: 4-Bromofluorobenzene	24.6			ug/l	25.0		98	80-120			

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 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B19020 Extracted: 02/19/05</b>											
<b>Matrix Spike Dup Analyzed: 02/19/2005 (5B19020-MSD1)</b>						<b>Source: IOB1556-01</b>					
Benzene	24.4	1.0	0.28	ug/l	25.0	ND	98	70-120	7	20	
Bromodichloromethane	21.5	2.0	0.30	ug/l	25.0	ND	86	70-140	6	20	
Bromoform	22.7	5.0	0.32	ug/l	25.0	ND	91	55-140	12	25	
Bromomethane	24.8	5.0	0.34	ug/l	25.0	ND	99	50-145	8	25	
Carbon tetrachloride	22.1	0.50	0.28	ug/l	25.0	ND	88	70-145	6	25	
Chlorobenzene	23.4	2.0	0.36	ug/l	25.0	ND	94	80-125	7	20	
Chloroethane	23.8	5.0	0.33	ug/l	25.0	ND	95	50-145	7	25	
Chloroform	22.2	2.0	0.33	ug/l	25.0	ND	89	70-135	6	20	
Chloromethane	23.2	5.0	0.30	ug/l	25.0	ND	93	35-145	6	25	
Dibromochloromethane	22.8	2.0	0.28	ug/l	25.0	ND	91	65-145	8	25	
1,2-Dichlorobenzene	23.3	2.0	0.32	ug/l	25.0	ND	93	75-130	5	20	
1,3-Dichlorobenzene	22.9	2.0	0.35	ug/l	25.0	ND	92	75-130	4	20	
1,4-Dichlorobenzene	23.0	2.0	0.37	ug/l	25.0	ND	92	80-120	4	20	
1,1-Dichloroethane	22.5	2.0	0.27	ug/l	25.0	ND	90	65-135	5	20	
1,2-Dichloroethane	23.3	0.50	0.28	ug/l	25.0	ND	93	60-150	17	20	
1,1-Dichloroethene	24.3	5.0	0.32	ug/l	25.0	ND	97	65-140	7	20	
trans-1,2-Dichloroethene	24.0	2.0	0.27	ug/l	25.0	ND	96	65-135	6	20	
1,2-Dichloropropane	23.7	2.0	0.35	ug/l	25.0	ND	95	65-130	7	20	
cis-1,3-Dichloropropene	23.9	2.0	0.22	ug/l	25.0	ND	96	70-140	7	20	
trans-1,3-Dichloropropene	23.7	2.0	0.24	ug/l	25.0	ND	95	70-140	9	25	
Ethylbenzene	24.8	2.0	0.25	ug/l	25.0	ND	99	70-130	6	20	
Methylene chloride	24.2	5.0	0.48	ug/l	25.0	0.95	93	60-135	6	20	
1,1,2,2-Tetrachloroethane	25.3	2.0	0.24	ug/l	25.0	ND	101	60-145	10	30	
Tetrachloroethene	23.0	2.0	0.32	ug/l	25.0	ND	92	70-130	8	20	
Toluene	24.0	2.0	0.36	ug/l	25.0	ND	96	70-120	6	20	
1,1,1-Trichloroethane	21.7	2.0	0.30	ug/l	25.0	0.76	84	75-140	7	20	
1,1,2-Trichloroethane	23.3	2.0	0.30	ug/l	25.0	ND	93	60-135	11	25	
Trichloroethene	23.0	2.0	0.26	ug/l	25.0	0.66	89	70-125	4	20	
Trichlorofluoromethane	20.7	5.0	0.34	ug/l	25.0	ND	83	55-145	5	25	
Vinyl chloride	22.8	0.50	0.26	ug/l	25.0	ND	91	40-135	5	30	
Surrogate: Dibromofluoromethane	24.1			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	25.8			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	24.9			ug/l	25.0		100	80-120			

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Project Manager



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Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B19020 Extracted: 02/19/05</b>											
<b>Blank Analyzed: 02/19/2005 (5B19020-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	24.9			ug/l	25.0		100	80-120			
Surrogate: Toluene-d8	26.8			ug/l	25.0		107	80-120			
Surrogate: 4-Bromofluorobenzene	25.2			ug/l	25.0		101	80-120			
<b>LCS Analyzed: 02/19/2005 (5B19020-BS1)</b>											
2-Chloroethyl vinyl ether	28.8	5.0	1.3	ug/l	25.0		115	20-175			
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120			
Surrogate: Toluene-d8	27.1			ug/l	25.0		108	80-120			
Surrogate: 4-Bromofluorobenzene	25.9			ug/l	25.0		104	80-120			
<b>Matrix Spike Analyzed: 02/19/2005 (5B19020-MS1) Source: IOB1556-01</b>											
2-Chloroethyl vinyl ether	21.2	5.0	1.3	ug/l	25.0	ND	85	20-175			
Surrogate: Dibromofluoromethane	24.1			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	25.9			ug/l	25.0		104	80-120			
Surrogate: 4-Bromofluorobenzene	24.6			ug/l	25.0		98	80-120			
<b>Matrix Spike Dup Analyzed: 02/19/2005 (5B19020-MSD1) Source: IOB1556-01</b>											
2-Chloroethyl vinyl ether	24.9	5.0	1.3	ug/l	25.0	ND	100	20-175	16	25	
Surrogate: Dibromofluoromethane	24.1			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	25.8			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	24.9			ug/l	25.0		100	80-120			

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Michele Harper  
Project Manager



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Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B22043-BLK1)</b>											
Acenaphthene	ND	10	4.3	ug/l							
Acenaphthylene	ND	10	3.2	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	10	3.2	ug/l							
Benzidine	ND	20	5.2	ug/l							
Benzoic acid	ND	20	2.6	ug/l							
Benzo(a)anthracene	ND	10	3.7	ug/l							
Benzo(b)fluoranthene	ND	10	2.7	ug/l							
Benzo(k)fluoranthene	ND	10	3.4	ug/l							
Benzo(g,h,i)perylene	ND	10	5.3	ug/l							
Benzo(a)pyrene	ND	10	3.5	ug/l							
Benzyl alcohol	ND	20	2.5	ug/l							
Bis(2-chloroethoxy)methane	ND	10	3.9	ug/l							
Bis(2-chloroethyl)ether	ND	10	4.4	ug/l							
Bis(2-chloroisopropyl)ether	ND	10	4.6	ug/l							
Bis(2-ethylhexyl)phthalate	ND	50	5.2	ug/l							
4-Bromophenyl phenyl ether	ND	10	4.6	ug/l							
Butyl benzyl phthalate	ND	20	3.5	ug/l							
4-Chloroaniline	ND	10	6.0	ug/l							
2-Chloronaphthalene	ND	10	4.0	ug/l							
4-Chloro-3-methylphenol	ND	20	3.5	ug/l							
2-Chlorophenol	ND	10	4.2	ug/l							
4-Chlorophenyl phenyl ether	ND	10	3.0	ug/l							
Chrysene	ND	10	2.8	ug/l							
Dibenz(a,h)anthracene	ND	20	4.7	ug/l							
Dibenzofuran	ND	10	2.6	ug/l							
Di-n-butyl phthalate	ND	20	2.8	ug/l							
1,3-Dichlorobenzene	ND	10	4.1	ug/l							
1,4-Dichlorobenzene	ND	10	3.9	ug/l							
1,2-Dichlorobenzene	ND	10	4.5	ug/l							
3,3-Dichlorobenzidine	ND	20	11	ug/l							
2,4-Dichlorophenol	ND	10	4.1	ug/l							
Diethyl phthalate	ND	10	3.1	ug/l							
2,4-Dimethylphenol	ND	20	4.4	ug/l							
Dimethyl phthalate	ND	10	3.6	ug/l							

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B22043-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	20	5.1	ug/l							
2,4-Dinitrophenol	ND	20	5.3	ug/l							
2,4-Dinitrotoluene	ND	10	4.2	ug/l							
2,6-Dinitrotoluene	ND	10	3.2	ug/l							
Di-n-octyl phthalate	ND	20	4.7	ug/l							
Fluoranthene	ND	10	4.2	ug/l							
Fluorene	ND	10	3.9	ug/l							
Hexachlorobenzene	ND	10	4.8	ug/l							
Hexachlorobutadiene	ND	10	4.2	ug/l							
Hexachlorocyclopentadiene	ND	20	3.4	ug/l							
Hexachloroethane	ND	10	4.2	ug/l							
Indeno(1,2,3-cd)pyrene	ND	20	5.4	ug/l							
Isophorone	ND	10	3.7	ug/l							
2-Methylnaphthalene	ND	10	3.0	ug/l							
2-Methylphenol	ND	10	3.7	ug/l							
4-Methylphenol	ND	10	3.8	ug/l							
Naphthalene	ND	10	4.5	ug/l							
2-Nitroaniline	ND	20	3.9	ug/l							
3-Nitroaniline	ND	20	4.5	ug/l							
4-Nitroaniline	ND	20	4.9	ug/l							
Nitrobenzene	ND	20	4.2	ug/l							
2-Nitrophenol	ND	10	4.2	ug/l							
4-Nitrophenol	ND	20	6.6	ug/l							
N-Nitrosodiphenylamine	ND	10	4.0	ug/l							
N-Nitroso-di-n-propylamine	ND	10	3.6	ug/l							
Pentachlorophenol	ND	20	4.0	ug/l							
Phenanthrene	ND	10	3.3	ug/l							
Phenol	ND	10	4.0	ug/l							
Pyrene	ND	10	3.9	ug/l							
1,2,4-Trichlorobenzene	ND	10	4.4	ug/l							
2,4,5-Trichlorophenol	ND	20	3.6	ug/l							
2,4,6-Trichlorophenol	ND	20	4.1	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	20	5.0	ug/l							
N-Nitrosodimethylamine	ND	20	3.7	ug/l							
Surrogate: 2-Fluorophenol	138			ug/l	200		69	35-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B22043-BLK1)</b>											
Surrogate: Phenol-d6	144			ug/l	200		72	45-120			
Surrogate: 2,4,6-Tribromophenol	162			ug/l	200		81	50-125			
Surrogate: Nitrobenzene-d5	76.2			ug/l	100		76	45-120			
Surrogate: 2-Fluorobiphenyl	79.8			ug/l	100		80	45-120			
Surrogate: Terphenyl-d14	70.2			ug/l	100		70	45-135			
<b>LCS Analyzed: 02/25/2005 (5B22043-BS1)</b>											
Acenaphthene	83.1	10	4.3	ug/l	100		83	55-120			M-NR1
Acenaphthylene	82.0	10	3.2	ug/l	100		82	55-120			
Aniline	78.1	10	2.9	ug/l	100		78	30-120			
Anthracene	86.0	10	3.2	ug/l	100		86	60-120			
Benzidine	150	20	5.2	ug/l	100		150	20-180			
Benzoic acid	68.1	20	2.6	ug/l	100		68	30-125			
Benzo(a)anthracene	82.9	10	3.7	ug/l	100		83	65-120			
Benzo(b)fluoranthene	84.5	10	2.7	ug/l	100		84	50-125			
Benzo(k)fluoranthene	89.6	10	3.4	ug/l	100		90	50-125			
Benzo(g,h,i)perylene	74.4	10	5.3	ug/l	100		74	35-160			
Benzo(a)pyrene	86.0	10	3.5	ug/l	100		86	55-125			
Benzyl alcohol	79.2	20	2.5	ug/l	100		79	40-130			
Bis(2-chloroethoxy)methane	82.5	10	3.9	ug/l	100		82	55-120			
Bis(2-chloroethyl)ether	68.6	10	4.4	ug/l	100		69	50-120			
Bis(2-chloroisopropyl)ether	77.4	10	4.6	ug/l	100		77	50-120			
Bis(2-ethylhexyl)phthalate	75.0	50	5.2	ug/l	100		75	65-125			
4-Bromophenyl phenyl ether	78.0	10	4.6	ug/l	100		78	55-125			
Butyl benzyl phthalate	79.3	20	3.5	ug/l	100		79	60-125			
4-Chloroaniline	80.4	10	6.0	ug/l	100		80	55-120			
2-Chloronaphthalene	80.9	10	4.0	ug/l	100		81	60-120			
4-Chloro-3-methylphenol	83.6	20	3.5	ug/l	100		84	60-120			
2-Chlorophenol	72.0	10	4.2	ug/l	100		72	45-120			
4-Chlorophenyl phenyl ether	80.7	10	3.0	ug/l	100		81	55-120			
Chrysene	83.0	10	2.8	ug/l	100		83	65-120			
Dibenz(a,h)anthracene	75.5	20	4.7	ug/l	100		76	40-160			
Dibenzofuran	81.1	10	2.6	ug/l	100		81	60-120			
Di-n-butyl phthalate	83.2	20	2.8	ug/l	100		83	65-125			
1,3-Dichlorobenzene	65.5	10	4.1	ug/l	100		66	40-120			
1,4-Dichlorobenzene	64.8	10	3.9	ug/l	100		65	40-120			

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 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>LCS Analyzed: 02/25/2005 (5B22043-BS1)</b>											
1,2-Dichlorobenzene	66.6	10	4.5	ug/l	100		67	40-120			M-NRI
3,3-Dichlorobenzidine	85.5	20	11	ug/l	100		86	50-170			
2,4-Dichlorophenol	80.7	10	4.1	ug/l	100		81	55-120			
Diethyl phthalate	78.4	10	3.1	ug/l	100		78	60-120			
2,4-Dimethylphenol	71.1	20	4.4	ug/l	100		71	35-120			
Dimethyl phthalate	78.0	10	3.6	ug/l	100		78	60-120			
4,6-Dinitro-2-methylphenol	77.3	20	5.1	ug/l	100		77	55-120			
2,4-Dinitrophenol	75.1	20	5.3	ug/l	100		75	40-140			
2,4-Dinitrotoluene	81.1	10	4.2	ug/l	100		81	60-140			
2,6-Dinitrotoluene	77.9	10	3.2	ug/l	100		78	65-125			
Di-n-octyl phthalate	68.3	20	4.7	ug/l	100		68	60-130			
Fluoranthene	86.3	10	4.2	ug/l	100		86	55-125			
Fluorene	83.9	10	3.9	ug/l	100		84	60-120			
Hexachlorobenzene	84.1	10	4.8	ug/l	100		84	50-120			
Hexachlorobutadiene	70.9	10	4.2	ug/l	100		71	45-120			
Hexachlorocyclopentadiene	69.3	20	3.4	ug/l	100		69	10-130			
Hexachloroethane	64.4	10	4.2	ug/l	100		64	40-120			
Indeno(1,2,3-cd)pyrene	71.9	20	5.4	ug/l	100		72	35-150			
Isophorone	75.7	10	3.7	ug/l	100		76	55-120			
2-Methylnaphthalene	80.5	10	3.0	ug/l	100		80	50-120			
2-Methylphenol	72.7	10	3.7	ug/l	100		73	45-120			
4-Methylphenol	75.3	10	3.8	ug/l	100		75	45-120			
Naphthalene	78.3	10	4.5	ug/l	100		78	50-120			
2-Nitroaniline	84.0	20	3.9	ug/l	100		84	60-130			
3-Nitroaniline	87.2	20	4.5	ug/l	100		87	50-140			
4-Nitroaniline	89.5	20	4.9	ug/l	100		90	45-160			
Nitrobenzene	72.3	20	4.2	ug/l	100		72	50-120			
2-Nitrophenol	79.1	10	4.2	ug/l	100		79	55-120			
4-Nitrophenol	74.9	20	6.6	ug/l	100		75	50-135			
N-Nitrosodiphenylamine	77.6	10	4.0	ug/l	100		78	60-120			
N-Nitroso-di-n-propylamine	73.9	10	3.6	ug/l	100		74	50-120			
Pentachlorophenol	88.3	20	4.0	ug/l	100		88	50-125			
Phenanthrene	84.1	10	3.3	ug/l	100		84	55-120			
Phenol	72.3	10	4.0	ug/l	100		72	45-120			
Pyrene	81.6	10	3.9	ug/l	100		82	50-120			

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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>LCS Analyzed: 02/25/2005 (5B22043-BS1)</b>											
1,2,4-Trichlorobenzene	70.3	10	4.4	ug/l	100		70	50-120			M-NR1
2,4,5-Trichlorophenol	83.4	20	3.6	ug/l	100		83	60-120			
2,4,6-Trichlorophenol	81.7	20	4.1	ug/l	100		82	60-120			
1,2-Diphenylhydrazine/Azobenzene	84.6	20	5.0	ug/l	100		85	60-120			
N-Nitrosodimethylamine	73.1	20	3.7	ug/l	100		73	40-120			
Surrogate: 2-Fluorophenol	132			ug/l	200		66	35-120			
Surrogate: Phenol-d6	142			ug/l	200		71	45-120			
Surrogate: 2,4,6-Tribromophenol	166			ug/l	200		83	50-125			
Surrogate: Nitrobenzene-d5	75.9			ug/l	100		76	45-120			
Surrogate: 2-Fluorobiphenyl	77.6			ug/l	100		78	45-120			
Surrogate: Terphenyl-d14	76.0			ug/l	100		76	45-135			
<b>LCS Dup Analyzed: 02/25/2005 (5B22043-BS1)</b>											
Acenaphthene	77.9	10	4.3	ug/l	100		78	55-120	6	20	
Acenaphthylene	78.7	10	3.2	ug/l	100		79	55-120	4	20	
Aniline	62.7	10	2.9	ug/l	100		63	30-120	22	25	
Anthracene	83.5	10	3.2	ug/l	100		84	60-120	3	20	
Benzidine	ND	20	5.2	ug/l	100			20-180		35	L2
Benzoic acid	61.0	20	2.6	ug/l	100		61	30-125	11	30	
Benzo(a)anthracene	80.9	10	3.7	ug/l	100		81	65-120	2	20	
Benzo(b)fluoranthene	80.1	10	2.7	ug/l	100		80	50-125	5	25	
Benzo(k)fluoranthene	80.7	10	3.4	ug/l	100		81	50-125	10	20	
Benzo(g,h,i)perylene	86.3	10	5.3	ug/l	100		86	35-160	15	25	
Benzo(a)pyrene	80.9	10	3.5	ug/l	100		81	55-125	6	25	
Benzyl alcohol	78.0	20	2.5	ug/l	100		78	40-130	2	20	
Bis(2-chloroethoxy)methane	78.3	10	3.9	ug/l	100		78	55-120	5	20	
Bis(2-chloroethyl)ether	66.9	10	4.4	ug/l	100		67	50-120	3	20	
Bis(2-chloroisopropyl)ether	76.3	10	4.6	ug/l	100		76	50-120	1	20	
Bis(2-ethylhexyl)phthalate	69.6	50	5.2	ug/l	100		70	65-125	7	20	
4-Bromophenyl phenyl ether	75.9	10	4.6	ug/l	100		76	55-125	3	25	
Butyl benzyl phthalate	85.0	20	3.5	ug/l	100		85	60-125	7	20	
4-Chloroaniline	73.7	10	6.0	ug/l	100		74	55-120	9	25	
2-Chloronaphthalene	78.3	10	4.0	ug/l	100		78	60-120	3	20	
4-Chloro-3-methylphenol	75.8	20	3.5	ug/l	100		76	60-120	10	25	
2-Chlorophenol	70.2	10	4.2	ug/l	100		70	45-120	3	25	
4-Chlorophenyl phenyl ether	79.3	10	3.0	ug/l	100		79	55-120	2	20	

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting		Spike	Source	%REC		RPD	RPD	Data
		Limit	MDL			Units	Level			
<b>Batch: 5B22043 Extracted: 02/22/05</b>										
<b>LCS Dup Analyzed: 02/25/2005 (5B22043-BSD1)</b>										
Chrysene	81.6	10	2.8	ug/l	100	82	65-120	2	20	
Dibenz(a,h)anthracene	86.3	20	4.7	ug/l	100	86	40-160	13	25	
Dibenzofuran	77.5	10	2.6	ug/l	100	78	60-120	5	20	
Di-n-butyl phthalate	80.8	20	2.8	ug/l	100	81	65-125	3	20	
1,3-Dichlorobenzene	64.4	10	4.1	ug/l	100	64	40-120	2	25	
1,4-Dichlorobenzene	63.4	10	3.9	ug/l	100	63	40-120	2	25	
1,2-Dichlorobenzene	65.7	10	4.5	ug/l	100	66	40-120	1	25	
3,3-Dichlorobenzidine	76.3	20	11	ug/l	100	76	50-170	11	25	
2,4-Dichlorophenol	75.1	10	4.1	ug/l	100	75	55-120	7	20	
Diethyl phthalate	76.4	10	3.1	ug/l	100	76	60-120	3	20	
2,4-Dimethylphenol	67.0	20	4.4	ug/l	100	67	35-120	6	25	
Dimethyl phthalate	75.1	10	3.6	ug/l	100	75	60-120	4	20	
4,6-Dinitro-2-methylphenol	76.9	20	5.1	ug/l	100	77	55-120	1	25	
2,4-Dinitrophenol	70.5	20	5.3	ug/l	100	70	40-140	6	25	
2,4-Dinitrotoluene	77.8	10	4.2	ug/l	100	78	60-140	4	20	
2,6-Dinitrotoluene	75.3	10	3.2	ug/l	100	75	65-125	3	20	
Di-n-octyl phthalate	64.0	20	4.7	ug/l	100	64	60-130	7	20	
Fluoranthene	80.3	10	4.2	ug/l	100	80	55-125	7	20	
Fluorene	80.1	10	3.9	ug/l	100	80	60-120	5	20	
Hexachlorobenzene	79.9	10	4.8	ug/l	100	80	50-120	5	20	
Hexachlorobutadiene	67.7	10	4.2	ug/l	100	68	45-120	5	25	
Hexachlorocyclopentadiene	66.0	20	3.4	ug/l	100	66	10-130	5	30	
Hexachloroethane	63.8	10	4.2	ug/l	100	64	40-120	1	25	
Indeno(1,2,3-cd)pyrene	81.8	20	5.4	ug/l	100	82	35-150	13	25	
Isophorone	71.9	10	3.7	ug/l	100	72	55-120	5	20	
2-Methylnaphthalene	74.5	10	3.0	ug/l	100	74	50-120	8	20	
2-Methylphenol	71.4	10	3.7	ug/l	100	71	45-120	2	20	
4-Methylphenol	73.1	10	3.8	ug/l	100	73	45-120	3	20	
Naphthalene	75.6	10	4.5	ug/l	100	76	50-120	4	20	
2-Nitroaniline	80.5	20	3.9	ug/l	100	80	60-130	4	20	
3-Nitroaniline	81.1	20	4.5	ug/l	100	81	50-140	7	25	
4-Nitroaniline	79.5	20	4.9	ug/l	100	80	45-160	12	20	
Nitrobenzene	70.4	20	4.2	ug/l	100	70	50-120	3	25	
2-Nitrophenol	75.4	10	4.2	ug/l	100	75	55-120	5	25	
4-Nitrophenol	65.8	20	6.6	ug/l	100	66	50-135	13	25	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22043 Extracted: 02/22/05</b>											
<b>LCS Dup Analyzed: 02/25/2005 (5B22043-BSD1)</b>											
N-Nitrosodiphenylamine	76.4	10	4.0	ug/l	100	76	60-120	2	20		
N-Nitroso-di-n-propylamine	70.3	10	3.6	ug/l	100	70	50-120	5	20		
Pentachlorophenol	83.9	20	4.0	ug/l	100	84	50-125	5	25		
Phenanthrene	80.8	10	3.3	ug/l	100	81	55-120	4	20		
Phenol	70.0	10	4.0	ug/l	100	70	45-120	3	25		
Pyrene	98.6	10	3.9	ug/l	100	99	50-120	19	25		
1,2,4-Trichlorobenzene	66.9	10	4.4	ug/l	100	67	50-120	5	20		
2,4,5-Trichlorophenol	76.7	20	3.6	ug/l	100	77	60-120	8	20		
2,4,6-Trichlorophenol	77.8	20	4.1	ug/l	100	78	60-120	5	20		
1,2-Diphenylhydrazine/Azobenzene	81.0	20	5.0	ug/l	100	81	60-120	4	25		
N-Nitrosodimethylamine	70.7	20	3.7	ug/l	100	71	40-120	3	20		
Surrogate: 2-Fluorophenol	126			ug/l	200	63	35-120				
Surrogate: Phenol-d6	137			ug/l	200	68	45-120				
Surrogate: 2,4,6-Tribromophenol	162			ug/l	200	81	50-125				
Surrogate: Nitrobenzene-d5	71.8			ug/l	100	72	45-120				
Surrogate: 2-Fluorobiphenyl	75.7			ug/l	100	76	45-120				
Surrogate: Terphenyl-d14	87.9			ug/l	100	88	45-135				

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

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 Received: 02/18/05

**METHOD BLANK/QC DATA**

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
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**Batch: 5B22041 Extracted: 02/22/05**

**Blank Analyzed: 02/23/2005 (5B22041-BLK1)**

Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.015	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.015	ug/l						
4,4'-DDE	ND	0.10	0.020	ug/l						
4,4'-DDT	ND	0.10	0.030	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.015	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.389			ug/l	0.500		78	35-120		
Surrogate: Decachlorobiphenyl	0.441			ug/l	0.500		88	45-120		

**LCS Analyzed: 02/23/2005 (5B22041-BS1)**

Aldrin	0.415	0.10	0.030	ug/l	0.500		83	45-115		M-NRI
alpha-BHC	0.450	0.10	0.015	ug/l	0.500		90	45-115		
beta-BHC	0.420	0.10	0.015	ug/l	0.500		84	50-115		
delta-BHC	0.435	0.20	0.020	ug/l	0.500		87	55-120		
gamma-BHC (Lindane)	0.453	0.10	0.015	ug/l	0.500		91	45-115		
4,4'-DDD	0.505	0.10	0.015	ug/l	0.500		101	60-120		
4,4'-DDE	0.478	0.10	0.020	ug/l	0.500		96	55-120		
4,4'-DDT	0.481	0.10	0.030	ug/l	0.500		96	60-130		
Dieldrin	0.466	0.10	0.015	ug/l	0.500		93	55-120		
Endosulfan I	0.437	0.10	0.015	ug/l	0.500		87	50-115		
Endosulfan II	0.459	0.10	0.040	ug/l	0.500		92	60-125		
Endosulfan sulfate	0.466	0.20	0.015	ug/l	0.500		93	60-120		

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22041 Extracted: 02/22/05</b>											
<b>LCS Analyzed: 02/23/2005 (5B22041-BS1)</b>											
Endrin	0.518	0.10	0.015	ug/l	0.500		104	55-125			M-NR1
Endrin aldehyde	0.444	0.10	0.045	ug/l	0.500		89	55-115			
Endrin ketone	0.457	0.10	0.020	ug/l	0.500		91	60-120			
Heptachlor	0.443	0.10	0.030	ug/l	0.500		89	45-115			
Heptachlor epoxide	0.425	0.10	0.020	ug/l	0.500		85	50-120			
Methoxychlor	0.525	0.10	0.035	ug/l	0.500		105	60-135			
Surrogate: Tetrachloro-m-xylene	0.381			ug/l	0.500		76	35-120			
Surrogate: Decachlorobiphenyl	0.440			ug/l	0.500		88	45-120			
<b>LCS Dup Analyzed: 02/23/2005 (5B22041-BSD1)</b>											
Aldrin	0.371	0.10	0.030	ug/l	0.500		74	45-115	11	30	
alpha-BHC	0.449	0.10	0.015	ug/l	0.500		90	45-115	0	30	
beta-BHC	0.419	0.10	0.015	ug/l	0.500		84	50-115	0	30	
delta-BHC	0.432	0.20	0.020	ug/l	0.500		86	55-120	1	30	
gamma-BHC (Lindane)	0.452	0.10	0.015	ug/l	0.500		90	45-115	0	30	
4,4'-DDD	0.496	0.10	0.015	ug/l	0.500		99	60-120	2	30	
4,4'-DDE	0.472	0.10	0.020	ug/l	0.500		94	55-120	1	30	
4,4'-DDT	0.481	0.10	0.030	ug/l	0.500		96	60-130	0	30	
Dieldrin	0.459	0.10	0.015	ug/l	0.500		92	55-120	2	30	
Endosulfan I	0.436	0.10	0.015	ug/l	0.500		87	50-115	0	30	
Endosulfan II	0.443	0.10	0.040	ug/l	0.500		89	60-125	4	30	
Endosulfan sulfate	0.461	0.20	0.015	ug/l	0.500		92	60-120	1	30	
Endrin	0.509	0.10	0.015	ug/l	0.500		102	55-125	2	30	
Endrin aldehyde	0.440	0.10	0.045	ug/l	0.500		88	55-115	1	30	
Endrin ketone	0.450	0.10	0.020	ug/l	0.500		90	60-120	2	30	
Heptachlor	0.446	0.10	0.030	ug/l	0.500		89	45-115	1	30	
Heptachlor epoxide	0.431	0.10	0.020	ug/l	0.500		86	50-120	1	30	
Methoxychlor	0.533	0.10	0.035	ug/l	0.500		107	60-135	2	30	
Surrogate: Tetrachloro-m-xylene	0.384			ug/l	0.500		77	35-120			
Surrogate: Decachlorobiphenyl	0.442			ug/l	0.500		88	45-120			

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

**METHOD BLANK/QC DATA**

**TOTAL PCBS (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22041 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/23/2005 (5B22041-BLK1)</b>											
Aroclor 1016	ND	1.0	0.20	ug/l							
Aroclor 1221	ND	1.0	0.10	ug/l							
Aroclor 1232	ND	1.0	0.15	ug/l							
Aroclor 1242	ND	1.0	0.15	ug/l							
Aroclor 1248	ND	1.0	0.25	ug/l							
Aroclor 1254	ND	1.0	0.25	ug/l							
Aroclor 1260	ND	1.0	0.40	ug/l							
Surrogate: Decachlorobiphenyl	0.340			ug/l	0.500		68	45-120			
<b>LCS Analyzed: 02/23/2005 (5B22041-BS2)</b>											
Aroclor 1016	2.62	1.0	0.20	ug/l	4.00		66	50-115			M-NRI
Aroclor 1260	2.49	1.0	0.40	ug/l	4.00		62	60-115			
Surrogate: Decachlorobiphenyl	0.312			ug/l	0.500		62	45-120			
<b>LCS Dup Analyzed: 02/23/2005 (5B22041-BSD2)</b>											
Aroclor 1016	2.91	1.0	0.20	ug/l	4.00		73	50-115	10	30	
Aroclor 1260	2.67	1.0	0.40	ug/l	4.00		67	60-115	7	25	
Surrogate: Decachlorobiphenyl	0.418			ug/l	0.500		84	45-120			

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 Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5B22063 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/22/2005 (5B22063-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 02/22/2005 (5B22063-BS1)</b>											
Mercury	8.32	0.20	0.063	ug/l	8.00		104	85-115			
<b>Matrix Spike Analyzed: 02/22/2005 (5B22063-MS1)</b>											
Mercury	8.36	0.20	0.063	ug/l	8.00	0.074	104	70-130			
<b>Matrix Spike Dup Analyzed: 02/22/2005 (5B22063-MSD1)</b>											
Mercury	8.38	0.20	0.063	ug/l	8.00	0.074	104	70-130	0	20	
<b>Batch: 5B24093 Extracted: 02/24/05</b>											
<b>Blank Analyzed: 02/25/2005-02/26/2005 (5B24093-BLK1)</b>											
Aluminum	ND	50	47	ug/l							
Arsenic	ND	5.0	3.8	ug/l							
Beryllium	ND	2.0	0.62	ug/l							
Boron	ND	0.050	0.0074	mg/l							
Chromium	ND	5.0	0.68	ug/l							
Nickel	ND	10	2.0	ug/l							
Selenium	ND	5.0	4.6	ug/l							
Silver	ND	10	1.3	ug/l							
Vanadium	ND	10	1.4	ug/l							
Zinc	7.80	20	3.7	ug/l							
<b>LCS Analyzed: 02/25/2005-02/26/2005 (5B24093-BS1)</b>											
Aluminum	461	50	47	ug/l	500		92	85-115			
Arsenic	497	5.0	3.8	ug/l	500		99	85-115			
Beryllium	504	2.0	0.62	ug/l	500		101	85-115			
Boron	0.468	0.050	0.0074	mg/l	0.500		94	85-115			
Chromium	492	5.0	0.68	ug/l	500		98	85-115			
Nickel	488	10	2.0	ug/l	500		98	85-115			
Selenium	481	5.0	4.6	ug/l	500		96	85-115			
Silver	251	10	1.3	ug/l	250		100	85-115			
Vanadium	504	10	1.4	ug/l	500		101	85-115			
Zinc	490	20	3.7	ug/l	500		98	85-115			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
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**Batch: 5B24093 Extracted: 02/24/05**

**Matrix Spike Analyzed: 02/25/2005-02/26/2005 (5B24093-MS1)**

Source: IOB1547-01

Aluminum	1250	50	47	ug/l	500	410	168	70-130			MI
Arsenic	515	5.0	3.8	ug/l	500	5.4	102	70-130			
Beryllium	520	2.0	0.62	ug/l	500	ND	104	70-130			
Boron	0.562	0.050	0.0074	mg/l	0.500	0.053	102	70-130			
Chromium	506	5.0	0.68	ug/l	500	ND	101	70-130			
Nickel	512	10	2.0	ug/l	500	ND	102	70-130			
Selenium	493	5.0	4.6	ug/l	500	ND	99	70-130			
Silver	250	10	1.3	ug/l	250	ND	100	70-130			
Vanadium	520	10	1.4	ug/l	500	3.1	103	70-130			
Zinc	521	20	3.7	ug/l	500	ND	104	70-130			

**Matrix Spike Dup Analyzed: 02/25/2005-02/26/2005 (5B24093-MSD1)**

Source: IOB1547-01

Aluminum	1300	50	47	ug/l	500	410	178	70-130	4	20	MI
Arsenic	527	5.0	3.8	ug/l	500	5.4	104	70-130	2	20	
Beryllium	525	2.0	0.62	ug/l	500	ND	105	70-130	1	20	
Boron	0.571	0.050	0.0074	mg/l	0.500	0.053	104	70-130	2	20	
Chromium	509	5.0	0.68	ug/l	500	ND	102	70-130	1	20	
Nickel	513	10	2.0	ug/l	500	ND	103	70-130	0	20	
Selenium	495	5.0	4.6	ug/l	500	ND	99	70-130	0	20	
Silver	251	10	1.3	ug/l	250	ND	100	70-130	0	20	
Vanadium	525	10	1.4	ug/l	500	3.1	104	70-130	1	20	
Zinc	523	20	3.7	ug/l	500	ND	105	70-130	0	20	

**Batch: 5B24099 Extracted: 02/24/05**

**Blank Analyzed: 02/25/2005-02/26/2005 (5B24099-BLK1)**

Antimony	ND	2.0	0.18	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Copper	ND	2.0	0.49	ug/l							
Lead	ND	1.0	0.13	ug/l							
Thallium	ND	1.0	0.075	ug/l							

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B24099 Extracted: 02/24/05</b>											
<b>LCS Analyzed: 02/25/2005 (5B24099-BS1)</b>											
Antimony	85.6	2.0	0.18	ug/l	80.0		107	85-115			
Cadmium	76.4	1.0	0.015	ug/l	80.0		96	85-115			
Copper	84.0	2.0	0.49	ug/l	80.0		105	85-115			
Lead	80.3	1.0	0.13	ug/l	80.0		100	85-115			
Thallium	78.5	1.0	0.075	ug/l	80.0		98	85-115			
<b>Matrix Spike Analyzed: 02/25/2005 (5B24099-MS1) Source: IOB1490-01</b>											
Antimony	85.7	2.0	0.18	ug/l	80.0	0.50	106	70-130			
Cadmium	75.1	1.0	0.015	ug/l	80.0	0.016	94	70-130			
Copper	82.5	2.0	0.49	ug/l	80.0	1.0	102	70-130			
Lead	77.6	1.0	0.13	ug/l	80.0	ND	97	70-130			
Thallium	76.5	1.0	0.075	ug/l	80.0	0.17	95	70-130			
<b>Matrix Spike Analyzed: 02/25/2005 (5B24099-MS2) Source: IOB1557-01</b>											
Antimony	83.8	2.0	0.18	ug/l	80.0	0.20	104	70-130			
Cadmium	74.6	1.0	0.015	ug/l	80.0	ND	93	70-130			
Copper	83.9	2.0	0.49	ug/l	80.0	ND	105	70-130			
Lead	77.7	1.0	0.13	ug/l	80.0	0.15	97	70-130			
Thallium	76.7	1.0	0.075	ug/l	80.0	0.19	96	70-130			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B24099-MSD1) Source: IOB1490-01</b>											
Antimony	85.0	2.0	0.18	ug/l	80.0	0.50	106	70-130	1	20	
Cadmium	75.2	1.0	0.015	ug/l	80.0	0.016	94	70-130	0	20	
Copper	81.2	2.0	0.49	ug/l	80.0	1.0	100	70-130	2	20	
Lead	76.3	1.0	0.13	ug/l	80.0	ND	95	70-130	2	20	
Thallium	75.2	1.0	0.075	ug/l	80.0	0.17	94	70-130	2	20	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B18129 Extracted: 02/18/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B18129-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.11	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 02/18/2005 (5B18129-BS1)</b>											
Chloride	5.11	0.50	0.26	mg/l	5.00		102	90-110			
Sulfate	10.6	0.50	0.18	mg/l	10.0		106	90-110			
<b>Matrix Spike Analyzed: 02/18/2005 (5B18129-MS1)</b>											
						<b>Source: IOB1556-01</b>					
Chloride	7.47	0.50	0.26	mg/l	5.00	2.1	107	80-120			
Sulfate	15.3	0.50	0.18	mg/l	10.0	4.7	106	80-120			
<b>Matrix Spike Dup Analyzed: 02/18/2005 (5B18129-MSD1)</b>											
						<b>Source: IOB1556-01</b>					
Chloride	7.43	0.50	0.26	mg/l	5.00	2.1	107	80-120	1	20	
Sulfate	14.3	0.50	0.18	mg/l	10.0	4.7	96	80-120	7	20	
<b>Batch: 5B23082 Extracted: 02/23/05</b>											
<b>Blank Analyzed: 02/23/2005 (5B23082-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 02/23/2005 (5B23082-BS1)</b>											
Oil & Grease	15.9	5.0	0.94	mg/l	20.0		80	65-120			M-NR1
<b>LCS Dup Analyzed: 02/23/2005 (5B23082-BSD1)</b>											
Oil & Grease	16.5	5.0	0.94	mg/l	20.0		82	65-120	4	20	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B23086 Extracted: 02/23/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B23086-BLK1)</b>											
Total Cyanide	ND	0.0050	0.0022	mg/l							
<b>LCS Analyzed: 02/25/2005 (5B23086-BS1)</b>											
Total Cyanide	0.197	0.0050	0.0022	mg/l	0.200		98	90-110			
<b>Matrix Spike Analyzed: 02/25/2005 (5B23086-MS1)</b>											
						<b>Source: IOB1522-01</b>					
Total Cyanide	0.206	0.0050	0.0022	mg/l	0.200	0.025	90	70-115			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B23086-MSD1)</b>											
						<b>Source: IOB1522-01</b>					
Total Cyanide	0.206	0.0050	0.0022	mg/l	0.200	0.025	90	70-115	0	15	
<b>Batch: 5B24111 Extracted: 02/24/05</b>											
<b>Blank Analyzed: 02/24/2005 (5B24111-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/24/2005 (5B24111-BS1)</b>											
Total Dissolved Solids	976	10	10	mg/l	1000		98	90-110			
<b>Duplicate Analyzed: 02/24/2005 (5B24111-DUP1)</b>											
						<b>Source: IOB1821-01</b>					
Total Dissolved Solids	374	10	10	mg/l		380			2	10	
<b>Batch: 5B25064 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B25064-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25064 Extracted: 02/25/05</b>											
<b>LCS Analyzed: 02/25/2005 (5B25064-BS1)</b>											
Perchlorate	48.4	4.0	0.80	ug/l	50.0		97	85-115			
<b>Matrix Spike Analyzed: 02/25/2005 (5B25064-MS1)</b>											
Perchlorate	51.3	4.0	0.80	ug/l	50.0	1.5	100	80-120			
<b>Matrix Spike Dup Analyzed: 02/26/2005 (5B25064-MSD1)</b>											
Perchlorate	51.4	4.0	0.80	ug/l	50.0	1.5	100	80-120	0	20	
<b>Batch: 5B25089 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B25089-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/25/2005 (5B25089-BS1)</b>											
Total Suspended Solids	956	10	10	mg/l	1000		96	85-115			
<b>Duplicate Analyzed: 02/25/2005 (5B25089-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l						10	

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOB1571-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.20	5.0	15
IOB1571-01	Antimony-200.8	Antimony	ug/l	0.20	2.0	6.00
IOB1571-01	Boron-200.7	Boron	mg/l	0.045	0.050	1.00
IOB1571-01	Cadmium-200.8	Cadmium	ug/l	0.019	1.0	4.00
IOB1571-01	Chloride - 300.0	Chloride	mg/l	4.90	0.50	150
IOB1571-01	Copper-200.8	Copper	ug/l	3.30	2.0	14
IOB1571-01	Mercury - 245.1	Mercury	ug/l	0.056	0.20	0.20
IOB1571-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.22	0.11	10.00
IOB1571-01	Perchlorate 314.0	Perchlorate	ug/l	0	4.0	6.00
IOB1571-01	Sulfate-300.0	Sulfate	mg/l	9.70	0.50	250
IOB1571-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	130	10	850
IOB1571-01	Thallium-200.8	Thallium	ug/l	0.019	1.0	2.00

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M1** The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
 Received: 02/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 160.2	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 335.2	Water	X	X
EPA 413.1	Water	X	X
EPA 608	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
SM2540C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).

### Subcontracted Laboratories

#### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOB1571-01

Analysis Performed: EDD + Level 4  
 Samples: IOB1571-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
 Samples: IOB1571-01

#### Eberline Services - SUB

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
 Samples: IOB1571-01

Analysis Performed: Gross Alpha  
 Samples: IOB1571-01

Analysis Performed: Gross Beta  
 Samples: IOB1571-01

Analysis Performed: Radium, Combined  
 Samples: IOB1571-01

Analysis Performed: Strontium 90  
 Samples: IOB1571-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IOB1571

Sampled: 02/18/05  
Received: 02/18/05

## Eberline Services - SUB

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Tritium  
Samples: IOB1571-01

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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IOB1571 <Page 39 of 39>

DOB 1571

**CHAIN OF CUSTODY FORM**

Version 5 8/12/04

Client Name/Address:				Project:				ANALYSIS REQUIRED										Field readings:												
Del Mar Analytical MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: <i>Paloch</i>				Boeing-SSFL NPDES Annual Outfall 003 Stormwater at RMHF Phone Number: (626) 568-6691 Fax Number: (626) 568-6515				Total Recoverable Metals:		Oil & Grease (EPA 413.1)		Cl-, SO4, NO3+NO2-N, Perchlorate		TDS, TSS		VOCs (624), NPDES + PP		VOCs A+A+2C+E		Pesticides/PCBs - PP		Gross Alpha, Gross Beta, Tritium (906.0*, Sr-90 Radium 226 & 228		SVOCs - PP		Acute Toxicity		Cyanide		
								Sb, Cd, Cu, Pb, Hg, B, V, Al, + PP		TCDD (and all congeners)		Oil & Grease (EPA 413.1)		Cl-, SO4, NO3+NO2-N, Perchlorate		TDS, TSS		VOCs (624), NPDES + PP		VOCs A+A+2C+E		Pesticides/PCBs - PP		Gross Alpha, Gross Beta, Tritium (906.0*, Sr-90 Radium 226 & 228		SVOCs - PP		Acute Toxicity		Cyanide
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	1A	1B	2A, 2B	3A, 3B	4A, 4B	5A, 5B	6A, 6B, 6C	7A, 7B, 7C	8A, 8B	9A, 9B, 9C	10A, 10B	11A	12	13A, 13B, 13C	14A, 14B, 14C	Turn around Time: (check)		Metals Only 72 Hours		Sample Integrity: (Check)				
Outfall 003	W	1L Poly	1	2-8-05 12:35	HNO3	1A	X																24 Hours	5 Days	72 Hours	Normal	Intact	On Ice		
Outfall 003-Dup	W	1L Poly	1		HNO3	1B	X																48 Hours	10 Days						
Outfall 003	W	1L Amber	2		None	2A, 2B																	72 Hours							
Outfall 003	W	1L Amber	2		HCl	3A, 3B			X														Perchlorate Only 72 Hours							
Outfall 003	W	Poly-500 ml	2		None	4A, 4B				X													Metals Only 72 Hours							
Outfall 003	W	Poly-500 ml	2		None	5A, 5B					X																			
Outfall 003	W	VOAs	3		HCl	6A, 6B, 6C																								
Outfall 003	W	VOA	3		None	7A, 7B, 7C						X																		
Outfall 003	W	1L Amber	2		None	8A, 8B																								
Outfall 003	W	1 Gal Poly VOAs	2		None	9A, 9B, 9C																								
Outfall 003	W	1L Amber	2		None	10A, 10B																								
Outfall 003	W	1 Gal Poly	1		None	11A																								
Outfall 003	W	500ml Poly	1		NaOH	12																								
Trip Blanks	W	VOA	3		None	13A, 13B, 13C																								
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C																								
Relinquished By				Date/Time:	Received By	Date/Time:											Turn around Time: (check)		Metals Only 72 Hours		Sample Integrity: (Check)									
<i>Paloch</i>				2-8-05 1450	<i>Paloch</i>	2-18-05 1450											5 Days		Normal		Intact									
Relinquished By				Date/Time:	Received By	Date/Time:											48 Hours		Perchlorate Only 72 Hours		Sample Integrity: (Check)									
<i>Paloch</i>				2-8-05 1830	<i>Paloch</i>	2-18-05 1830											10 Days		Metals Only 72 Hours		Intact									
Relinquished By				Date/Time:	Received By	Date/Time:											72 Hours		Perchlorate Only 72 Hours		Sample Integrity: (Check)									
<i>Paloch</i>				2-18-05 1830	<i>Paloch</i>	2-18-05 1830											Normal		Metals Only 72 Hours		Intact									





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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March 31, 2005

MWH - Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Project: Annual Outfall 003  
Sampled: 02/18/05  
Del Mar Analytical Number: IOB1571


Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), Eberline Services performed the gross alpha/beta analyses (EPA 900.0), the tritium analysis (H-3, EPA 906.0), and the strontium analysis (SR -90 EPA 905.0), and Alta Analytical performed Method 1613 Dioxin for the project referenced above. Please use the following cross-reference table when reviewing your results.

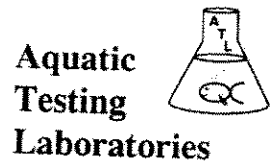
MWH ID	DEL MAR ID	ATL ID	Eberline ID	Alta ID
Outfall 003	IOB1571-01	A-05021908-001	R502214-8293	25780-001

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me (949) 261-1022, at extension 215.

Sincerely yours,  
DEL MAR ANALYTICAL

  
Michele Harper  
Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** February 23, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05021908-001  
**Sample ID.:** IOB1571-01

**Sample Control:** The samples were received by ATL in a chilled state, with the chain of custody record attached.

Date Sampled: 02/18/05  
Date Received: 02/19/05  
Date Tested: 02/19/05 to 02/23/05

**Sample Analysis:** The following analyses were performed on your sample:  
Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0).  
Attached are the test data generated from the analysis of your sample.

## Result Summary:

<u>Sample ID.</u>	<u>Results</u>
IOB1571-01	100% Survival (TU <sub>a</sub> = 0.0)

**Quality Control:** Reviewed and approved by:

Joseph A. Lemay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05021908-001  
 Client/ID: Del Mar IOB1571-01

Start Date: 02/19/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 12 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050208.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.0	8.8	7.9	0	0	R 1330
	100%	20.1	9.7	6.6	0	0	
24 Hr	Control	19.3	7.0	7.9	0	0	R 1330
	100%	19.4	6.4	7.4	0	0	
48 Hr	Control	19.4	6.8	7.7	0	0	R 1330
	100%	19.3	5.2	7.2	0	0	
Renewal	Control	19.1	7.7	8.0	0	0	R 1300
	100%	19.7	8.4	7.2	0	0	
72 Hr	Control	19.1	6.8	7.6	0	0	R 1200
	100%	19.0	7.6	7.4	0	0	
96 Hr	Control	19.2	7.5	7.5	0	0	R 1200
	100%	19.0	8.0	7.3	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 6.6; Conductivity: 152 umho; Temp: 4°C;  
 DO: 9.7 mg/l; Alkalinity: 47 mg/l; Hardness: 65 mg/l; NH<sub>3</sub>-N: 0.5 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No.  
 Control: Alkalinity: 54 mg/l; Hardness: 92 mg/l; Conductivity: 280 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes /  No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1571

<p style="text-align: center;"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine        17461 Derian Avenue, Suite 100        Irvine, CA 92614        Phone: (949) 261-1022        Fax: (949) 261-1228        Project Manager: Michele Harper</p>	<p style="text-align: center;"><b>RECEIVING LABORATORY:</b></p> <p>Aquatic Testing Laboratories-SUB        4350 Transport Street, Unit 107        Ventura, CA 93003        Phone : (805) 650-0546        Fax: (805) 650-0756</p>
--	--

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOB1571-01 Water Bioassay-Acute 96hr	Water 02/20/05 00:25	Sampled: 02/18/05 12:25 FH minnow, EPA/821-R02-012, Sub to AqTox Labs
Containers Supplied: 1 gal Poly (IOB1571-01X)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 48

Released By: [Signature] Date: 2/19/05 Time: 08:30      Received By: [Signature] Date: 2/19/05 Time: 08:30  
 Released By: [Signature] Date: 2/19/05 Time: 11:00      Received By: [Signature] Date: 2-19-05 Time: 11:00



March 15, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1571  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502214-8293

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 23, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/mjv*

*Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice*

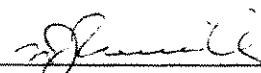
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8293</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502214-01</u>	Contract <u>PROJECT# 10B1571</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client Sample ID	Lab Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
10B1571-01	8293-001	02/18/05	03/08/05	GrossAlpha	0.651 ± 1.1	pCi/L	1.90
			03/08/05	Gross Beta	4.58 ± 1.4	pCi/L	1.97
			03/13/05	H3	10.7 ± 150	pCi/L	258
			03/12/05	Sr90	1.06 ± 0.23	pCi/L	0.261

Certified by   
 Report Date 03/15/05  
 Page 1

# Eberline Services

## QC RESULTS

SDG <u>8293</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502214-01</u>	Contract <u>PROJECT# 10B1571</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Lab

Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>						
8294-003	GrossAlpha	10.9 ± 1.2	pCi/Smpl	10.2	0.313	107% recovery
	Gross Beta	9.49 ± 0.74	pCi/Smpl	10.1	0.546	94% recovery
	H3	214 ± 23	pCi/Smpl	235	25.4	91% recovery
	Sr90	9.75 ± 0.32	pCi/Smpl	10.1	0.145	97% recovery
<u>BLANK</u>						
8294-004	GrossAlpha	-0.034 ± 0.23	pCi/Smpl	NA	0.415	<MDA
	Gross Beta	-0.236 ± 0.29	pCi/Smpl	NA	0.551	<MDA
	H3	9.66 ± 15	pCi/Smpl	NA	25.1	<MDA
	Sr90	-0.064 ± 0.098	pCi/Smpl	NA	0.140	<MDA

DUPLICATES

Sample ID	Nuclide	Results ± 2σ	MDA
8294-005	GrossAlpha	0.399 ± 0.53	0.874
	Gross Beta	2.91 ± 1.2	1.78
	H3	76.8 ± 150	254
	Sr90	0.884 ± 0.24	0.281

ORIGINALS

Sample ID	Results ± 2σ	MDA	3σ	RPD (Tot)	Eval
8294-001	0.904 ± 0.74	1.00	-	-	0 satis.
	3.32 ± 1.2	1.79	13	88	satis.
	-41.9 ± 150	254	-	0	satis.
	0.901 ± 0.24	0.280	2	61	satis.

SPIKED SAMPLE

Sample ID	Nuclide	Results ± 2σ	MDA
8294-006	GrossAlpha	86.0 ± 5.3	0.881
	Gross Beta	72.1 ± 3.5	1.79
	H3	22300 ± 580	252

ORIGINAL SAMPLE

Sample ID	Results ± 2σ	MDA	Added	%Recv
8294-002	1.42 ± 0.93	1.19	71.5	118
	3.75 ± 1.2	1.78	67.2	102
	-77.0 ± 140	255	23600	95

Certified by
Report Date <u>03/15/05</u>
Page 2



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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 765-0043 Fax (480) 765-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1571

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: 4 weeks Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1571-01 Water      Sampled: 02/18/05 12:25</b>		
EDD + Level 4	03/18/05 12:25	
Gross Alpha-O	02/18/06 12:25	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/18/06 12:25	900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/18/06 12:25	HOLD for Gross A&B results; EPA 903.1 & 904.0
Strontium 90-O	02/18/06 12:25	EPA 905.0
Tritium-O	02/18/06 12:25	EPA 906.0
<b>Containers Supplied:</b>		
1 gal Poly (IOB1571-01S)		
40 ml Voa Vial (IOB1571-01T)		
40 ml Voa Vial (IOB1571-01U)		

### SAMPLE INTEGRITY:

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: [Signature] Date: 2-22-05 Time: 1700      Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_      Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_





RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: DEL MRR ANALYT City IRVINE State CA

Date/Time received 2/23/05 10:00 CoC No. IUB 1571

Container I.D. No. Special Requested TAT (Days) 4week P.O. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [  ]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [  ]
- 5. Packing material is: Wet [  ] Dry [ ]
- 6. Number of samples in shipping container: 1 Sample Matrix WATER
- 7. Number of containers per sample: 3 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [  ] No [ ]
- 9. Paperwork agrees with samples? Yes [  ] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [  ]
- 11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [  ] Not preserved [ ] pH 2 Preservative HNO3
- 13. Describe any anomalies: \_\_\_\_\_
- 14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
- 15. Inspected by AR Date: 2/23/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



March 01, 2005

**Alta Project I.D.: 25780**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on February 24, 2005 under your Project Name "IOB1571". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
HRMS Services Director



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 2/24/2005**

Alta Lab. ID

Client Sample ID

25780-001

IOB1571-01

**SECTION II**



Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	6543	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	25-Feb-05	Date Analyzed DB-5:	28-Feb-05			
Date Analyzed DB-225:	NA							
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.866			13C-2,3,7,8-TCDD	75.9	25 - 164	
1,2,3,7,8-PeCDD	ND	1.15			13C-1,2,3,7,8-PeCDD	73.9	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.88			13C-1,2,3,4,7,8-HxCDD	70.6	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.86			13C-1,2,3,6,7,8-HxCDD	73.4	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.84			13C-1,2,3,4,6,7,8-HpCDD	67.4	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	3.38			13C-OCDD	56.3	17 - 157	
OCDD	ND	8.88			13C-2,3,7,8-TCDF	78.7	24 - 169	
2,3,7,8-TCDF	ND	0.545			13C-1,2,3,7,8-PeCDF	68.1	24 - 185	
1,2,3,7,8-PeCDF	ND	1.62			13C-2,3,4,7,8-PeCDF	73.3	21 - 178	
2,3,4,7,8-PeCDF	ND	1.45			13C-1,2,3,4,7,8-HxCDF	60.2	26 - 152	
1,2,3,4,7,8-HxCDF	ND	1.24			13C-1,2,3,6,7,8-HxCDF	64.3	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.869			13C-2,3,4,6,7,8-HxCDF	63.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.958			13C-1,2,3,7,8,9-HxCDF	65.2	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.55			13C-1,2,3,4,6,7,8-HpCDF	54.3	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	2.22			13C-1,2,3,4,7,8,9-HpCDF	59.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.68			13C-OCDF	54.9	17 - 157	
OCDF	ND	4.49			CRS 37Cl-2,3,7,8-TCDD	77.4	35 - 197	
<b>Totals</b>					<b>Footnotes</b>			
Total TCDD	ND	0.866			a. Sample specific estimated detection limit.			
Total PeCDD	ND	1.15			b. Estimated maximum possible concentration.			
Total HxCDD	ND	1.86			c. Method detection limit.			
Total HpCDD	ND	3.38			d. Lower control limit - upper control limit.			
Total TCDF	ND	0.545						
Total PeCDF	ND	1.54						
Total HxCDF	ND	1.37						
Total HpCDF	ND	2.38						

Analyst: MS

Approved By: William J. Luksemburg 01-Mar-2005 16:29



OPR Results							EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	6543	Lab Sample:	0-OPR001	Date Analyzed DB-5:	28-Feb-05	Date Analyzed DB-225:	NA	
Sample Size:	1,000 L	Date Extracted:	25-Feb-05							
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL				
2,3,7,8-TCDD	10.0	8.67	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	67.4	25 - 164				
1,2,3,7,8-PeCDD	50.0	43.8	35 - 71	13C-1,2,3,7,8-PeCDD	64.0	25 - 181				
1,2,3,4,7,8-HxCDD	50.0	42.5	35 - 82	13C-1,2,3,4,7,8-HxCDD	58.2	32 - 141				
1,2,3,6,7,8-HxCDD	50.0	43.5	38 - 67	13C-1,2,3,6,7,8-HxCDD	62.5	28 - 130				
1,2,3,7,8,9-HxCDD	50.0	43.7	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	57.2	23 - 140				
1,2,3,4,6,7,8-HpCDD	50.0	42.5	35 - 70	13C-OCDD	51.4	17 - 157				
OCDD	100	87.0	78 - 144	13C-2,3,7,8-TCDF	72.5	24 - 169				
2,3,7,8-TCDF	10.0	7.98	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	59.4	24 - 185				
1,2,3,7,8-PeCDF	50.0	41.4	40 - 67	13C-2,3,4,7,8-PeCDF	64.8	21 - 178				
2,3,4,7,8-PeCDF	50.0	42.3	34 - 80	13C-1,2,3,4,7,8-HxCDF	49.4	26 - 152				
1,2,3,4,7,8-HxCDF	50.0	42.0	36 - 67	13C-1,2,3,6,7,8-HxCDF	52.7	26 - 123				
1,2,3,6,7,8-HxCDF	50.0	43.0	42 - 65	13C-2,3,4,6,7,8-HxCDF	55.2	28 - 136				
2,3,4,6,7,8-HxCDF	50.0	42.3	35 - 78	13C-1,2,3,7,8,9-HxCDF	53.4	29 - 147				
1,2,3,7,8,9-HxCDF	50.0	43.5	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	45.6	28 - 143				
1,2,3,4,6,7,8-HpCDF	50.0	41.8	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	49.6	26 - 138				
1,2,3,4,7,8,9-HpCDF	50.0	42.7	39 - 69	13C-OCDF	49.0	17 - 157				
OCDF	100	88.8	63 - 170	CRS 37Cl-2,3,7,8-TCDD	76.2	35 - 197				

Analyst: MS

Approved By: William J. Luksemburg 01-Mar-2005 16:29



Sample ID: IOB1571-01		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25780-001		
Project:	IOB1571	Sample Size:	0.929 L	QC Batch No.:	6543		
Date Collected:	18-Feb-05			Date Analyzed DB-5:	28-Feb-05		
Time Collected:	1225			Date Analyzed DB-225:	NA		
Date Analyzed DB-5:	28-Feb-05			Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.623		IS 13C-2,3,7,8-TCDD	84.6	25 - 164	
1,2,3,7,8-PeCDD	ND	1.44		13C-1,2,3,7,8-PeCDD	83.9	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.70		13C-1,2,3,4,7,8-HxCDD	79.2	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.68		13C-1,2,3,6,7,8-HxCDD	81.4	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.66		13C-1,2,3,4,6,7,8-HpCDD	79.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	5.49		J	13C-OCDD	67.8	17 - 157	
OCDD	52.6		J	13C-2,3,7,8-TCDF	85.4	24 - 169	
2,3,7,8-TCDF	ND	0.523		13C-1,2,3,7,8-PeCDF	77.8	24 - 185	
1,2,3,7,8-PeCDF	ND	0.788		13C-2,3,4,7,8-PeCDF	80.0	21 - 178	
2,3,4,7,8-PeCDF	ND	0.742		13C-1,2,3,4,7,8-HxCDF	70.7	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.612		13C-1,2,3,6,7,8-HxCDF	72.9	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.592		13C-2,3,4,6,7,8-HxCDF	69.7	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.504		13C-1,2,3,7,8,9-HxCDF	73.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.751		13C-1,2,3,4,6,7,8-HpCDF	65.9	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	1.79		13C-1,2,3,4,7,8,9-HpCDF	73.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.692		13C-OCDF	68.7	17 - 157	
OCDF	ND			CRS 37Cl-2,3,7,8-TCDD	88.5	35 - 197	
<b>Totals</b>			2.71				
Total TCDD	ND	0.623					
Total PeCDD	ND	1.71					
Total HxCDD	ND	1.68					
Total HpCDD	13.0						
Total TCDF	ND	0.523					
Total PeCDF	ND	0.765					
Total HxCDF	ND	0.719					
Total HpCDF	ND		1.53				
<b>Footnotes</b>							
a. Sample specific estimated detection limit.							
b. Estimated maximum possible concentration.							
c. Method detection limit.							
d. Lower control limit - upper control limit.							

Analyst: MS

Approved By: William J. Luksemburg 01-Mar-2005 16:29

**APPENDIX**



## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that corresponds to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are "interim limits only" until in-house limits are utilized.

## **CURRENT CERTIFICATIONS**



NELAP — (Primary AA: California, Certificate No. 02102CA)  
Department of the Navy  
U.S. Army Corps of Engineers  
U.S. EPA Region 5  
Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)  
Commonwealth of Kentucky — (Certificate No. 90063)  
Commonwealth of Virginia — (Certificate No. 00013)  
State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)  
State of Arizona — (Certificate No. AZ0639)  
State of Arkansas, Department of Health — (Approval granted through CA certification)  
State of Arkansas, Department of Environmental Quality  
State of California — (Certificate No. 1640)  
State of Colorado  
State of Connecticut — (Certificate No. PH-0182)  
State of Florida — (Certificate No. 87456)  
State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)  
State of Louisiana, Department of Environmental Quality  
State of Maine  
State of Michigan (Certificate No. 81178087)  
State of Mississippi — (Approval granted through CA certification)  
State of Nevada — (Certificate No. CA413)  
State of New Jersey — (Certificate No. CA003)  
State of New York, Department of Health — (Certificate No. 11411)  
State of North Carolina — (Certification No. 06700)  
State of North Dakota, Department of Health — (Certificate No. R-078)  
State of New Mexico  
State of Oklahoma — (D9919)  
State of Oregon — (Certificate No. CA413)  
State of Pennsylvania — (Certificate No. 68-490)  
State of South Carolina — (Certificate No. 87002001)  
State of Tennessee — (Certificate No. 02996)  
State of Texas — (Certificate No. TX247-1000A)  
State of Utah — (Certificate No. E-201)  
State of Washington — (Certification No. C091)  
State of Wisconsin — (Certificate No. 998036160)  
State of Wyoming — (USEPA Region 8 Ref. 8TMS-Q)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-9396 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0651  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1571

<b>SENDING LABORATORY:</b> Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	<b>RECEIVING LABORATORY:</b> Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 933-0940 <div style="text-align: right; font-size: 1.2em; font-weight: bold;">25780 0.8°C</div>
---	--

Standard TAT is requested unless specific due date is requested => Due Date: 2 weeks Initials: MH

Analysis	Expiration	Comments
Sample ID: IOB1571-01 Water	Sampled: 02/18/05 12:25	
1613-Dioxin-HR	02/25/05 12:25	J flags, 17 congeners, no TEQ, sub to Alta
EDD + Level 4-OUT	03/18/05 12:25	
<b>Containers Supplied:</b>		
1 L Amber (IOB1571-01C)		
1 L Amber (IOB1571-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No		
			Samples Received at (temp): _____		

Released By: Royce Campbell Date: 2-23-05 Time: 1700 Received By: Bettina J. Benedict Date: 2/24/05 Time: 0905

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25780

1. Date Samples Arrived: <u>2/24/05</u> <u>0905</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
2. Time / Date logged in: <u>1220</u> <u>2/24/05</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
3. Samples Arrived By: (circle) <u>FedEx</u> UPS World Courier Other:			
4. Shipping Preservation: (circle) <u>Ice / Blue Ice</u> / Dry Ice / None Temp °C <u>0.8</u>			
5. Shipping Container(s) Intact? If not, describe condition in comment section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Shipping Documentation Present? (circle) Shipping Label <u>Airbill</u> Tracking Number <u>7904 3642 7349</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. _____ Intact? If not intact, describe condition in comment section.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9. Sample Container Intact? If no, indicate sample condition in comment section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Chain of Custody (COC) or other Sample Documentation Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed			
13. Container(s) and/or Bottle(s) Requested?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments: Samplers initials found on sample label

ALTA Analytical Laboratory  
El Dorado Hills, CA 95762



2832 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1223  
 1014 E. Coolidge Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 535-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2528 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3629 FAX (702) 798-3621

May 10, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Projects: 13267 (Study 2) / Routine Outfall 003  
 Sampled: 2/18/05  
 Del Mar Analytical Number: IOB1576

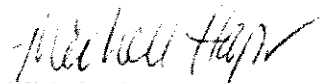
Dear Ms. Kelly:

Eberline Services performed the Gross Alpha/Beta (EPA 900.0), Tritium (EPA 906.0), Strontium-90 (EPA 905.0), Radium-226 (Ra-226, EPA 903.1), Radium-228 (Ra-228, EPA 904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1) analyses for the projects referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	EBERLINE ID
Outfall 003 Filtered	IOB1576-01	R502215-01 / 8294-001
Outfall 003 Unfiltered	IOB1576-02	R502215-01 / 8294-002
Outfall 003 Substrate	IOB1576-03	R502216-01 / 8295-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

  
 Michele Harper  
 Project Manager



May 10, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1576  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502215-8294

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 23, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0); results for those analyses were reported on March 15. This report contains the analytical results for Ra-226 (EPA903.1) and Ra-228 (EPA904.0). The Ra-226 QC samples are 8368-005, 006, and 007, and the Ra-228 QC samples are 8263-002, 003, and 004. The QC LCS, blank analyses, and sample duplicates for both the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/injv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

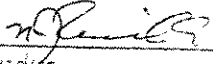
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG 9294 Work Order <u>R502215-01</u> Received Date <u>02/23/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB1576</u> Matrix <u>WATER</u>
---	---

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1576-01	6294-001	02/18/05	03/08/05	GrossAlpha	0.904 ± 0.74	pCi/L	1.00
			03/08/05	Gross Beta	3.32 ± 1.2	pCi/L	1.79
		04/22/05	04/22/05	Ra228	0.746 ± 0.36	pCi/L	0.776
			03/12/05	H3	-41.9 ± 150	pCi/L	254
			05/06/05	Ra226	0.617 ± 0.023	pCi/L	0.039
			03/12/05	Sr90	0.901 ± 0.24	pCi/L	0.280
IOB1576-02	6294-002	02/18/05	03/08/05	GrossAlpha	1.42 ± 0.93	pCi/L	1.19
			03/08/05	Gross Beta	3.75 ± 1.2	pCi/L	1.78
		04/22/05	04/22/05	Ra228	1.14 ± 0.36	pCi/L	0.742
			03/12/05	H3	-77.0 ± 140	pCi/L	255
			05/05/05	Ra226	0.109 ± 0.024	pCi/L	0.026
			03/12/05	Sr90	0.892 ± 0.22	pCi/L	0.253

Certified by <u></u> Report Date <u>05/10/05</u> Page 1
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# Eberline Services

## QC RESULTS

SDG <u>8294</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>8502215-01</u>	Contract <u>PROJECT# IOB1576</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8263-002	Ra228	12.7 ± 0.80	pCi/Smpl	10.2	1.07	125% recovery
<u>BLANK</u>							
	8263-003	Ra228	-0.465 ± 0.43	pCi/Smpl	NA	1.19	<MDA
<u>LCS</u>							
	8294-003	GrossAlpha	10.9 ± 1.2	pCi/Smpl	10.2	0.313	107% recovery
		Gross Beta	9.49 ± 0.74	pCi/Smpl	10.1	0.546	94% recovery
		H3	214 ± 23	pCi/Smpl	235	25.4	91% recovery
		Sr90	9.75 ± 0.32	pCi/Smpl	10.1	0.145	97% recovery
<u>BLANK</u>							
	8294-004	GrossAlpha	-0.034 ± 0.23	pCi/Smpl	NA	0.415	<MDA
		Gross Beta	-0.236 ± 0.29	pCi/Smpl	NA	0.551	<MDA
		H3	9.66 ± 15	pCi/Smpl	NA	25.1	<MDA
		Sr90	-0.064 ± 0.098	pCi/Smpl	NA	0.140	<MDA
<u>LCS</u>							
	8368-005	GrossAlpha	13.0 ± 1.4	pCi/Smpl	11.2	0.420	116% recovery
		Gross Beta	12.4 ± 0.85	pCi/Smpl	12.1	0.581	102% recovery
		Ra226	5.45 ± 0.18	pCi/Smpl	5.59	0.056	97% recovery
<u>BLANK</u>							
	8368-006	GrossAlpha	-0.051 ± 0.14	pCi/Smpl	NA	0.355	<MDA
		Gross Beta	-0.190 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		Ra226	-0.014 ± 0.011	pCi/Smpl	NA	0.021	<MDA

DUPLICATES				ORIGINALS				
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot)	Eval
8263-004	Ra228	0.245 ± 0.27	0.716	8263-001	0.143 ± 0.31	0.787	-	0 satis.
8294-005	GrossAlpha	0.399 ± 0.53	0.874	8294-001	0.904 ± 0.74	1.00	-	0 satis.
	Gross Beta	2.91 ± 1.2	1.78		3.32 ± 1.2	1.79	13	88 satis.
	H3	76.8 ± 250	254		-41.3 ± 150	254	-	0 satis.
	Sr90	0.884 ± 0.24	0.281		0.901 ± 0.24	0.280	2	51 satis.
8368-007	GrossAlpha	5.26 ± 5.8	8.58	8368-001	8.78 ± 6.2	7.52	50	187 satis.
	Gross Beta	11.2 ± 7.5	11.8		16.6 ± 7.3	10.8	39	118 satis.

Certified by

Report Date 05/10/05

Page 2



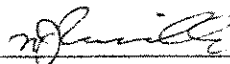
Eberline Services

QC RESULTS

SDG <u>8294</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502215-01</u>	Contract <u>PROJECT# IOB1576</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

DUPLICATES			ORIGINALS					
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot)	3σ Eval
	Ra226	0.011 ± 0.27	0.488		-0.198 ± 0.13	0.241	-	0 satis.

SPIKED SAMPLE			ORIGINAL SAMPLE					
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	Added	%Recy
8294-006	GrossAlpha	86.0 ± 5.3	0.881	8294-002	1.42 ± 0.93	1.19	71.5	118
	Gross Beta	72.1 ± 3.5	1.79		3.75 ± 1.2	1.78	67.2	102
	H3	22300 ± 580	252		-77.0 ± 140	255	23600	95
8368-008	GrossAlpha	1560 ± 120	21.4	8368-002	26.5 ± 18	22.4	1530	100
	Gross Beta	1490 ± 72	35.5		50.6 ± 24	36.5	1480	97

Certified by 
Report Date <u>05/10/05</u>
Page 3



March 15, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1576  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502216-8295

Dear Ms. Harper:

Enclosed are Cs-137 gamma spectroscopy results for the solids filtered from Del Mar sample IOB1576-01. Sample IOB1576-01 was received at Eberline Services on February 23, 2005. The sample was filtered and the collected substrate was analyzed for gamma emitting radionuclides (EPA901.1). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. The parenthetical G after a nuclide indicates that the result was obtained by gamma spectroscopy. A "U" in the results column indicates that the nuclide was not detected greater than the indicated minimum detectable activity (MDA).

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8295</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502216-01</u>	Contract <u>PROJECT# IOB1576</u>
Received Date <u>02/23/05</u>	Matrix <u>SOLID</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
10B1576-03	B295-001	02/18/05	03/04/05	Cs137 (G)	U	pCi/Smpl	14.4

Certified by *[Signature]*  
Report Date 03/15/05  
Page 1

Eberline Services

QC RESULTS

SDG <u>8295</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502216-01</u>	Contract <u>PROJECT# IQB1576</u>
Received Date <u>02/23/05</u>	Matrix <u>SDLID</u>

Lab

Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>						
8295-002	Cs137 (G)	286 ± 25	pCi/Smpl	267	16.7	107% recovery
<u>BLANK</u>						
8295-003	Cs137 (G)	U	pCi/Smpl	NA	11.7	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8295-004	Cs137 (G)	U	12.5	8295-001	U	14.4	- 0 satis.

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 2



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 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3521

## SUBCONTRACT ORDER - PROJECT # IOB1576

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Work Order Comments: Level IV Data, include std logs

Standard TAT is requested unless specific due date is requested => Due Date: AWK TAT Initials: MH

Analysis	Expiration	Sampled:	Comments
Sample ID: IOB1576-01	Water	02/18/05 12:32	Filter w/ preweighed .45 um & preserve (except H3)
EDD + Level 4-OUT	03/18/05 12:32		**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	02/18/06 12:32		900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/18/06 12:32		900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/18/06 12:32		HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/18/06 12:32		905.0
Tritium-O	02/18/06 12:32		906

- Containers Supplied:
- 1 L Amber (IOB1576-01A)
  - 1 L Amber (IOB1576-01B)
  - 1 L Amber (IOB1576-01C)
  - 1 L Amber (IOB1576-01D)

Sample ID: IOB1576-02	Water	Sampled: 02/18/05 12:32	Analyze as received, do not preserve
Gross Alpha-O	02/18/06 12:32		900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/18/06 12:32		900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/18/06 12:32		HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/18/06 12:32		905.0
Tritium-O	02/18/06 12:32		906

- Containers Supplied:
- 1 L Amber (IOB1576-02A)
  - 1 L Amber (IOB1576-02B)
  - 1 L Amber (IOB1576-02C)
  - 1 L Amber (IOB1576-02D)
  - 40 ml Voa Vial (IOB1576-02E)
  - 40 ml Voa Vial (IOB1576-02F)

Sample ID: IOB1576-03	Solid	Sampled: 02/18/05 12:32	Analyze substrate on filter from IOB1576-01
Gamma Scan-O	02/18/06 12:32		Cesium 137, EPA 901.1, 20 pci/sample RL

2-22-05

	Date	Time		Date	Time
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time



17461 Denan Ave, Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9586 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-9520 Fax (702) 796-3621

**SUBCONTRACT ORDER - PROJECT # IOB1576**

**SAMPLE INTEGRITY:**

All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

<i>Michelle Haupt</i>	<i>2-22-05</i>	<i>1700</i>			
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client DEL MAR ANALYT. City IRVINE State CA

Date/Time received 2/23/05 10:00 CoC No. TOB1576

Container I.D. No. 2PRD Requested TAT (Days) 4 WK P.O. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [✓]
- 5. Packing material is: Wet [ ] Dry [ ]
- 6. Number of samples in shipping container: 2 Sample Matrix WATER
- 7. Number of containers per sample: 10 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [✓] No [ ]
- 9. Paperwork agrees with samples? Yes [ ] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
- 11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [ ] Not preserved [✓] pH 7 Preservative \_\_\_\_\_
- 13. Describe any anomalies: \_\_\_\_\_
- 14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
- 15. Inspected by lu Date: 2/23/05 Time: 10:00

Customer Sample				Customer Sample			
No.	cpm	mR/hr	wipe	No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

1081576

# CHAIN OF CUSTODY FORM

**Del Mar Analytical** Version 5.8/12/04  
 Client Name/Address:  
**MWH-Pasadena**  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Project:  
 Boeing-SSFL NPDES  
**Outfall 003 - 13267**  
 Storm Water at RMHF

Perimeter Pond  
 Phone Number:  
 (626) 568-6691  
 Fax Number:  
 (626) 568-6515

Project Manager: **Bronwyn Kelly**

Sampler: **Polloa**

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	ANALYSIS REQUIRED						Field readings: Temp = 55.6 pH= 7.2	Comments
							(FILTERED) Gross Alpha, Total Combined Radium 226& Radium 228, Sr-90 (905.0), Gross Beta, Sr-90 (905.0), (UNFILTERED) Gross Alpha, Total Combined Radium 226& Radium 228, Tritium (906.0)	Substrate (Radiospectroscopy for Cesium-137)						
Outfall 003	W	1L Amber	4	2-15-05 12:32	HNO3		X							Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15pCi/L
Outfall 003	W	1L Amber	4		HNO3		X							Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15pCi/L
Outfall 003	W	VOAS	2		None			X						
Relinquished By: <i>[Signature]</i>				Date/Time: 2-15-05 1450	Received By: <i>[Signature]</i>									
Relinquished By: <i>[Signature]</i>				Date/Time: 2-18-05 1830	Received By: <i>[Signature]</i>									
Relinquished By: <i>[Signature]</i>				Date/Time: 2-15-05 1830	Received By: <i>[Signature]</i>									

5

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_ ✓  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check) On Ice: X 30C  
 Intact \_\_\_\_\_



# **APPENDIX A**

## **Section 6**

Outfall 003, February 18, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711RA5  
Task Order 313150010  
SDG No. Multiple

No. of Analyses 8

Laboratory Eberline

Reviewer P. Meeks

Analysis/Method Radionuclides

Date: 03/28/05  
Reviewer's Signature  
P. Meeks

**ACTION ITEMS<sup>a</sup>**

- 1. Case Narrative Deficiencies
- 2. Out of Scope Analyses
- 3. Analyses Not Conducted
- 4. Missing Hardcopy Deliverables
- 5. Incorrect Hardcopy Deliverables
- 6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

Qualifications applied for:

- 1. Detector efficiency outliers.
- 2. Exceeded holding imtes.

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB1556, IOB1557, IOB1559, IOB1570, IOB1571, IOB1576

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1556, IOB1557, IOB1559, IOB1570, IOB1571, IOB1576  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 8  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 24, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 004	IOB1556-01	8289-001	water	900.0, 905.0, 906.0
Outfall 005	IOB1557-01	8290-001	water	900.0, 905.0, 906.0
Outfall 006	IOB1559-01	8291-001	water	900.0, 905.0, 906.0
Outfall 018	IOB1570-01	8292-001	water	900.0, 905.0, 906.0
Outfall 003	IOB1571-01	8293-001	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOB1576-01	8294-001	water	900.0, 905.0, 906.0
Outfall 003 Unfiltered	IOB1576-02	8294-002	water	900.0, 905.0, 906.0
Outfall 003 Substrate	IOB1576-03	8295-001	solid	901.1



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition. All tritium samples were received unpreserved in glass containers. All gross alpha, gross beta, and strontium samples were preserved, except for the Outfall 003 samples in SDG IOB1556. Outfall 003 Filtered, was filtered by Eberline and then preserved. Outfall 003 Unfiltered was not preserved. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories, except for the COC listing Outfall 003 in SDG IOB1571, which was not signed as received by Eberline. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium and preserved gross alpha, gross beta, and strontium samples were analyzed within 180 days of collection. The Outfall 003 Unfiltered gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, these gross alpha and gross beta results were qualified as estimated, "J." No further qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The detector efficiencies for Outfall 006, Outfall 018, Outfall 003, Outfall 003 Filtered, and Outfall 003 Unfiltered were less than 20%; therefore, these results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The remaining detector efficiencies were above 20%.

#### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 80% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with a branch efficiency of 85%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Two blank spikes (8294-002 and 8295-002) were analyzed in association with the samples in these SDGs. All blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analysis on Outfall 003 Filtered and Outfall 003 Substrate. All results were within the 3-sigma limits and all RPDs were  $\leq 20\%$ . No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 003 Unfiltered for gross alpha, gross beta, and tritium. The recovery for gross alpha was above 3-sigma; however, as the recovery of 118% was considered acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

**2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.8.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8289</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502210-01</u>	Contract <u>PROJECT# 1081556</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client

Sample ID

Outfall 004

1081556-01

mm 3/24/05

Lab

Sample ID

8289-001

Collected

02/18/05

Analyzed

03/08/05

Nuclide

GrossAlpha

Gross Beta

H3

Sr90

Results ± 2σ

0.309 ± 0.49

2.21 ± 1.2

0 ± 150

0.333 ± 0.22

Units

pCi/L

pCi/L

pCi/L

pCi/L

MDA

0.796

1.76

257

0.285

Rev  
Qual

U

U

Qual  
Gde

**AMEC VALIDATED**

*[Faint signature]*

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/15/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8291</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502212-01</u>	Contract <u>PROJECT# 1081559</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MOA	Rev Qual	Qual Code
Client <u>Sample ID</u> outfall 006 1081559-01 pm 3/24/05	8291-001		02/18/05	03/08/05	GrossAlpha	3.92 ± 1.5	pCi/L	1.34	J	H R
				03/08/05	Gross Beta	9.00 ± 1.6	pCi/L	1.82		
				03/12/05	H3	14.2 ± 150	pCi/L	259	U	
				03/12/05	Sr90	-0.081 ± 0.29	pCi/L	0.335	U	

pm 4/18/05

**AMEC VALIDATED**

**LEVEL 1**

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8290</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS02211-01</u>	Contract <u>PROJECT# 1081557</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> Outfall 005 1081557-01  MM 3/24/05	8290-001		02/18/05	03/08/05	GrossAlpha	-0.252 ± 0.33	pCi/L	0.862	U	
				03/08/05	Gross Beta	1.75 ± 1.2	pCi/L	1.87	U	
				03/12/05	H3	-3.55 ± 150	pCi/L	258	U	
				03/12/05	Sr90	-0.029 ± 0.24	pCi/L	0.308	U	

**AMEC VALIDATED**

LEVEL II

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8293</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502214-01</u>	Contract <u>PROJECT# 1081571</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 1081571-01 pm 3/24/05	8293-001		02/18/05	03/08/05	GrossAlpha	0.651 ± 1.1	pCi/L	1.90	UJ	R
				03/08/05	Gross Beta	4.58 ± 1.4	pCi/L	1.97		
				03/13/05	H3	10.7 ± 150	pCi/L	258		
				03/12/05	Sr90	1.06 ± 0.23	pCi/L	0.261		

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8292</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502213-01</u>	Contract <u>PROJECT# 1081570</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> Outfall 018 1081570-01  MM 3/24/05	8292-001		02/18/05	03/08/05	GrossAlpha	1.82 ± 1.0	pCi/L	1.11	J	R
				03/08/05	Gross Beta	3.97 ± 1.3	pCi/L	1.84		
				03/12/05	H3	-31.5 ± 150	pCi/L	254	U	
				03/12/05	Sr90	-0.052 ± 0.21	pCi/L	0.278	U	

**AMEC VALIDATED**

**LEVEL II**

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8294</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502215-01</u>	Contract <u>PROJECT# 10B1576</u>
Received Date <u>02/23/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Filtered 10B1576-01	8294-001	02/18/05	03/08/05	GrossAlpha	0.904 ± 0.74	pCi/L	1.00	CJ	R	
				Gross Beta	3.32 ± 1.2	pCi/L	1.79			
				H3	-41.9 ± 150	pCi/L	254			
				Sr90	0.901 ± 0.24	pCi/L	0.280			
Outfall 003 Unfiltered 10B1576-02	8294-002	02/18/05	03/08/05	GrossAlpha	1.42 ± 0.93	pCi/L	1.19	CJ	H, R	
				Gross Beta	3.75 ± 1.2	pCi/L	1.78			
				H3	-77.0 ± 140	pCi/L	255			
				Sr90	0.892 ± 0.22	pCi/L	0.253			

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/15/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8295</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502216-01</u>	Contract <u>PROJECT# 1081576</u>
Received Date <u>02/23/05</u>	Matrix <u>SOL ID</u>

Client	Lab	Collected	Analyzed	Nuclide	Results $\pm 2\sigma$	Units	MDA	Rev Qual	Qual Code
<u>Sample ID</u> 1081576-03	<u>Sample ID</u> 8295-001	02/18/05	03/04/05	Cs137 (G)	U	pCi/Smpl	14.4	U	

**AMEC VALIDATED**

**LEVEL III**

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/15/05</u>
Page 1

# **APPENDIX A**

## **Section 7**

Outfall 003, March 19, 2005

Del Mar Analytical Laboratory Report



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Projects: 13267 (Study 2) / Routine Outfall 003  
Sampled: 3/19/05  
Del Mar Analytical Number: IOC1562

Dear Ms. Kelly:

Eberline Services performed the Gross Alpha/Beta (EPA 900.0), Tritium (EPA 906.0), Strontium-90 (EPA 905.0), Radium-226 (Ra-226, EPA 903.1), Radium-228 (Ra-228, EPA 904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1) analyses for the projects referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	EBERLINE ID
Outfall 003 Filtered	IOC1562-01	R503161-01 / 8351-001
Outfall 003 Unfiltered	IOC1562-02	R503161-01 / 8351-002
Outfall 003 Substrate	IOC1562-03	R503162-01 / 8352-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

  
Michele Harper  
Project Manager



# EBERLINE SERVICES

May 10, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOC1562  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503161-8351

Dear Ms. Harper:

Enclosed are results from the analyses of two water samples received at Eberline Services on March 22 2005. The samples were analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), strontium-90 (Sr-90, EPA905.0), radium-226 (Ra-226, EPA903.1), and radium-228 (Ra-228, EPA904.0). The QC samples for gross alpha/beta, tritium, and Sr-90 are 8344-002, 003, 004, and 005; for Ra-226 the QC samples are 8368-005, 006, and 007; for Ra-228 the QC samples are 8263-002, 003, and 004. The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MC/M/njv*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8351</u> Work Order <u>R503161-01</u> Received Date <u>03/22/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOC1562</u> Matrix <u>WATER</u>
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Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOC1562-01	8351-001	03/19/05	04/08/05	GrossAlpha	8.96 ± 3.3	pCi/L	2.54
			04/08/05	Gross Beta	18.0 ± 3.1	pCi/L	3.73
			04/22/05	Ra228	0.448 ± 0.53	pCi/L	0.961
			04/07/05	H3	-43.7 ± 96	pCi/L	164
			05/05/05	Ra226	0.091 ± 0.026	pCi/L	0.034
			04/05/05	Sr90	5.49 ± 0.58	pCi/L	0.445
IOC1562-02	8351-002	03/19/05	04/06/05	GrossAlpha	5.03 ± 3.0	pCi/L	3.27
			04/06/05	Gross Beta	19.0 ± 3.7	pCi/L	4.56
			04/22/05	Ra228	0.386 ± 0.56	pCi/L	0.897
			04/07/05	H3	-34.3 ± 99	pCi/L	168
			05/05/05	Ra226	0.145 ± 0.028	pCi/L	0.031
			04/05/05	Sr90	5.49 ± 0.56	pCi/L	0.404

Certified by <u><i>[Signature]</i></u> Report Date <u>05/16/05</u> Page 1
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# Eberline Services

## QC RESULTS

SDG <u>8351</u> Work Order <u>R503161-01</u> Received Date <u>03/22/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOC1562</u> Matrix <u>WATER</u>
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Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8263-002	Ra228	12.7 ± 0.80	pCi/Smpl	10.2	1.07	125% recovery
<u>BLANK</u>							
	8263-003	Ra228	-0.465 ± 0.43	pCi/Smpl	NA	1.19	<MDA
<u>LCS</u>							
	8344-002	GrossAlpha	8.03 ± 1.1	pCi/Smpl	11.2	0.419	72% recovery
		Gross Beta	11.3 ± 0.78	pCi/Smpl	12.1	0.541	93% recovery
		H3	236 ± 15	pCi/Smpl	258	16.5	91% recovery
		Sr90	11.6 ± 0.61	pCi/Smpl	11.1	0.239	105% recovery
<u>BLANK</u>							
	8344-003	GrossAlpha	-0.115 ± 0.12	pCi/Smpl	NA	0.392	<MDA
		Gross Beta	0.070 ± 0.31	pCi/Smpl	NA	0.546	<MDA
		H3	1.47 ± 9.9	pCi/Smpl	NA	16.6	<MDA
		Sr90	-0.039 ± 0.12	pCi/Smpl	NA	0.246	<MDA
<u>LCS</u>							
	8368-005	GrossAlpha	13.0 ± 1.4	pCi/Smpl	11.2	0.420	116% recovery
		Gross Beta	12.4 ± 0.85	pCi/Smpl	12.1	0.581	102% recovery
		Ra226	5.45 ± 0.18	pCi/Smpl	5.59	0.056	97% recovery
<u>BLANK</u>							
	8368-006	GrossAlpha	-0.051 ± 0.14	pCi/Smpl	NA	0.355	<MDA
		Gross Beta	-0.190 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		Ra226	-0.014 ± 0.011	pCi/Smpl	NA	0.021	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8263-004	Ra228	0.245 ± 0.27	0.716
8344-004	GrossAlpha	0.239 ± 0.66	1.59
	Gross Beta	2.19 ± 1.2	1.85
	H3	8.93 ± 100	168
	Sr90	-0.013 ± 0.24	0.484
8368-007	GrossAlpha	5.26 ± 5.8	8.58
	Gross Beta	11.2 ± 7.5	11.8

<u>ORIGINALS</u>						
Sample ID	Results ± 2σ	MDA	RPD	(Tot)	Eval	3σ
8263-001	0.143 ± 0.31	0.787	-	0	satis.	
8344-001	0.305 ± 0.81	1.20	-	0	satis.	
	1.96 ± 1.1	1.80	11	122	satis.	
	-31.0 ± 98	166	-	0	satis.	
	0.037 ± 0.22	0.442	-	0	satis.	
8368-001	8.78 ± 6.2	7.52	50	187	satis.	
	16.6 ± 7.3	10.8	39	118	satis.	

Certified by *[Signature]*  
 Report Date 05/10/05  
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Eberline Services

QC RESULTS

SDG <u>8351</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501161-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

<u>DUPLICATES</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>MDA</u>
	Ra226	0.011 ± 0.27	0.488

<u>ORIGINALS</u>			
<u>Sample ID</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>RPD (Tot) Eval</u>
	-0.198 ± 0.13	0.241	3σ - 0 satis.

<u>SPIKED SAMPLE</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>MDA</u>
8344-005	GrossAlpha	63.4 ± 5.6	1.22
	Gross Beta	77.1 ± 3.6	1.83
	H3	23100 ± 500	223
8368-008	GrossAlpha	1560 ± 120	21.4
	Gross Beta	1490 ± 72	35.5

<u>ORIGINAL SAMPLE</u>				
<u>Sample ID</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>Added</u>	<u>%Recv</u>
8344-001	0.305 ± 0.81	1.20	76.6	82
	1.96 ± 1.1	1.80	73.7	102
	-31.0 ± 98	166	23500	98
8368-002	26.5 ± 18	22.4	1530	100
	50.6 ± 24	36.5	1480	97

Certified by *[Signature]*  
 Report Date 05/10/05  
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# EBERLINE SERVICES

July 6, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/06)

Dear Ms. Harper:

Enclosed are revised gamma Cs-137 reports for various projects, the project numbers and Eberline Services report numbers are given below. The results were previously reported in the units of pCi/sample; the enclosed reports present the results in the recalculated units of pCi/g.

<u>Del Mar Project</u>	<u>Eberline Services Report</u>
IOB1069-03	R502140-8269
IOB1576-03	R502216-8295
IOB2065-04	R503156-8346
IOB1014-04	R503158-8348
IOC1523-04	R503160-8350
IOC1562-03	R503162-8352
IOC2063-04	R503231-8382
IOD2061-03	R505003-8443

Please call me if you have any questions concerning the enclosed reports.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/mjv

Enclosure: Reports  
Invoice


Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503162-01</u>	Contract <u>PROJECT# 10C1562</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client <u>Sample ID</u>	Lab <u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
10C1562-03	8352-001	03/19/05	04/25/05	Cs137 (G)	U	pCi/G	10.9

Certified by <u></u>
Report Date <u>07/06/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503162-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>	8346-002	Cs137 (G)	265 ± 27	pCi/Smpl	267	21.5	99% recovery
<u>BLANK</u>	8346-003	Cs137 (G)	U	pCi/Smpl	NA	11.0	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	3σ RPD (Tot) Eval
8346-004	Cs137 (G)	U	28.4	8346-001	U	27.5	- 0 satis.

Certified by <u><i>[Signature]</i></u>
Report Date <u>07/06/05</u>
Page 2



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4867 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9556 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IOC1562

**SENDING LABORATORY:**

Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**

Eberline Services  
 2030 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438

Work Order Comments: Level IV Data, include std logs

Standard TAT is requested unless specific due date is requested => Due Date: 3 weeks Initials: \_\_\_\_\_


Analysis	Expiration	Comments
Sample ID: IOC1562-01 Water	Sampled: 03/19/05 09:46	Filter w/ preweighed .45 um & preserve (except H3)
EDD + Level 4-OUT	04/16/05 09:46	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	03/19/06 09:46	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	03/19/06 09:46	900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	03/19/06 09:46	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	03/19/06 09:46	905.0
Tritium-O	03/19/06 09:46	906

**Containers Supplied:**  
 1 L Amber (IOC1562-01A)  
 1 L Amber (IOC1562-01B)  
 1 L Amber (IOC1562-01C)  
 1 L Amber (IOC1562-01D)

Sample ID: IOC1562-02 Water	Sampled: 03/19/05 09:46	Analyze as received, do not preserve
Gross Alpha-O	03/19/06 09:46	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	03/19/06 09:46	900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	03/19/06 09:46	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	03/19/06 09:46	905.0
Tritium-O	03/19/06 09:46	906

**Containers Supplied:**  
 1 L Amber (IOC1562-02A)  
 1 L Amber (IOC1562-02B)  
 1 L Amber (IOC1562-02C)  
 1 L Amber (IOC1562-02D)  
 40 ml Voa Vial (IOC1562-02E)  
 40 ml Voa Vial (IOC1562-02F)

Sample ID: IOC1562-03 Water	Sampled: 03/19/05 09:46	analyze substrate on filter from IOC1562-01
Gamma Scan-O	03/19/06 09:46	Cesium 137, EPA 901.1, 20 pci/sample RL


SON THAI
03/22/05
10:00 AM

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Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client DEL MAR City IRVINE State CA

Date/Time received 03/22/05 CoC No. IOC 1562

Container I.D. No. BUDEK Requested TAT (Days) 3 weeks P.D. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [✓] N/A [ ]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [✓] N/A [ ]
- 5. Packing material is: Wet [✓] Dry [ ]
- 6. Number of samples in shipping container: 2 Sample Matrix Water
- 7. Number of containers per sample: \_\_\_\_\_ (Or see CoC IOC-1562)
- 8. Samples are in correct container Yes [✓] No [ ]
- 9. Paperwork agrees with samples? Yes [✓] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]
- 11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [ ] Not preserved [✓] pH 7 Preservative \_\_\_\_\_
- 13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_

15. Inspected by TS Date: 03/22/05 Time: 10:00 AM

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

IDOC 1562

**CHAIN OF CUSTODY FORM**

Client Name/Address:	Project:					ANALYSIS REQUIRED	Field readings:				
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101	Boeing-SSFL NPDES Outfall 003- 13267 Stormwater at RMHF						Temp = 54.3 F pH = 6.7				
Del Mar Contact: Michele Harper	Phone Number: (626) 568-6691						Comments				
Project Manager: Bronwyn Kelly	Fax Number: (626) 568-6515										
Sampler: <i>P. P. P.</i>											
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	(FILTERED) Gross Alpha, Gross Beta, Sr-90 (90S O), & Radium 226	(UNFILTERED) Gross Alpha, Gross Beta, Sr-90 (90S O), & Radium 226	Tritium (906.0)	Substrate (Radiospectroscopy for Cesium -137)	Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15 pCi/L
Outfall 003	W	1L Amber	4	2-17-05 09:45	None		X				
Outfall 003	W	1L Amber	4		None			X		X	
Outfall 003	W	VOAs	2		None				X		
Relinquished By: <i>M. Harper</i>	Date/Time: 3/14/05 3:05	Received By: <i>Russell B...</i>					Date/Time: 3/15/05 12:45	Turn around Time: (check) 24 Hours _____ 5 Days <u>L</u>			
Relinquished By: <i>Russell B...</i>	Date/Time: 3/14/05 3:20	Received By: <i>M. Kelly</i>					Date/Time: 3/15/05 15:30	48 Hours _____ 10 Days _____			
Relinquished By: <i>M. Kelly</i>	Date/Time: 3/15/05 17:30	Received By: <i>M. Kelly</i>					Date/Time: 3/15/05 17:30	72 Hours _____ Normal _____			
Perchlorate Only 72 Hours _____							Metals Only 72 Hours _____	Sample Integrity: (Check) Intact <u>X</u> On Ice: <u>X</u>			

IDOC

# **APPENDIX A**

## **Section 8**

Outfall 003, March 19, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711RA8  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 10

Laboratory Eberline

Date: 05/17/05

Reviewer P. Meeks

Reviewer's Signature  


Analysis/Method Radionuclides

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were applied for detector efficiency outliers and exceeded holding times.
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 10  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: May 17, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab/Unfiltered	IOC1523-01	8349-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC1523-03	8349-002	water	900.0, 905.0, 906.0
Outfall 011 Grab/Substrate	IOC1523-04	8350-001	water	901.1
Outfall 011 Composite	IOC1526-01	8344-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Filtered	IOC1562-01	8351-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOC1562-02	8351-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOC1562-03	8352-001	water	901.1
Outfall 011 Grab/Unfiltered	IOC2063-01	8381-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC2063-03	8381-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Composite	IOC2064-01	8383-001	water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

All samples were received unpreserved, in glass containers. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As instructed on the transfer COCs, Eberline filtered and then preserved samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063). The gross alpha, gross beta, strontium, radium-226, radium-228, and cesium-137 results for the remaining samples were not qualified for lack of preservation, as the methods specifies a five-day holding time for unpreserved samples.

No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. None of the COCs requested radium-226 or radium-228 analyses. These analyses were requested by M. Harper of Del Mar Analytical, as per instructions in a letter from the LARWQCB dated 3/22/05. The original and transfer COCs accounted for the samples and remaining analyses presented in this data package.

Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

All tritium analyses and all analyses for samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063) were performed within 180 days of collection. The remaining analyses were performed beyond the five day holding time for unpreserved samples; therefore, the gross alpha, gross beta, radium-226, radium-228, strontium-90, and cesium-137 results for samples Outfall 011 Grab Unfiltered (IOC1523), Outfall 011 Grab Substrate (IOC1523), Outfall 011 Composite (IOC1526), Outfall 003 Unfiltered, Outfall 003 Substrate, Outfall 011 Grab Unfiltered (IOC2063), Outfall 011 Substrate (IOC2063), and Outfall 011 Composite (IOC2064) were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. All gross alpha detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in June 2002. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in July 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 90% and the actinium chemical yields were greater than 65%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Blank spikes were analyzed in association with the samples in these SDGs. Two gross alpha, two radium-228, one radium-226, one strontium-90, and one tritium LCS recoveries were outside the 3-sigma limits control limits, but all had acceptable recoveries ranging from 72- 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 011Composite (IOC1526) and for gross alpha, gross beta, tritium, strontium, radium-226, and radium-228 on Outfall 011Grab Unfiltered (IOC2063). All results were within the 3-sigma limits and no qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 011Composite (IOC1526) and for gross alpha, gross beta, tritium, and radium-226 on Outfall 011Grab Unfiltered (IOC2063). The Outfall 011 Grab Unfiltered gross alpha (114%), gross beta (104%), tritium (96%), and radium-226 (104%) were outside the 3-sigma control limits; however, as the recoveries were deemed acceptable, no qualifications were required. The Outfall 011 Composite gross alpha recovery outside the 3-sigma limits; however, as the 82% recovery was deemed acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS03159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Grab Unfiltered IOC1523-01	8349-001	03/18/05	04/02/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39
			04/02/05	04/02/05	Gross Beta	2.09 ± 1.3	pCi/L	1.94
			04/22/05	04/22/05	Ra228	0.453 ± 0.25	pCi/L	0.611
			04/07/05	04/07/05	H3	-16.2 ± 98	pCi/L	166
			05/06/05	05/06/05	Ra226	0.084 ± 0.020	pCi/L	0.023
			04/05/05	04/05/05	Sr90	-0.108 ± 0.25	pCi/L	0.508
			04/02/05	04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28
Outfall Oil Grab Filtered IOC1523-03	8349-002	03/18/05	04/02/05	04/02/05	Gross Beta	3.37 ± 1.3	pCi/L	1.79
			04/07/05	04/07/05	H3	-63.2 ± 96	pCi/L	166
			04/05/05	04/05/05	Sr90	0.029 ± 0.29	pCi/L	0.588

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Eberline Services

ANALYSIS RESULTS

SDG <u>8350</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503160-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MCA
		Outfall Oil Grab Substrate						
IOC1523-04	8350-001	03/18/05	04/11/05	Cs137 (G)	U	pCi/Smpl	9.67	

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Eberline Services

ANALYSIS RESULTS

SDG <u>B344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u> Outfall Oil Composite IOC1526	<u>Sample ID</u> 8344-001	03/18/05	04/02/05	GrossAlpha	0.305 ± 0.81	pCi/L	1.20
			04/02/05	Gross Beta	1.96 ± 1.1	pCi/L	1.80
			04/22/05	Ra228	0.359 ± 0.23	pCi/L	0.576
			04/07/05	H3	-31.0 ± 98	pCi/L	166
			05/06/05	Ra226	0.063 ± 0.020	pCi/L	0.024
			04/05/05	Sr90	0.032 ± 0.22	pCi/L	0.442

Am 5/17/05

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Eberline Services

ANALYSIS RESULTS

SDG <u>8351</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503161-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 Filtered IOC1562-01	8351-001	03/19/05	04/08/05	GrossAlpha	8.96 ± 3.3	pCi/L	2.54	
			04/08/05	Gross Beta	18.0 ± 3.1	pCi/L	3.73	
			04/22/05	Ra228	0.448 ± 0.53	pCi/L	0.961	
			04/07/05	H3	-43.7 ± 96	pCi/L	164	
			05/05/05	Ra226	0.091 ± 0.026	pCi/L	0.034	
			04/05/05	Sr90	5.49 ± 0.58	pCi/L	0.445	
Outfall 003 Unfiltered IOC1562-02	8351-002	03/19/05	04/06/05	GrossAlpha	5.03 ± 3.0	pCi/L	3.27	
			04/06/05	Gross Beta	19.0 ± 3.7	pCi/L	4.56	
			04/22/05	Ra228	0.386 ± 0.56	pCi/L	0.897	
			04/07/05	H3	-34.3 ± 99	pCi/L	168	
			05/05/05	Ra226	0.145 ± 0.028	pCi/L	0.031	
			04/05/05	Sr90	5.49 ± 0.56	pCi/L	0.404	

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Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503162-01</u>	Contract <u>PROJECT# ICC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003	Substrate	8352-001	03/19/05	04/25/05	Cs137 (G)	U	pCi/Smpl	5.55

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Eberline Services

ANALYSIS RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Outfall Oil Grab Unfiltered</u> IOC2063-01	<u>8381-001</u>	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
			04/18/05	Sr90	-0.052 ± 0.37	pCi/L	0.658
<u>Outfall Oil Grab Filtered</u> IOC2063-03	<u>8381-002</u>	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
			04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535

PM 5/17/05

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Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503232-01</u>	Contract <u>PROJECT# IOC2064</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Composite IOC2064-01	8383-001	03/25/05	04/11/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
			04/11/05	04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
			05/05/05	05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
			04/21/05	04/21/05	H3	83.4 ± 170	pCi/L	278
			04/29/05	04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
			04/18/05	04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

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Report Date <u>05/11/05</u>
Page <u>1</u>

# **APPENDIX A**

## **Section 9**

Outfall 003, April 28, 2005

Del Mar Analytical Laboratory Report



2852 Alton Ave., Irvine CA 92606 (949) 261-1622 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
  
Projects: 13267 (Study 2) / Routine Outfall 003  
Sampled: 4/28/05  
Del Mar Analytical Number: IOD2061

Dear Ms. Kelly:

Eberline Services performed the Gross Alpha/Beta (EPA 900.0), Tritium (EPA 906.0), Strontium-90 (EPA 905.0), Radium-226 (Ra-226, EPA 903.1), Radium-228 (Ra-228, EPA 904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1) analyses for the projects referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	EBERLINE ID
Outfall 003 Filtered	IOD2061-01	R505002-01 / 8442-001
Outfall 003 Unfiltered	IOD2061-02	R505002-01 / 8442-002
Outfall 003 Substrate	IOD2061-03	R505003-01 / 8443-001

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

Michele Harper  
Project Manager



# EBERLINE SERVICES

July 12, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOD2061  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Reports R505002-8442

Dear Ms. Harper:

Enclosed is a Level IV data report (on CD) for the results of the two water samples in the above referenced Del Mar Analytical Project. The samples were received at Eberline Services on April 30, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Forms. The requested analyses for the sample were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), strontium-90 (Sr-90, EPA905.0), radium-226 (Ra-226, EPA903.1), and radium-228 (Ra-228, EPA904.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results, were all within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed. Insufficient sample volume was received for a duplicate analysis to be performed. No problems were encountered during the analyses.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MC/Minjv*

*Enclosure: CD (Report)*

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

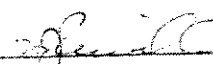


Eberline Services

ANALYSIS RESULTS

SDG <u>8442</u>	Client <u>DEL MAR ANNA</u>
Work Order <u>B505002-01</u>	Contract <u>PROJECT# IOD2061</u>
Received Date <u>04/30/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
IOD2061-01	8442-001	04/28/05	05/10/05		GrossAlpha	2.79 ± 3.7	pCi/L	4.35
			05/10/05		Gross Beta	43.2 ± 5.9	pCi/L	6.39
			06/13/05		Ra228	1.24 ± 0.81	pCi/L	2.22
			05/19/05		H3	56.8 ± 110	pCi/L	185
			06/16/05		Ra226	0.290 ± 0.38	pCi/L	0.630
			05/19/05		Sr90	10.8 ± 0.85	pCi/L	0.551
IOD2061-02	8442-002	04/28/05	05/10/05		GrossAlpha	8.85 ± 5.0	pCi/L	5.79
			05/10/05		Gross Beta	43.8 ± 6.9	pCi/L	8.12
			06/13/05		Ra228	0.542 ± 0.55	pCi/L	1.73
			05/19/05		H3	65.7 ± 110	pCi/L	189
			06/16/05		Ra226	0.650 ± 0.47	pCi/L	0.707
			05/19/05		Sr90	11.4 ± 0.82	pCi/L	0.457

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 Report Date 07/12/05  
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# Eberline Services

## QC RESULTS

SDG <u>8442</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R505002-01</u>	Contract <u>PROJECT# IOD2061</u>
Received Date <u>04/30/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8442-003	GrossAlpha	8.52 ± 1.1	pCi/Smpl	10.0	0.425	84% recovery
		Gross Beta	10.1 ± 0.75	pCi/Smpl	10.0	0.551	101% recovery
		H3	289 ± 18	pCi/Smpl	291	18.2	99% recovery
		Sr90	10.7 ± 0.60	pCi/Smpl	10.0	0.274	107% recovery
<u>BLANK</u>							
	8442-004	GrossAlpha	0.014 ± 0.21	pCi/Smpl	NA	0.365	<MDA
		Gross Beta	-0.037 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		H3	3.81 ± 11	pCi/Smpl	NA	18.6	<MDA
		Sr90	-0.008 ± 0.15	pCi/Smpl	NA	0.393	<MDA
<u>LCS</u>							
	8442-007	Ra228	12.2 ± 0.57	pCi/Smpl	10.0	0.666	122% recovery
		Ra226	6.14 ± 0.27	pCi/Smpl	5.58	0.087	110% recovery
<u>BLANK</u>							
	8442-008	Ra228	0.014 ± 0.27	pCi/Smpl	NA	0.710	<MDA
		Ra226	-0.005 ± 0.034	pCi/Smpl	NA	0.065	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	3σ
8442-005	GrossAlpha	5.41 ± 3.8	4.89	8442-001	2.79 ± 3.7	4.35	64 199 satis.
	Gross Beta	40.1 ± 5.9	6.71		43.2 ± 5.9	6.39	7 52 satis.
	H3	75.7 ± 110	185		56.8 ± 110	165	- 0 satis.
	Sr90	11.1 ± 0.84	0.501		10.8 ± 0.85	0.551	3 28 satis.
8442-009	Ra226	0.559 ± 0.53	0.837	8442-001	0.290 ± 0.38	0.630	- 0 satis.

<u>SPIKED SAMPLE</u>				<u>ORIGINAL SAMPLE</u>				
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	Added	%Recy
8442-006	GrossAlpha	222 ± 21	5.77	8442-002	8.85 ± 5.0	5.79	219	97
	Gross Beta	147 ± 16	7.84		43.8 ± 6.9	8.12	287	106
	H3	33200 ± 430	185		68.7 ± 110	189	23300	99
8442-010	Ra226	123 ± 3.8	0.844	8442-002	0.680 ± 0.47	0.707	123	98

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 Report Date 07/12/05  
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# EBERLINE SERVICES

July 6, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/06)

Dear Ms. Harper:

Enclosed are revised gamma Cs-137 reports for various projects, the project numbers and Eberline Services report numbers are given below. The results were previously reported in the units of pCi/sample; the enclosed reports present the results in the recalculated units of pCi/g.

<u>Del Mar Project</u>	<u>Eberline Services Report</u>
IOB1069-03	R502140-8269
IOB1576-03	R502216-8295
IOB2065-04	R503156-8346
IOB1014-04	R503158-8348
IOC1523-04	R503160-8350
IOC1562-03	R503162-8352
IOC2063-04	R503231-8382
IOD2061-03	R505003-8443

Please call me if you have any questions concerning the enclosed reports.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure. Reports  
Invoice

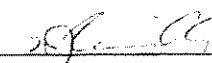
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0940  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8443</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R505003-01</u>	Contract <u>PROJECT# 1002061</u>
Received Date <u>04/30/05</u>	Matrix <u>SOLID</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
1002061-03	8443-001	04/28/05	05/06/05	Cs137 (G)	U	pCi/G	13.9

Certified by <u></u>
Report Date <u>07/06/05</u>
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Eberline Services

QC RESULTS

SDG <u>8443</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R505003-01</u>	Contract <u>PROJECT# 1002061</u>
Received Date <u>04/30/05</u>	Matrix <u>SOLID</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
LCS	8443-002	Cs137 (G)	260 ± 13	pCi/Smpl	222	9.53	117% recovery
BLANK	8443-003	Cs137 (G)	U	pCi/Smpl	NA	4.54	<MDA

DUPLICATES				ORIGINALS			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8443-004	Cs137 (G)	U	30.0	8443-001	U	13.9	- 0 satis.

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 Report Date 07/06/05  
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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92125 Ph (619) 505-9596 Fax (619) 505-9685  
 9630 South 51st Street, Suite B-126, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #2, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOD2061

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Work Order Comments: Level IV Data, include std logs

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOD2061-01 Water	Sampled: 04/28/05 13:28	Filter w/ preweighed .45 um & preserve (except H3)
EDD + Level 4-OUT	05/26/05 13:28	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	04/28/06 13:28	900.0
Gross Beta-O	04/28/06 13:28	900.0
Radium, Combined-O	04/28/06 13:28	EPA 903.1 & 904.0
Strontium 90-O	04/28/06 13:28	905.0
Tritium-O	04/28/06 13:28	906

- Containers Supplied:
- 1 L Amber (IOD2061-01A)
  - 1 L Amber (IOD2061-01B)
  - 1 L Amber (IOD2061-01C)
  - 1 L Amber (IOD2061-01D)

Sample ID: IOD2061-02 Water	Sampled: 04/28/05 13:28	Analyze as received, do not preserve
Filtering Fee	04/29/05 13:28	Filter using a 0.45 micron filter
Gross Alpha-O	04/28/06 13:28	900.0
Gross Beta-O	04/28/06 13:28	900.0
Radium, Combined-O	04/28/06 13:28	EPA 903.1 & 904.0
Strontium 90-O	04/28/06 13:28	905.0
Tritium-O	04/28/06 13:28	906

- Containers Supplied:
- 1 L Amber (IOD2061-02A)
  - 1 L Amber (IOD2061-02B)
  - 1 L Amber (IOD2061-02C)
  - 1 L Amber (IOD2061-02D)
  - 40 ml Voa Vial (IOD2061-02E)
  - 40 ml Voa Vial (IOD2061-02F)

Sample ID: IOD2061-03 Water	Sampled: 04/28/05 13:28	analyze substrate on filter from IOC2061-01
Gamma Scan-O	04/28/06 13:28	Cesium 137, EPA 901.1, 20 pci/sample RL

Released By: Date: 4-29-05 Time: 17:00 Received By: Date: 04/30/05 Time: \_\_\_\_\_

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA

Date/Time received 04/30/05 CoC No. # 7002061

Container I.D. No. ICE CHEST RUBBER MAT Requested TAT (Days) STD P.O. Received Yes [ ] No [ ]

### INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [x]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [x]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [x]
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [x]
5. Packing material is: Wet [ ] Dry [x]
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: \_\_\_\_\_ (Or see CoC X)
8. Samples are in correct container Yes [x] No [ ]
9. Paperwork agrees with samples? Yes [x] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [x]
11. Samples are: In good condition [ ] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [x] pH 7 Preservative \_\_\_\_\_
13. Describe any anomalies:  
\_\_\_\_\_  
\_\_\_\_\_
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
15. Inspected by MFW Date: 05/02/05 Time: 8:20

Customer Sample No.	cpm	mR/hr	Wide	Customer Sample No.	cpm	mR/hr	Wide

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

160 10022061

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/05

Client Name/Address: <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES Outfall 003-13267 Storm water at RMIHF		ANALYSIS REQUIRED						Field readings: Temp = 70.8 pH= 7.0	
Del Mar Contact: Michele Harper Project Manager: Bronwyn Kelly		Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Preservative		Bottle #		Substrate (Radiospectroscopy for Cesium -137)		Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15 pCi/L	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	None	None	None	(FILTERED) Gross Alpha, Total Combined Radium 226 & Radium 228	(UNFILTERED) Gross Alpha, Gross Beta, Sr-90 (905.0) & Radium 226, Tritium (906.0)	Analyze for Total Combined RA-226 & 228 only if Gross Alpha > 15 pCi/L	Comments
Outfall 003	W	1L Amber	4	4-28-05 1815	None	None	None	X	X	X	
Outfall 003	W	1L Amber	4		None	None					
Outfall 003	W	VOCs	2		None	None					
Relinquished By	Date/Time	Received By	Date/Time	Turn around time (check)							
<i>[Signature]</i>	4/28/05 1815	<i>[Signature]</i>	4/28/05 1815	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity (Check)	Intact	On ice: <input checked="" type="checkbox"/> <b>20</b>
Relinquished By	Date/Time	Received By	Date/Time								
<i>[Signature]</i>	4/28/05 1815	<i>[Signature]</i>	4/28/05 1815								
Relinquished By	Date/Time	Received By	Date/Time								

*[Signature]*



# **APPENDIX A**

## **Section 10**

Outfall 003, April 28, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
355 South Teller Street  
Suite 300  
Lakewood, CO 80226

Package ID T711RA9  
Task Order 313150012  
SDG No. IOD2061

No. of Analyses 2

Laboratory Eberline  
Reviewer P. Meeks  
Analysis/Method Radionuclides

Date: 07/14/05  
Reviewer's Signature  
*P. Meeks*

**ACTION ITEMS<sup>a</sup>**

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**

Qualifications were applied for detector efficiencies below 20% and exceeded holding times.	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

---

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

---

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUP: IOD2061

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150012  
SDG#: IOD2061  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: July 14, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003 Filtered	IOD2061-01	8442-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOD2061-02	8442-001	water	900.0, 903.1, 904.0, 905.0, 906.0



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Both samples in this SDG were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition. All tritium samples were received unpreserved in glass containers. All gross alpha, gross beta, radium-226, radium-228, and strontium samples were received unpreserved. Upon receipt, the laboratory filtered and then preserved the gross alpha, gross beta, radium-226, radium-228, and strontium aliquots for Outfall 003 Filtered. As per instructions, Outfall 003 Unfiltered was not preserved. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COC was signed and dated by field and laboratory personnel. The transfer COC was signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form I; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium samples and preserved gross alpha, gross beta, radium-226, radium-228, and strontium samples for Outfall 003 Filtered were analyzed within 180 days of collection. The unpreserved gross alpha, gross beta, radium-226, radium-228, and strontium samples for Outfall 003 Unfiltered were analyzed beyond the five-day holding time; therefore, the results for gross alpha, gross beta, radium-226, radium-228, and strontium were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The gross alpha detector efficiencies were both less than 20%; therefore, the nondetected gross alpha results for Outfall 003 Filtered was qualified as estimated, "UJ," and the detected gross alpha results for Outfall 003 Unfiltered was qualified as estimated, "J." The remaining detector efficiencies were above 20%.

#### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004 and October 2003. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%. And the actinium chemical yields were greater than 50%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Aqueous blank spikes were analyzed in association with the samples in this SDG. The radium-228 and radium-226 recoveries exceeded the 3-sigma limits; however, these recoveries, 122% and 110%, were deemed acceptable. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses on Outfall 003 Filtered for all analytes except radium-228. The gross alpha RPD was greater than 20%; however, as the result was within the 3-sigma limits, no qualifications were required. All remaining RPDs were  $\leq 20\%$  and all results were within the 3-sigma limits. No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 003 Filtered for all analytes except radium-228 and strontium. The recoveries were all within the 3-sigma limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in this data package. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in this SDG.

Eberline Services

ANALYSIS RESULTS

SDG 8442	Client DEL MAR ANAL
Work Order R505002-01	Contract PROJECT# IOD2061
Received Date 04/30/05	Matrix WATER

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code
Outfall 003 Filtered IOD2061-01	8442-001	04/28/05	05/10/05	GrossAlpha	2.79 ± 3.7	pCi/L	4.35	S C C C	R
			05/10/05	Gross Beta	43.2 ± 5.9	pCi/L	6.39		
			05/13/05	Ra228	1.24 ± 0.81	pCi/L	2.22		
			05/19/05	H3	56.8 ± 110	pCi/L	185		
			06/16/05	Ra226	0.290 ± 0.38	pCi/L	0.630		
			05/19/05	Sr90	10.8 ± 0.85	pCi/L	0.551		
Outfall 003 unfiltered IOD2061-02  pm 7/14/05	8442-002	04/28/05	05/10/05	GrossAlpha	8.85 ± 5.0	pCi/L	5.79	F H S B H	R, H H H H H
			05/10/05	Gross Beta	43.8 ± 6.9	pCi/L	8.12		
			06/13/05	Ra228	0.542 ± 0.55	pCi/L	1.73		
			05/19/05	H3	65.7 ± 110	pCi/L	189		
			06/16/05	Ra226	0.650 ± 0.47	pCi/L	0.707		
			05/19/05	Sr90	11.4 ± 0.82	pCi/L	0.457		

**AMEC VALIDATED**

**LEVEL 1**

Certified by <i>[Signature]</i>
Report Date 07/12/05
Page 1

# **APPENDIX A**

## **Section 11**

Outfall 003, October 18, 2005

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 10/18/05  
Received: 10/18/05  
Issued: 01/20/06 16:28

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOJ1231-01	Outfall 003	Water

Reviewed By:

*Michele Chamberlin*

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1231-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5J19098	0.36	4.0	ND	2	10/19/05	10/21/05	RL-1
Cadmium	EPA 200.8	5J19098	0.030	2.0	<b>0.34</b>	2	10/19/05	10/21/05	RL-1, B, J
Copper	EPA 200.8	5J19098	2.0	8.0	<b>17</b>	4	10/19/05	10/20/05	
Lead	EPA 200.8	5J19098	0.16	4.0	<b>11</b>	4	10/19/05	10/20/05	
Mercury	EPA 245.1	5J19052	0.050	0.20	<b>0.059</b>	1	10/19/05	10/19/05	J
<b>Sample ID: IOJ1231-01RE1 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Copper	EPA 200.8	5J19098	2.0	8.0	<b>17</b>	4	10/19/05	10/24/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOJ1231-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	5J18042	2.6	5.0	100	10	10/18/05	10/18/05	
Nitrate/Nitrite-N	EPA 300.0	5J18042	0.072	0.26	ND	1	10/18/05	10/18/05	
Oil & Grease	EPA 413.1	5J24050	0.90	4.8	1.1	1	10/24/05	10/24/05	J
Sulfate	EPA 300.0	5J18042	1.8	5.0	80	10	10/18/05	10/18/05	
Total Dissolved Solids	SM2540C	5J24100	10	10	850	1	10/24/05	10/24/05	
Total Suspended Solids	EPA 160.2	5J21114	10	10	480	1	10/21/05	10/21/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 003 (IOJ1231-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	10/18/2005 10:48	10/18/2005 18:00	10/18/2005 21:30	10/18/2005 22:12

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5J19052 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/19/2005 (5J19052-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 10/19/2005 (5J19052-BS1)</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 10/19/2005 (5J19052-MS1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	7.99	0.20	0.050	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/19/2005 (5J19052-MSD1)</b>											
						<b>Source: IOJ1182-01</b>					
Mercury	8.09	0.20	0.050	ug/l	8.00	ND	101	70-130	1	20	
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Blank Analyzed: 10/20/2005 (5J19098-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	0.109	1.0	0.015	ug/l							J
Copper	ND	2.0	0.49	ug/l							
Lead	0.0450	1.0	0.040	ug/l							J
<b>LCS Analyzed: 10/20/2005 (5J19098-BS1)</b>											
Antimony	77.4	2.0	0.18	ug/l	80.0		97	85-115			
Cadmium	81.9	1.0	0.015	ug/l	80.0		102	85-115			
Copper	77.7	2.0	0.49	ug/l	80.0		97	85-115			
Lead	81.2	1.0	0.13	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS1)</b>											
						<b>Source: IOJ1156-01</b>					
Antimony	84.7	2.0	0.18	ug/l	80.0	0.18	106	70-130			
Cadmium	84.1	1.0	0.015	ug/l	80.0	0.14	105	70-130			
Copper	83.0	2.0	0.49	ug/l	80.0	3.9	99	70-130			
Lead	79.1	1.0	0.040	ug/l	80.0	0.32	98	70-130			

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J19098 Extracted: 10/19/05</b>											
<b>Matrix Spike Analyzed: 10/20/2005 (5J19098-MS2)</b>						<b>Source: IOJ1159-01</b>					
Antimony	86.6	2.0	0.18	ug/l	80.0	0.29	108	70-130			
Cadmium	84.6	1.0	0.015	ug/l	80.0	0.072	106	70-130			
Copper	84.8	2.0	0.49	ug/l	80.0	4.8	100	70-130			
Lead	80.8	1.0	0.040	ug/l	80.0	0.53	100	70-130			
<b>Matrix Spike Dup Analyzed: 10/20/2005 (5J19098-MSD1)</b>						<b>Source: IOJ1156-01</b>					
Antimony	85.5	2.0	0.18	ug/l	80.0	0.18	107	70-130	1	20	
Cadmium	84.4	1.0	0.015	ug/l	80.0	0.14	105	70-130	0	20	
Copper	83.1	2.0	0.49	ug/l	80.0	3.9	99	70-130	0	20	
Lead	79.9	1.0	0.040	ug/l	80.0	0.32	99	70-130	1	20	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5J18042 Extracted: 10/18/05</b>											
<b>Blank Analyzed: 10/18/2005 (5J18042-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 10/18/2005 (5J18042-BS1)</b>											
Chloride	4.98	0.50	0.26	mg/l	5.00		100	90-110			M-3
Sulfate	9.99	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 10/18/2005 (5J18042-MS1) Source: IOJ1153-01</b>											
Sulfate	25.3	0.50	0.18	mg/l	10.0	14	113	80-120			
<b>Matrix Spike Dup Analyzed: 10/18/2005 (5J18042-MSD1) Source: IOJ1153-01</b>											
Sulfate	24.8	0.50	0.18	mg/l	10.0	14	108	80-120	2	20	
<b>Batch: 5J21114 Extracted: 10/21/05</b>											
<b>Blank Analyzed: 10/21/2005 (5J21114-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 10/21/2005 (5J21114-BS1)</b>											
Total Suspended Solids	960	10	10	mg/l	1000		96	85-115			
<b>Duplicate Analyzed: 10/21/2005 (5J21114-DUP1) Source: IOJ1202-01</b>											
Total Suspended Solids	436	10	10	mg/l		420			4	10	
<b>Batch: 5J24050 Extracted: 10/24/05</b>											
<b>Blank Analyzed: 10/24/2005 (5J24050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5J24050 Extracted: 10/24/05</b>										
<b>LCS Analyzed: 10/24/2005 (5J24050-BS1)</b>										
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120		M-NR1
<b>LCS Dup Analyzed: 10/24/2005 (5J24050-BSD1)</b>										
Oil & Grease	16.1	5.0	0.94	mg/l	20.0		80	65-120	0	20
<b>Batch: 5J24100 Extracted: 10/24/05</b>										
<b>Blank Analyzed: 10/24/2005 (5J24100-BLK1)</b>										
Total Dissolved Solids	ND	10	10	mg/l						
<b>LCS Analyzed: 10/24/2005 (5J24100-BS1)</b>										
Total Dissolved Solids	998	10	10	mg/l	1000		100	90-110		
<b>Duplicate Analyzed: 10/24/2005 (5J24100-DUP1)</b>										
Total Dissolved Solids	440	10	10	mg/l		Source: IOJ0222-03			0	10

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
 Received: 10/18/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOJ1231-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.10	4.8	15
IOJ1231-01	Antimony-200.8	Antimony	ug/l	0.31	4.0	6.00
IOJ1231-01	Cadmium-200.8	Cadmium	ug/l	0.34	2.0	4.00
IOJ1231-01	Chloride - 300.0	Chloride	mg/l	100	5.0	150
<b>IOJ1231-01</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>17</b>	<b>8.0</b>	<b>14</b>
IOJ1231-01	Mercury - 245.1	Mercury	ug/l	0.059	0.20	0.20
IOJ1231-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0	0.26	10.00
IOJ1231-01	Sulfate-300.0	Sulfate	mg/l	80	5.0	250
<b>IOJ1231-01</b>	<b>TDS - SM 2540C</b>	<b>Total Dissolved Solids</b>	<b>mg/l</b>	<b>850</b>	<b>10</b>	<b>850</b>
<b>IOJ1231-01RE1</b>	<b>Copper-200.8</b>	<b>Copper</b>	<b>ug/l</b>	<b>17</b>	<b>8.0</b>	<b>14</b>

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05  
Received: 10/18/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOJ1231

Sampled: 10/18/05

Received: 10/18/05

### Certification Summary

#### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

#### Subcontracted Laboratories

##### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4

Samples: IOJ1231-01

Analysis Performed: Strontium 90

Samples: IOJ1231-01

##### Pace Analytical, MN- SUB

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR

Samples: IOJ1231-01

**Del Mar Analytical, Irvine**  
 Michele Chamberlin  
 Project Manager

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117 DJ1231

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/17/05

Client Name/Address:		Project:		ANALYSIS REQUIRED										Field readings:	Comments		
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler: Rick BAJAGA		Boeing-SSFL NPDES Routine Outfall 003 Stormwater at RMHF Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N	TDS, TSS	Gross Alpha, Gross Beta Thoron (006.0), Sr-90 Radon 220 & Radon 228							Temp = 61.5 °C pH = 6.82	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #											
Outfall 003	W	1L Poly	1	10-18-05	HNO3	1A	X										
Outfall 003-Dup	W	1L Poly	1		HNO3	1B	X										
Outfall 003	W	1L Amber	2		None	2A, 2B		X									
Outfall 003	W	1L Amber	2		HCl	3A, 3B			X								
Outfall 003	W	Poly-500 ml	2		None	4A, 4B				X							
Outfall 003	W	Poly-500 ml	2	10-19-05	None	5A, 5B					X						
Outfall 003	W	Poly-1 gal	2	10-19-05	None												
Outfall 003	W	Poly-1 gal	2	10-18-05	None	6A, 6B											
Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L Sr-90 only																	
Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____																	
Relinquished By: [Signature] Date/Time: 10/18/05 15:01 Received By: [Signature] Date/Time: 10/18/05 1800																	
Relinquished By: [Signature] Date/Time: 10/18/05 1800 Received By: [Signature] Date/Time: 10/18/05 1800																	
Relinquished By: [Signature] Date/Time: 10/18/05 1800 Received By: [Signature] Date/Time: 10/18/05 1800																	



**ADDITIONAL ANALYSIS REQUEST FORM**

Today's Date: 10/20 Del Mar Analytical Project Manager: MH

Request via:  telephone  chain of custody form  fax transmission  E-mail  other

Client: MWH Pas/300 Contact: Bronwyn Kelly

Project: Routine outfall 003

Date Sampled: 10/18 Date Received: 10/18

Status:  in progress  completed  received today  received yesterday  on hold  other

SAMPLE NUMBER	SAMPLE DESCRIPTION	ANALYSIS REQUESTED	SPECIAL REQUIREMENTS
10J1231-01	outfall 003	Strontium-90	Level 4+RDD
	- Add-in to orig work order, normal TAT		

TURNAROUND STATUS:  Same Day  24hr  48hr  3days  
 5days  Standard  No Rush Charge



# EBERLINE SERVICES

April 11, 2006

Ms. Michele Chamberlin  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/07)

Dear Ms. Chamberlin:

Enclosed is a Level IV data package (on CD) for the water samples in the following Del Mar Analytical Projects, the associated Eberline Services work orders are also specified:

<u>Del Mar Project #</u>	<u>Eberline Work Order</u>	<u>Sample Receipt Date</u>
IOJ1231	R510124-8615	10/21/05
IOK0900	R511134-8621	11/11/05
IPC0164	R603040-8668	03/03/06
IPC1333	R603083-8669	03/14/06

The samples were analyzed according to the accompanying Del Mar Analytical Subcontract Order Forms. The analyses of samples IOJ1231-01 and IOK0900-01 were reanalyses. The requested analysis for all samples was Sr-90 (EPA905.0). The samples were neither filtered nor preserved prior to analysis. Samples IOJ1231-01 and IOK0900-01 were analyzed in a common preparation batch, while samples IPC0164-01 and IPC1333-01 were analyzed separately with their own QC samples. The QC LCS's, blank analyses, and duplicate analyses were all within the control limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed. No problems were encountered during the analyses.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Level IV Report on CD

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8615</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>2518124-21</u>	Contract <u>PROJECT# 10J1231</u>
Received Date <u>10/21/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
10J1231-01	8615-001	10/18/05	03/28/06	Sr-90	8.58 ± 0.99	pCi/L	0.656

Certified by <u><i>[Signature]</i></u>
Report Date <u>04/06/06</u>
Page 1

Eberline Services

QC RESULTS

SDG #615	Client DEL MAR ANAL
Work Order R510124-01	Contract PROJECT# IOJ1231
Received Date 10/21/98	Matrix WATER

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
LCS	8615-002	Sr-90	10.3 ± 0.78	pCi/Smpl	9.82	0.341	105% recovery
BLANK	8615-003	Sr-90	-0.167 ± 0.18	pCi/Smpl	NA	0.402	<MDA

DUPLICATES				ORIGINALS				
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot)	Eval
8615-004	Sr-90	8.54 ± 0.96	0.588	8615-001	8.58 ± 0.99	0.656	0	32 satis.

Certified by <i>[Signature]</i>
Report Date 04/06/06
Page 2



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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOJ1231**

<p align="center"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Harper</p>	<p align="center"><b>RECEIVING LABORATORY:</b></p> <p>Eberline Services          2030 Wright Avenue          Richmond, CA 94804          Phone : (510) 235-2633          Fax: (510) 235-0438</p>
---	--

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOJ1231-01 Water	Sampled: 10/18/05 10:48	
EDD + Level 4	11/15/05 10:48	Excel EDD email to pm, Include Std logs for Lvl IV
Strontium 90-O	10/18/06 10:48	905.0, sub to Eberline
<b>Containers Supplied:</b>		
1 gal Poly (IOJ1231-01K)		
1 gal Poly (IOJ1231-01L)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): **BROKEN CONTAINER**

Released By: Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: **MFW** Date: **10/21/05** Time: **10:00**

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



**RICHMOND, CA LABORATORY**  
SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA  
 Date/Time received 10/21/05 10:50 CoC No. IOJ1231  
 Container I.D. No. BOX/STYRO Requested TAT (Days) \_\_\_\_\_ P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [X]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [X]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]
5. Packing material is: BROKEN CONTAINER, MELTED ICE Wet [X] Dry [ ]
6. Number of samples in shipping container: 2 Sample Matrix W
7. Number of containers per sample: 2 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [X] pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies:  
\_\_\_\_\_  
\_\_\_\_\_
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
15. Inspected by RFW Date: 10/21/05 Time: 10:45

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 12**

Outfall 003, October 18, 2005


MEC<sup>X</sup> Data Validation Reports



**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA12  
 Task Order 313150010  
 SDG No. IOJ1231

No. of Analyses 1  
 Date: December 15, 2005  
 Reviewer's Signature 

Laboratory Eberline  
 Reviewer E. Wessling  
 Analysis/Method Sr-90 by 905.0

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -holding times missed
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUP:  
IOJ1231

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOJ1231  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Method 905.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IOJ1231-01	8615-001	water	905.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 011 Grab for unfiltered reanalyses and cesium analysis of the substrate. No qualifications were required.

#### 2.1.3 Holding Times

The Outfall 003 Unfiltered strontium-90-sample was analyzed beyond the five day holding time for unpreserved samples; therefore, these results were qualified as estimated, "J"

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### 2.3 BLANKS

No measurable activities were detected in the method blank, therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in this SDG. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on a sample other than from the site; therefore, no assessment was made for this criterion. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed for the strontium analysis. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this SDG. The sample result and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in this SDG.

Eberline Services

ANALYSIS RESULTS

SDG <u>8615</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS10124-01</u>	Contract <u>PROJECT# IOJ1231</u>
Received Date <u>10/31/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
IOJ1231-01	8615-001	10/19/05	11/17/05	Sr90	8.44 ± 1.3	pCi/L	0.992

*Raw Anal*  
*Anal*  
*J* / *A*

Certified by <u><i>[Signature]</i></u>
Report Date <u>11/21/05</u>
Page 1

# **APPENDIX A**

## **Section 13**

Outfall 003, November 9, 2005

Del Mar Analytical Laboratory Report





Del Mar Analytical

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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 11/09/05  
Received: 11/09/05  
Issued: 01/20/06 17:27

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOK0900-01	Outfall 003	Water

Reviewed By:

*Michele Chamberlin*

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOK0900-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5K16096	0.18	2.0	35	1	11/16/05	11/16/05	
Cadmium	EPA 200.8	5K16096	0.015	1.0	0.22	1	11/16/05	11/17/05	J
Copper	EPA 200.8	5K16096	0.49	2.0	7.1	1	11/16/05	11/16/05	B
Lead	EPA 200.8	5K16096	0.040	1.0	1.4	1	11/16/05	11/16/05	
Mercury	EPA 245.1	5K17098	0.050	0.20	ND	1	11/17/05	11/17/05	

### Sample ID: IOK0900-01RE1 (Outfall 003 - Water)

Reporting Units: ug/l

Antimony	EPA 200.8	5K25104	0.18	2.0	37	1	11/25/05	11/27/05	
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Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOK0900-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	5K09130	1.3	2.5	98	5	11/09/05	11/10/05	
Nitrate/Nitrite-N	EPA 300.0	5K09130	0.072	0.26	2.9	1	11/09/05	11/09/05	
Oil & Grease	EPA 413.1	5K14056	0.96	5.1	1.1	1	11/14/05	11/14/05	J
Sulfate	EPA 300.0	5K09130	0.90	2.5	99	5	11/09/05	11/10/05	
Total Dissolved Solids	SM2540C	5K16116	10	10	590	1	11/16/05	11/16/05	
Total Suspended Solids	EPA 160.2	5K10088	10	10	19	1	11/10/05	11/10/05	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
Received: 11/09/05

**SHORT HOLD TIME DETAIL REPORT**

Sample ID: Outfall 003 (IOK0900-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	11/09/2005 13:38	11/09/2005 18:00	11/09/2005 23:30	11/09/2005 23:57

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5K16096 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005-11/17/2005 (5K16096-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	1.20	2.0	0.25	ug/l							J
Lead	0.129	1.0	0.040	ug/l							J
<b>LCS Analyzed: 11/16/2005-11/17/2005 (5K16096-BS1)</b>											
Antimony	75.0	2.0	0.050	ug/l	80.0		94	85-115			
Cadmium	85.7	1.0	0.025	ug/l	80.0		107	85-115			
Copper	82.7	2.0	0.25	ug/l	80.0		103	85-115			
Lead	82.4	1.0	0.040	ug/l	80.0		103	85-115			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS1)</b>						<b>Source: IOK0918-02</b>					
Antimony	76.3	2.0	0.050	ug/l	80.0	0.060	95	70-130			
Cadmium	86.0	1.0	0.025	ug/l	80.0	ND	108	70-130			
Copper	79.4	2.0	0.25	ug/l	80.0	2.7	96	70-130			
Lead	79.8	1.0	0.040	ug/l	80.0	0.070	100	70-130			
<b>Matrix Spike Analyzed: 11/16/2005-11/17/2005 (5K16096-MS2)</b>						<b>Source: IOK0922-03</b>					
Antimony	75.0	2.0	0.050	ug/l	80.0	0.096	94	70-130			
Cadmium	86.5	1.0	0.025	ug/l	80.0	0.11	108	70-130			
Copper	107	2.0	0.25	ug/l	80.0	34	91	70-130			
Lead	77.7	1.0	0.040	ug/l	80.0	0.22	97	70-130			
<b>Matrix Spike Dup Analyzed: 11/16/2005-11/17/2005 (5K16096-MSD1)</b>						<b>Source: IOK0918-02</b>					
Antimony	75.6	2.0	0.050	ug/l	80.0	0.060	94	70-130	1	20	
Cadmium	86.4	1.0	0.025	ug/l	80.0	ND	108	70-130	1	20	
Copper	78.0	2.0	0.25	ug/l	80.0	2.7	94	70-130	2	20	
Lead	79.7	1.0	0.040	ug/l	80.0	0.070	100	70-130	0	20	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K17098 Extracted: 11/17/05</b>											
<b>Blank Analyzed: 11/17/2005 (5K17098-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 11/17/2005 (5K17098-BS1)</b>											
Mercury	8.09	0.20	0.050	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 11/17/2005 (5K17098-MS1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.44	0.20	0.050	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 11/17/2005 (5K17098-MSD1)</b>											
						<b>Source: IOK0827-04</b>					
Mercury	8.29	0.20	0.050	ug/l	8.00	ND	104	70-130	2	20	
<b>Batch: 5K25104 Extracted: 11/25/05</b>											
<b>Blank Analyzed: 11/27/2005 (5K25104-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
<b>LCS Analyzed: 11/27/2005 (5K25104-BS1)</b>											
Antimony	79.6	2.0	0.18	ug/l	80.0		100	85-115			
<b>Matrix Spike Analyzed: 11/27/2005 (5K25104-MS1)</b>											
						<b>Source: IOK2100-01</b>					
Antimony	77.4	2.0	0.18	ug/l	80.0	0.29	96	70-130			
<b>Matrix Spike Dup Analyzed: 11/27/2005 (5K25104-MSD1)</b>											
						<b>Source: IOK2100-01</b>					
Antimony	80.6	2.0	0.18	ug/l	80.0	0.29	100	70-130	4	20	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K09130 Extracted: 11/09/05</b>											
<b>Blank Analyzed: 11/09/2005 (5K09130-BLK1)</b>											
Chloride	0.327	0.50	0.15	mg/l							J
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	0.472	0.50	0.45	mg/l							J
<b>LCS Analyzed: 11/09/2005 (5K09130-BS1)</b>											
Chloride	4.74	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.52	0.50	0.45	mg/l	10.0		95	90-110			
<b>Matrix Spike Analyzed: 11/09/2005 (5K09130-MS1) Source: IOK0875-01</b>											
Chloride	23.0	0.50	0.15	mg/l	5.00	18	100	80-120			
Sulfate	18.6	0.50	0.45	mg/l	10.0	9.3	93	80-120			
<b>Matrix Spike Dup Analyzed: 11/09/2005 (5K09130-MSD1) Source: IOK0875-01</b>											
Chloride	22.9	0.50	0.15	mg/l	5.00	18	98	80-120	0	20	
Sulfate	18.7	0.50	0.45	mg/l	10.0	9.3	94	80-120	1	20	
<b>Batch: 5K10088 Extracted: 11/10/05</b>											
<b>Blank Analyzed: 11/10/2005 (5K10088-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/10/2005 (5K10088-BS1)</b>											
Total Suspended Solids	970	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 11/10/2005 (5K10088-DUP1) Source: IOK0617-01</b>											
Total Suspended Solids	440	10	10	mg/l		450			2	10	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5K14056 Extracted: 11/14/05</b>											
<b>Blank Analyzed: 11/14/2005 (5K14056-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 11/14/2005 (5K14056-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NRI
<b>LCS Dup Analyzed: 11/14/2005 (5K14056-BSD1)</b>											
Oil & Grease	17.4	5.0	0.94	mg/l	20.0		87	65-120	2	20	
<b>Batch: 5K16116 Extracted: 11/16/05</b>											
<b>Blank Analyzed: 11/16/2005 (5K16116-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 11/16/2005 (5K16116-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 11/16/2005 (5K16116-DUP1)</b>											
Total Dissolved Solids	196	10	10	mg/l		Source: IOK0904-01			2	10	

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.





# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IOK0900-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.10	5.1	15
<b>IOK0900-01</b>	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>35</b>	<b>2.0</b>	<b>6.00</b>
IOK0900-01	Cadmium-200.8	Cadmium	ug/l	0.22	1.0	4.00
IOK0900-01	Chloride - 300.0	Chloride	mg/l	98	2.5	150
IOK0900-01	Copper-200.8	Copper	ug/l	7.10	2.0	14
IOK0900-01	Mercury - 245.1	Mercury	ug/l	0	0.20	0.20
IOK0900-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	2.90	0.26	10.00
IOK0900-01	Sulfate-300.0	Sulfate	mg/l	99	2.5	250
IOK0900-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	590	10	850
<b>IOK0900-01RE1</b>	<b>Antimony-200.8</b>	<b>Antimony</b>	<b>ug/l</b>	<b>37</b>	<b>2.0</b>	<b>6.00</b>

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
Received: 11/09/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOK0900

Sampled: 11/09/05  
 Received: 11/09/05

### Certification Summary

#### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

#### Subcontracted Laboratories

##### Alta Analytical *NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOK0900-01

Analysis Performed: EDD + Level 4  
 Samples: IOK0900-01

##### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Level 4 + EDD  
 Samples: IOK0900-01

Analysis Performed: Strontium 90  
 Samples: IOK0900-01

Del Mar Analytical, Irvine  
 Michele Chamberlin  
 Project Manager

# CHAIN OF CUSTODY FORM

Client Name/Address: **MWH-Pasadena**  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Project: **Boeing-SSFL NPDES  
 Routine Outfall 003**  
 Stormwater at RMHF

ANALYSIS REQUIRED

Field readings:  
 Temp = 59.7  
 pH = 9.4

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cl <sup>-</sup> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N	TDS, TSS	91-90 (905.0)	Comments
Outfall 003	W	1L Poly	1	11-9-05 13:38	HNO3	1A	X						
Outfall 003-Dup	W	1L Poly	1	11-9-05 13:38	HNO3	1B	X						
Outfall 003	W	1L Amber	2		None	2A, 2B		X					
Outfall 003	W	1L Amber	2		HCl	3A, 3B		X					
Outfall 003	W	Poly-500 ml	2		None	4A, 4B			X		X		
Outfall 003	W	Poly-500 ml	2		None	5A, 5B						X	unfiltered analysis
Outfall 003	W	Poly-1 gal	1	11-9-05 13:38	None							X	

Relinquished By: *[Signature]* Date/Time: 11-9-05 15:00  
 Received By: *[Signature]* Date/Time: 11/9/05 1500

Relinquished By: *[Signature]* Date/Time: 11/9/05 1800  
 Received By: *[Signature]* Date/Time: 11/9/05 1800

Relinquished By: *[Signature]* Date/Time: \_\_\_\_\_  
 Received By: *[Signature]* Date/Time: \_\_\_\_\_

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check) On ice: 5C  
 Intact





December 10, 2005

**Alta Project I.D.: 27026**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on December 08, 2005 under your Project Name "IOK0900". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 12/8/2005**

Alta Lab. ID

Client Sample ID

27026-001

IOK0900-01

## SECTION II

Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	7516	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000105			13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000893			13C-1,2,3,7,8-PeCDD	81.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000158			13C-1,2,3,4,7,8-HxCDD	75.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000149			13C-1,2,3,6,7,8-HxCDD	77.1	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000154			13C-1,2,3,4,6,7,8-HpCDD	70.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000172			13C-OCDD	56.0	17 - 157	
OCDD	ND	0.00000585			13C-2,3,7,8-TCDF	79.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000899			13C-1,2,3,7,8-PeCDF	73.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000135			13C-2,3,4,7,8-PeCDF	76.2	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000117			13C-1,2,3,4,7,8-HxCDF	70.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000723			13C-1,2,3,6,7,8-HxCDF	74.2	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000682			13C-2,3,4,6,7,8-HxCDF	73.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000824			13C-1,2,3,7,8,9-HxCDF	76.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000132			13C-1,2,3,4,6,7,8-HpCDF	68.4	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000743			13C-1,2,3,4,7,8,9-HpCDF	72.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000947			13C-OCDF	59.0	17 - 157	
OCDF	ND	0.00000230			CRS 37Cl-2,3,7,8-TCDD	97.0	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.00000105						
Total PeCDD	ND	0.000000893						
Total HxCDD	ND	0.00000154						
Total HpCDD	ND	0.00000172						
Total TCDF	ND	0.000000899						
Total PeCDF	ND	0.000000593						
Total HxCDF	ND	0.000000861						
Total HpCDF	ND	0.000000833						

**Footnotes**

- a. Sample specific estimated detection limit
- b. Estimated maximum possible concentration
- c. Method detection limit
- d. Lower control limit - upper control limit.

Analyst: WJL      Approved By: Martha M. Maier      10-Dec-2005 15:23



OPR Results		EPA Method 1613			
Matrix	Aqueous	QC Batch No:	7516	Lab Sample:	0-OPR001
Sample Size:	1.000 L	Date Extracted:	8-Dec-05	Date Analyzed DB-5:	9-Dec-05
				Date Analyzed DB-225:	NA
Analyte	Spike Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	6.7 - 15.8	13C-2,3,7,8-1CDD	81.6	25 - 164
1,2,3,7,8-PeCDD	50.0	35 - 71	13C-1,2,3,7,8-PeCDD	74.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.8	32 - 141
1,2,3,6,7,8-HxCDD	50.0	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.2	28 - 130
1,2,3,7,8,9-HxCDD	50.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	65.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	35 - 70	13C-OCDD	51.0	17 - 157
OCDD	100	78 - 144	13C-2,3,7,8-TCDF	85.7	24 - 169
2,3,7,8-TCDF	10.0	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	74.5	24 - 185
1,2,3,7,8-PeCDF	50.0	40 - 67	13C-2,3,4,7,8-PeCDF	72.8	21 - 178
2,3,4,7,8-PeCDF	50.0	34 - 80	13C-1,2,3,4,7,8-HxCDF	63.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	36 - 67	13C-1,2,3,6,7,8-HxCDF	60.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	42 - 65	13C-2,3,4,6,7,8-HxCDF	68.0	28 - 136
2,3,4,6,7,8-HxCDF	50.0	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	60.4	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	65.4	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	39 - 69	13C-OCDF	53.9	17 - 157
OCDF	100	63 - 170	CRS 37Cl-2,3,7,8-TCDD	99.0	35 - 197

Analyst: WJL  
 Approved By: Martha M. Maier  
 Date: 10-Dec-2005 15:23

**Sample ID: IOK0900-01** **EPA Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	27026-001
Project:	IOK0900	Sample Size:	1.013 L	QC Batch No:	7516
Date Collected:	9-Nov-05			Date Analyzed DB-5:	10-Dec-05
Time Collected:	1338			Date Analyzed DB-225:	NA
				Date Received:	8-Dec-05
				Date Extracted:	8-Dec-05
				Date Analyzed DB-225:	NA

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000101			13C-2,3,7,8-TCDD	87.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000100			13C-1,2,3,7,8-PeCDD	88.0	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000232			13C-1,2,3,4,7,8-HxCDD	74.8	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000226			13C-1,2,3,6,7,8-HxCDD	79.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000229			13C-1,2,3,4,6,7,8-HpCDD	73.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000173			J	13C-OCDD	56.9	17 - 157	
OCDD	0.000145				13C-2,3,7,8-TCDF	84.9	24 - 169	
2,3,7,8-TCDF	ND		0.00000172		13C-1,2,3,7,8-PeCDF	85.8	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000223			13C-2,3,4,7,8-PeCDF	81.5	21 - 178	
2,3,4,7,8-PeCDF	ND		0.00000181		13C-1,2,3,4,7,8-HxCDF	71.5	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000951			13C-1,2,3,6,7,8-HxCDF	72.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000908			13C-2,3,4,6,7,8-HxCDF	75.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000105			13C-1,2,3,7,8,9-HxCDF	80.4	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000163			13C-1,2,3,4,6,7,8-HpCDF	70.6	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND		0.00000271		13C-1,2,3,4,7,8,9-HpCDF	75.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000188			13C-OCDF	60.0	17 - 157	
OCDF	0.00000510			J	CRS 37Cl-2,3,7,8-TCDD	103	35 - 197	

Totals	Footnotes							
Total TCDD	0.00000112							
Total PeCDD	0.00000123		0.00000242					
Total HxCDD	0.00000258		0.00000624					
Total HpCDD	0.0000424							
Total TCDF	0.0000203		0.0000296					
Total PeCDF	ND		0.0000130					
Total HxCDF	0.00000224							
Total HpCDF	ND		0.00000503					

Analyst: WJL  
 Approved By: Martha M. Maier  
 10-Dec-2005 15:23

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



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 9484 Chippewa Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-0506 Fax (619) 505-0888  
 8820 South 51st Street, Suite 3-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2620 E. Sunset Rd., Suite #3, Las Vegas, NV 89130 Ph (702) 798-9820 Fax (702) 798-9821

**SUBCONTRACT ORDER - PROJECT # IOK0900**

<p align="center"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Chamberlin</p>	<p align="center"><b>RECEIVING LABORATORY:</b></p> <p>Alta Analytical - SUB          1104 Windfield Way          El Dorado Hills, CA 95762          Phone: (916) 933-1640          Fax: (916) 673-0106</p> <p align="right" style="font-size: 2em;"><i>27026</i> <i>1.7°C</i></p>
---	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0900-01	Water	Sampled: 11/09/05 13:38
1613-Dioxin-HR	11/16/05 13:38	Instant Notification
EDD + Level 4	12/07/05 13:38	J flags, 17 congeners, no TEQ, ug/L, sub=Pace-MN Excel EDD email to pm, include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOK0900-01C)		
1 L Amber (IOK0900-01D)		

**SAMPLE INTEGRITY:**

All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

*COC rec'd via email Bettina D. Benedict 10/18/05*

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

### SAMPLE LOG-IN CHECKLIST

Alta Project #: 27026

Samples Arrival:	Date/Time <u>12/8/05 0910</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Logged In:	Date/Time <u>12/8/05 1059</u>	Initials: <u>BBB</u>	Location: <u>WR-2</u>
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> Cal
	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered	<input type="checkbox"/> Other
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C	<u>1.7°C</u>	Time: <u>0925</u>	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill	✓		
Trk # <u>6741 2802 3830</u>	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?		✓	
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>5</sub> Preservation Documented?		COC	Sample Container <u>None</u>
Shipping Container	Alta	<u>Client</u>	Retain <u>Return</u> Dispose

Comments:



# EBERLINE SERVICES

April 11, 2006

Ms. Michele Chamberlin  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/07)

Dear Ms. Chamberlin:

Enclosed is a Level IV data package (on CD) for the water samples in the following Del Mar Analytical Projects, the associated Eberline Services work orders are also specified:

<u>Del Mar Project #</u>	<u>Eberline Work Order</u>	<u>Sample Receipt Date</u>
IOJ1231	R510124-8615	10/21/05
IOK0900	R511134-8621	11/11/05
IPC0164	R603040-8668	03/03/06
IPC1333	R603083-8669	03/14/06

The samples were analyzed according to the accompanying Del Mar Analytical Subcontract Order Forms. The analyses of samples IOJ1231-01 and IOK0900-01 were reanalyses. The requested analysis for all samples was Sr-90 (EPA905.0). The samples were neither filtered nor preserved prior to analysis. Samples IOJ1231-01 and IOK0900-01 were analyzed in a common preparation batch, while samples IPC0164-01 and IPC1333-01 were analyzed separately with their own QC samples. The QC LCS's, blank analyses, and duplicate analyses were all within the control limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed. No problems were encountered during the analyses.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Level IV Report on CD

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)



Eberline Services

ANALYSIS RESULTS

SDG <u>8621</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS11134-01</u>	Contract <u>PROJECT# TOK0900</u>
Received Date <u>11/15/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
10X0960-01	8621-001	11/09/05	03/28/06	Sr-90	0.586 ± 0.32	pCi/L	0.528

Certified by [Signature]  
Report Date 04/06/06  
Page 1



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOK0900

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438 <div style="text-align: center; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 10px auto; display: flex; align-items: center; justify-content: center;">8621</div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOK0900-01 Water	Sampled: 11/09/05 13:38	Instant Notification
Level 4 + EDD-OUT	12/07/05 13:38	**LEVEL IV QC, ACCESS 7 EDD**
Strontium 90-O	11/09/06 13:38	905.0, sub to Eberline
<b>Containers Supplied:</b>		
1 gal Poly (IOK0900-01K)		

SAMPLE INTEGRITY:					
All containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice::	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Samples Received at (temp):	_____

Released By: Alamy Amara Date: 11-10-05 Time: 1700 Received By: MPW Date: 11/11/05 Time: 9:25

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



**RICHMOND, CA LABORATORY**  
SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA  
 Date/Time received 11/11/05 9:25 CoC No. I0K0900  
 Container I.D. No. BOX Requested TAT (Days) STD P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes  No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes  No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A
5. Packing material is: Wet [ ] Dry
6. Number of samples in shipping container: 1 Sample Matrix W
7. Number of containers per sample: 1 (Or see CoC         )
8. Samples are in correct container Yes  No [ ]
9. Paperwork agrees with samples? Yes  No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels
11. Samples are: In good condition  Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved  pH          Preservative
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date
15. Inspected by MFW Date: 11/11/05 Time: 13:00

Customer Sample No	cpm	mR/hr	Wipe	Customer Sample No	cpm	mR/hr	wipe

Ion Chamber Ser. No.          Calibration date           
 Alpha Meter Ser. No.          Calibration date           
 Beta/Gamma Meter Ser. No.          Calibration date

# **APPENDIX A**

## **Section 14**

Outfall 003, November 9, 2005

MEC<sup>X</sup> Data Validation Reports


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA13  
 Task Order 313150010  
 SDG No. IOK0900

No. of Analyses 12

Laboratory Eberline  
 Reviewer E. Wessling  
 Analysis/Method Sr-90 by 905.0

Date: December 15, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: -holding times missed -original analysis rejected in favor of reanalysis
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUP:  
IOK0900

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title:	NPDES Monitoring
Contract Task Order #:	313150010
SDG#:	IOK0900
Project Manager:	P. Costa
Matrix:	Water
Analysis:	Radionuclides
QC Level:	Level IV
No. of Samples:	1
No. of Reanalyses/Dilutions:	1
Reviewer:	E. Wessling
Date of Review:	December 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Method 905.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IOK0900-01	8621-001	water	905.0
Outfall 003 RE1	IOK0900-01 RE1	8621-001	water	905.0



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The sample was noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. Sample Outfall 003 was filtered prior to strontium analysis. As the Outfall 003 strontium analysis was not retained no qualification was required.

#### 2.1.2 Chain of Custody

The original COC was signed and dated by field and laboratory personnel. The transfer COC was signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 003 for unfiltered reanalyses of strontium and cesium analysis of the substrate. No qualifications were required.

#### 2.1.3 Holding Times

The Outfall 003 and Outfall 003 RE1 strontium-90-samples were analyzed beyond the five day holding time for unpreserved samples; therefore, strontium detected in Outfall 003 RE1 was qualified as estimated, "J." As the result for Outfall 003 was not retained, no qualification for the exceeded holding time was required. No further qualifications were required.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability. The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### 2.3 BLANKS

No measurable activities were detected in the method blank; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in this SDG. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on a sample other than from the site; therefore, no assessment was made for this criterion. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Analyses that involve the yielding of an analytical tracer do not require matrix spike analyses; therefore, no strontium matrix spike was performed. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the sample in this SDG. The sample result and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted.

The laboratory reanalyzed Outfall 003 for strontium, without filtering the sample aliquot, as required by the NPDES permit. As the reanalysis result, Outfall 003 RE1, was similar to the original result, the reviewer rejected, "R," the original result, Outfall 003, in favor of the reanalysis result as it was compliant with the NPDES permit. No further qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in this SDG.

Eberline Services

ANALYSIS RESULTS

SIC <u>8821</u>	Client <u>DEL MAR ASAL</u>
Work Order <u>0611134-01</u>	Contract <u>PROJECT# 1080908</u>
Received Date <u>11/11/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Slide	Results ± 2σ	Units	MDA
Sample ID	Sample ID						
ICR05980-01	6621-001	11/09/05	12/01/05	8x-90	0.517 ± 0.26	pCi/L	0.414

Rev  
Case  
↓  
H

*Handwritten notes:*  
0.517 ± 0.26

Certified by <u>[Signature]</u>
Report Date <u>12/08/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

Job No. <u>111</u>	Title <u>DEL MAP AREA</u>
Work Order <u>111001.01</u>	Contract <u>PROJECTS 2000010</u>
Received Date <u>11/21/03</u>	Matrix <u>WASTE</u>

Client	Lab	Sample ID	Collected	Received	Matrix	Units	MSD
Outfall	003	10X0001-03	11/20/03	12/01/03	01-00	1.001	0.004

*Handwritten notes:*  
R  
D

*Handwritten note:*  
Rev/PM 4/14/04

Received by <u>[Signature]</u>
Report Date <u>12/01/03</u>
Page

Eberline Services

ANALYSIS RESULTS

SDG <u>8621</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS11134-01</u>	Contract <u>PROJECT# IOK0900</u>
Received Date <u>11/11/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results - 2σ	Units	MDA
		<u>outfall 003 RE1</u>						
IOK0900-01	8621-001		11/09/05	03/26/06	Sr-90	0.586 ± 0.32	pCi/L	0.528

Re Qual	Qual Code
J	H

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>04/05/06</u>
Page 1

# **APPENDIX A**

## **Section 15**

Outfall 003, January 1, 2006

Del Mar Analytical Laboratory Report



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 01/01/06  
Received: 01/01/06  
Issued: 01/13/06 16:10

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID  
IPA0002-01

CLIENT ID  
Outfall 003

MATRIX  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Amy Windham For Michele Chamberlin  
Project Manager



# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
 Received: 01/01/06

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPA0002-01 (Outfall 003 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	6A04084	0.18	2.0	2.7	1	01/04/06	01/05/06	
Cadmium	EPA 200.8	6A04084	0.015	1.0	0.28	1	01/04/06	01/05/06	J
Copper	EPA 200.8	6A04084	0.49	2.0	7.0	1	01/04/06	01/05/06	
Lead	EPA 200.8	6A04084	0.040	1.0	3.0	1	01/04/06	01/05/06	
Mercury	EPA 245.1	6A03072	0.050	0.20	ND	1	01/03/06	01/03/06	

Del Mar Analytical, Irvine  
 Amy Windham For Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06

Received: 01/01/06

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPA0002-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	6A01004	1.3	2.5	80	5	01/01/06	01/01/06	
Nitrate/Nitrite-N	EPA 300.0	6A01004	0.072	0.26	1.1	1	01/01/06	01/01/06	
Oil & Grease	EPA 413.1	6A06048	0.91	4.9	2.1	1	01/06/06	01/06/06	J
Sulfate	EPA 300.0	6A01004	0.18	0.50	57	1	01/01/06	01/01/06	
Total Dissolved Solids	SM2540C	6A03093	10	10	440	1	01/03/06	01/03/06	
Total Suspended Solids	EPA 160.2	6A04121	10	10	29	1	01/04/06	01/04/06	

Del Mar Analytical, Irvine  
 Amy Windham For Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
Received: 01/01/06

**SHORT HOLD TIME DETAIL REPORT**

Sample ID: Outfall 003 (IPA0002-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	01/01/2006 11:30	01/01/2006 15:25	01/01/2006 17:30	01/01/2006 18:28

Del Mar Analytical, Irvine  
Amy Windham For Michele Chamberlin  
Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
 Received: 01/01/06

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6A03072 Extracted: 01/03/06</b>										
<b>Blank Analyzed: 01/03/2006 (6A03072-BLK1)</b>										
Mercury	ND	0.20	0.063	ug/l						
<b>LCS Analyzed: 01/03/2006 (6A03072-BS1)</b>										
Mercury	7.95	0.20	0.063	ug/l	8.00		99		85-115	
<b>Matrix Spike Analyzed: 01/03/2006 (6A03072-MS1) Source: IOL2617-01</b>										
Mercury	7.95	0.20	0.063	ug/l	8.00	ND	99		70-130	
<b>Matrix Spike Dup Analyzed: 01/03/2006 (6A03072-MSD1) Source: IOL2617-01</b>										
Mercury	8.00	0.20	0.063	ug/l	8.00	ND	100	1	70-130 20	
<b>Batch: 6A04084 Extracted: 01/04/06</b>										
<b>Blank Analyzed: 01/05/2006 (6A04084-BLK1)</b>										
Antimony	0.162	2.0	0.050	ug/l						J
Cadmium	ND	1.0	0.025	ug/l						
Copper	0.321	2.0	0.25	ug/l						J
Lead	ND	1.0	0.040	ug/l						
<b>LCS Analyzed: 01/05/2006 (6A04084-BS1)</b>										
Antimony	78.5	2.0	0.050	ug/l	80.0		98		85-115	
Cadmium	80.2	1.0	0.025	ug/l	80.0		100		85-115	
Copper	80.8	2.0	0.25	ug/l	80.0		101		85-115	
Lead	78.3	1.0	0.040	ug/l	80.0		98		85-115	
<b>Matrix Spike Analyzed: 01/05/2006 (6A04084-MS1) Source: IOL2694-49</b>										
Antimony	78.2	2.0	0.050	ug/l	80.0	0.26	97		70-130	
Cadmium	76.0	1.0	0.025	ug/l	80.0	ND	95		70-130	
Copper	102	2.0	0.25	ug/l	80.0	23	99		70-130	
Lead	84.3	1.0	0.040	ug/l	80.0	2.7	102		70-130	

Del Mar Analytical, Irvine  
 Amy Windham For Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
 Received: 01/01/06

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6A04084 Extracted: 01/04/06</b>											
<b>Matrix Spike Analyzed: 01/05/2006 (6A04084-MS2)</b>						<b>Source: IOL2694-50</b>					
Antimony	80.0	2.0	0.050	ug/l	80.0	0.094	100	70-130			
Cadmium	76.2	1.0	0.025	ug/l	80.0	ND	95	70-130			
Copper	101	2.0	0.25	ug/l	80.0	18	104	70-130			
Lead	87.5	1.0	0.040	ug/l	80.0	1.8	107	70-130			
<b>Matrix Spike Dup Analyzed: 01/05/2006 (6A04084-MSD1)</b>						<b>Source: IOL2694-49</b>					
Antimony	76.7	2.0	0.050	ug/l	80.0	0.26	96	70-130	2	20	
Cadmium	76.1	1.0	0.025	ug/l	80.0	ND	95	70-130	0	20	
Copper	101	2.0	0.25	ug/l	80.0	23	98	70-130	1	20	
Lead	83.9	1.0	0.040	ug/l	80.0	2.7	102	70-130	1	20	

Del Mar Analytical, Irvine  
 Amy Windham For Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06

Received: 01/01/06

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6A01004 Extracted: 01/01/06</b>											
<b>Blank Analyzed: 01/01/2006 (6A01004-BLK1)</b>											
Chloride	ND	0.50	0.15	mg/l							
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	ND	0.50	0.45	mg/l							
<b>LCS Analyzed: 01/01/2006 (6A01004-BS1)</b>											
Chloride	4.88	0.50	0.15	mg/l	5.00		98	90-110			M-3
Sulfate	9.56	0.50	0.45	mg/l	10.0		96	90-110			
<b>Matrix Spike Analyzed: 01/01/2006 (6A01004-MS1) Source: IPA0003-01</b>											
Sulfate	14.4	0.50	0.45	mg/l	10.0	5.1	93	80-120			
<b>Matrix Spike Dup Analyzed: 01/01/2006 (6A01004-MSD1) Source: IPA0003-01</b>											
Sulfate	14.8	0.50	0.45	mg/l	10.0	5.1	97	80-120	3	20	
<b>Batch: 6A03093 Extracted: 01/03/06</b>											
<b>Blank Analyzed: 01/03/2006 (6A03093-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/03/2006 (6A03093-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 01/03/2006 (6A03093-DUP1) Source: IPA0005-01</b>											
Total Dissolved Solids	981	10	10	mg/l		980			0	10	
<b>Batch: 6A04121 Extracted: 01/04/06</b>											
<b>Blank Analyzed: 01/04/2006 (6A04121-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

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 Amy Windham For Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06

Received: 01/01/06

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6A04121 Extracted: 01/04/06</b>											
<b>LCS Analyzed: 01/04/2006 (6A04121-BS1)</b>											
Total Suspended Solids	962	10	10	mg/l	1000		96	85-115			
<b>Duplicate Analyzed: 01/04/2006 (6A04121-DUP1)</b>											
Total Suspended Solids	308	10	10	mg/l		350			13	10	R-3
<b>Batch: 6A06048 Extracted: 01/06/06</b>											
<b>Blank Analyzed: 01/06/2006 (6A06048-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 01/06/2006 (6A06048-BS1)</b>											
Oil & Grease	19.2	5.0	0.94	mg/l	20.0		96	65-120			M-NR1
<b>LCS Dup Analyzed: 01/06/2006 (6A06048-BSD1)</b>											
Oil & Grease	19.6	5.0	0.94	mg/l	20.0		98	65-120	2	20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
 Received: 01/01/06

## Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IPA0002-01	413.1 Oil and Grease	Oil & Grease	mg/l	2.10	4.9	15
IPA0002-01	Antimony-200.8	Antimony	ug/l	2.70	2.0	6.00
IPA0002-01	Cadmium-200.8	Cadmium	ug/l	0.28	1.0	4.00
IPA0002-01	Chloride - 300.0	Chloride	mg/l	80	2.5	150
IPA0002-01	Copper-200.8	Copper	ug/l	7.00	2.0	14
IPA0002-01	Mercury - 245.1	Mercury	ug/l	0.0037	0.20	0.20
IPA0002-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	1.10	0.26	10.00
IPA0002-01	Sulfate-300.0	Sulfate	mg/l	57	0.50	250
IPA0002-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	440	10	850

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 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
Received: 01/01/06

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-3** The RPD exceeded the method control limit due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine  
Amy Windham For Michele Chamberlin  
Project Manager





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPA0002

Sampled: 01/01/06  
 Received: 01/01/06

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical *NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta  
 Samples: IPA0002-01

Analysis Performed: EDD + Level 4  
 Samples: IPA0002-01

#### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Level 4 + EDD  
 Samples: IPA0002-01

Analysis Performed: Strontium 90  
 Samples: IPA0002-01

**Del Mar Analytical, Irvine**  
 Amy Windham For Michele Chamberlin  
 Project Manager

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 10/21/05

Client Name/Address: <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF		ANALYSIS REQUIRED TDS, TSS Cl <sup>-</sup> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N Oil & Grease (EPA 413.1) TCDD (and all congeners) Sb, Cd, Cu, Pb, Hg Total Recoverable Metals:		Field readings: Temp = <b>56 F</b> pH = <b>7.13</b> Comments	
Project Manager: Bronwyn Kelly Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF		ANALYSIS REQUIRED TDS, TSS Cl <sup>-</sup> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N Oil & Grease (EPA 413.1) TCDD (and all congeners) Sb, Cd, Cu, Pb, Hg Total Recoverable Metals:		Field readings: Temp = <b>56 F</b> pH = <b>7.13</b> Comments	
Sampler: <b>Rubendanna</b>	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF	Project: Boeing-SSFL NPDES <b>Routine Outfall 003</b> Stormwater at RMHF
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	
Outfall 003	W	1L Poly	1	01-01-06 11:30A	HNO3	1A	X
Outfall 003-Dup	W	1L Poly	1		HNO3	1B	X
Outfall 003	W	1L Amber	2		None	2A, 2B	X
Outfall 003	W	1L Amber	2		HCl	3A, 3B	X
Outfall 003	W	Poly-500 ml	2		None	4A, 4B	X
Outfall 003	W	Poly-500 ml	2		None	5A, 5B	X
Outfall 003	W	Poly-1 gal	1	01-01-06 11:30A	None	6A, 6B	X
Relinquished By				Date/Time: 1-1-06 13:5	Received By		Date/Time: 01/01/06 13:5
Relinquished By				Date/Time: 1/1/06 15:25	Received By		Date/Time: 1/1/06 15:25
Relinquished By				Date/Time:	Received By		Date/Time:

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check)  
 Intact  On Ice  3°C

*[Signature]*  
 11/06 1525



January 17, 2006

**Alta Project I.D.: 27135**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on January 04, 2006 under your Project Name "IPA0002". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



*Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.*



**Section I: Sample Inventory Report**

**Date Received: 1/4/2006**

Alta Lab. ID

Client Sample ID

27135-001

IPA0002-01

## SECTION II

Method Blank		EPA Method 1613			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	
2,3,7,8-TCDD	ND	0.000000671			IS 13C-2,3,7,8-TCDD 84.0 25 - 164
1,2,3,7,8-PeCDD	ND	0.000000560			13C-1,2,3,7,8-PeCDD 78.7 25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000149			13C-1,2,3,4,7,8-HxCDD 81.9 32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000147			13C-1,2,3,6,7,8-HxCDD 74.4 28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000145			13C-1,2,3,4,6,7,8-HpCDD 75.6 23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000146			13C-OCDD 40.1 17 - 157
OCDD	ND	0.00000535			13C-2,3,7,8-TCDF 82.6 24 - 169
2,3,7,8-TCDF	ND	0.000000546			13C-1,2,3,7,8-PeCDF 65.3 24 - 185
1,2,3,7,8-PeCDF	ND	0.00000112			13C-2,3,4,7,8-PeCDF 71.3 21 - 178
2,3,4,7,8-PeCDF	ND	0.000000885			13C-1,2,3,4,7,8-HxCDF 73.7 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000511			13C-1,2,3,6,7,8-HxCDF 70.0 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000518			13C-2,3,4,6,7,8-HxCDF 78.0 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000522			13C-1,2,3,7,8,9-HxCDF 79.2 29 - 147
1,2,3,7,8,9-HxCDF	ND	0.000000675			13C-1,2,3,4,6,7,8-HpCDF 64.7 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000764			13C-1,2,3,4,7,8,9-HpCDF 76.3 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000622			13C-OCDF 49.6 17 - 157
OCDF	ND	0.00000360			CRS 37Cl-2,3,7,8-TCDD 88.7 35 - 197
<b>Totals</b>					<b>Footnotes</b>
Total TCDD	ND	0.000000671			a. Sample specific estimated detection limit.
Total PeCDD	ND	0.000000560			b. Estimated maximum possible concentration.
Total HxCDD	ND	0.00000147			c. Method detection limit.
Total HpCDD	ND	0.00000146			d. Lower control limit - upper control limit.
Total TCDF	ND	0.000000546			
Total PeCDF	ND	0.000000997			
Total HxCDF	ND	0.000000553			
Total HpCDF	ND	0.000000692			

Analyst: JMH

Approved By:

Martha M. Maier

17-Jan-2006 09:17

OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	7632	Lab Sample:	0-OPR001	
Sample Size:	1.00 L	Date Extracted:	8-Jan-06	Date Analyzed DB-5:	11-Jan-06	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	8.44	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	66.7	25 - 164
1,2,3,7,8-PeCDD	50.0	48.8	35 - 71	13C-1,2,3,7,8-PeCDD	70.5	25 - 181
1,2,3,4,7,8-HxCDD	50.0	48.8	35 - 82	13C-1,2,3,4,7,8-HxCDD	68.7	32 - 141
1,2,3,6,7,8-HxCDD	50.0	46.7	38 - 67	13C-1,2,3,6,7,8-HxCDD	65.6	28 - 130
1,2,3,7,8,9-HxCDD	50.0	48.7	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	70.6	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	47.2	35 - 70	13C-OCDD	49.9	17 - 157
OCDD	100	95.4	78 - 144	13C-2,3,7,8-TCDF	62.9	24 - 169
2,3,7,8-TCDF	10.0	9.58	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	63.1	24 - 185
1,2,3,7,8-PeCDF	50.0	46.6	40 - 67	13C-2,3,4,7,8-PeCDF	64.2	21 - 178
2,3,4,7,8-PeCDF	50.0	48.4	34 - 80	13C-1,2,3,4,7,8-HxCDF	65.4	26 - 152
1,2,3,4,7,8-HxCDF	50.0	47.6	36 - 67	13C-1,2,3,6,7,8-HxCDF	63.8	26 - 123
1,2,3,6,7,8-HxCDF	50.0	48.7	42 - 65	13C-2,3,4,6,7,8-HxCDF	67.9	28 - 136
2,3,4,6,7,8-HxCDF	50.0	47.3	35 - 78	13C-1,2,3,7,8,9-HxCDF	70.4	29 - 147
1,2,3,7,8,9-HxCDF	50.0	47.3	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	63.1	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	48.5	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	70.1	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	48.4	39 - 69	13C-OCDF	56.4	17 - 157
OCDF	100	97.7	63 - 170	CRS 37Cl-2,3,7,8-TCDD	81.7	35 - 197

Analyst: JMH

Approved By: Martha M. Maier 17-Jan-2006 09:17

Sample ID: IPA0002-01		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	27135-001		
Project:	IPA0002	Sample Size:	0.893 L	QC Batch No.:	7632		
Date Collected:	1-Jan-06			Date Analyzed DB-5:	12-Jan-06		
Time Collected:	1130			Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000874		IS 13C-2,3,7,8-TCDD	68.3	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000112		13C-1,2,3,7,8-PeCDD	65.8	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000180		13C-1,2,3,4,7,8-HxCDD	62.0	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000178		13C-1,2,3,6,7,8-HxCDD	60.4	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000175		13C-1,2,3,4,6,7,8-HpCDD	59.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000158		J	13C-OCDD	38.8	17 - 157	
OCDD	0.000117			13C-2,3,7,8-TCDF	68.7	24 - 169	
2,3,7,8-TCDF	ND	0.00000104		13C-1,2,3,7,8-PeCDF	66.6	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000133		13C-2,3,4,7,8-PeCDF	66.3	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000115		13C-1,2,3,4,7,8-HxCDF	59.4	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000150		13C-1,2,3,6,7,8-HxCDF	58.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000150		13C-2,3,4,6,7,8-HxCDF	60.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000159		13C-1,2,3,7,8,9-HxCDF	61.8	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000221		13C-1,2,3,4,6,7,8-HpCDF	54.2	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00000844		J	13C-1,2,3,4,7,8,9-HpCDF	58.1	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000252		13C-OCDF	44.7	17 - 157	
OCDF	0.0000260		J	CRS 37Cl-2,3,7,8-TCDD	84.4	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.000000874					
Total PeCDD	ND	0.00000112					
Total HxCDD	0.00000455						
Total HpCDD	0.0000309						
Total TCDF	ND	0.00000104					
Total PeCDF	ND	0.00000124					
Total HxCDF	0.00000255						
Total HpCDF	0.0000162						

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: DMS  
 Approved By: Martha M. Maier  
 17-Jan-2006 09:17



**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



NO. 9123 P. 2  
 17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1048  
 9464 Chesapeake Drive, Suite 505, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 3530 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0045 Fax (480) 785-0651  
 2620 E. Sunset Rd., Suite 101, Las Vegas, NV 89120 Ph (702) 790-3420 Fax (702) 790-3921

**SUBCONTRACT ORDER - PROJECT # IPA0002**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  27135 0.7°C

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPA0002-01 Water	Sampled: 01/01/06 11:30	Instant Notification
1613-Dioxin-HR-Alta	01/08/06 11:30	J flags, 17 congeners, no TEQ, ug/L, sub=Alta
* EDD + Level 4	01/29/06 11:30	Excel EDD email to pin, Include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IPA0002-01C)		
1 L Amber (IPA0002-01D)		

\* This request was revised, please use this coc to replace the one received w/ the sample.

MC

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

Released By	Date	Time	Received By	Date	Time



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 8830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IPA0002**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 673-0106  <i>27135</i>  <i>0.7°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPA0002-01 Water 1613-Dioxin-HR-Alta Level 4 + EDD-OUT	Sampled: 01/01/06 11:30 01/08/06 11:30 01/29/06 11:30	Instant Notification J flags, 17 congeners, no TEQ, ug/L, sub=Alta **LEVEL IV QC, ACCESS 7 EDD**
<b>Containers Supplied:</b> 1 L Amber (IPA0002-01C) 1 L Amber (IPA0002-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

Released By: *[Signature]* Date: *1/3/06* Time: \_\_\_\_\_ Received By: *Bethna A. Benedict* Date: *1/4/06* Time: *0935*

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



# EBERLINE

SERVICES

March 21, 2006

Ms. Michele Chamberlin  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IPA002  
Eberline Services NELAP Cert #01120CA (exp. 01/31/07)  
Eberline Services Report R601009-8637

Dear Ms. Chamberlin:

Enclosed are Sr-90 reanalysis results for one water sample received as the above referenced Del Mar Analytical project. Results were originally reported on January 30, 2006. The batch QC LCS, blank analysis, and sample duplicate analysis results were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require a matrix spike analysis to be performed. The reported gross alpha/gross beta QC sample results are not relevant to this report.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/njv*

*Enclosure: Report*

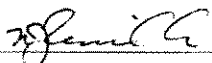
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SOG <u>8637</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601009-01</u>	Contract <u>PROJECT# IPA0002</u>
Received Date <u>01/04/06</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
IPA0002-01	3637-001	01/01/06	03/08/06	Sr-90	0.659 ± 0.36	pCi/L	0.604

Certified by <u></u>
Report Date <u>03/21/06</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8653</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R602147-21</u>	Contract <u>PROJECT# IPB1818</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8653-002	GrossAlpha	9.32 ± 0.63	pCi/Smpl	10.2	0.306	91% recovery
		Gross Beta	9.96 ± 0.37	pCi/Smpl	9.83	0.271	101% recovery
		Sr-90	11.2 ± 0.61	pCi/Smpl	10.8	0.229	104% recovery
<u>BLANK</u>							
	8653-003	GrossAlpha	-0.408 ± 0.18	pCi/Smpl	NA	0.376	<MDA
		Gross Beta	0.080 ± 0.24	pCi/Smpl	NA	0.414	<MDA
		Sr-90	-0.073 ± 0.16	pCi/Smpl	NA	0.418	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8653-004	GrossAlpha	0.122 ± 0.53	0.893
	Gross Beta	6.92 ± 0.71	0.869
	Sr-90	0.358 ± 0.39	0.771

<u>ORIGINALS</u>						
Sample ID	Results ± 2σ	MDA	3σ		RPD (Tot)	Eval
8653-001	0.735 ± 0.45	0.587	143	249		satis.
	7.03 ± 0.74	0.906	2	48		satis.
	0.317 ± 0.31	0.594	-	0		satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8653-005	GrossAlpha	74.0 ± 2.9	0.626
	Gross Beta	66.0 ± 1.7	0.891

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8653-001	0.735 ± 0.45	0.587	71.4	103	
	7.03 ± 0.74	0.906	65.5	90	

Certified by *[Signature]*

Report Date 03/21/06

Page 2





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2920 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 716-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IPA0002

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Chamberlin

**RECEIVING LABORATORY:**  
 Eberline Services  
 2030 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438


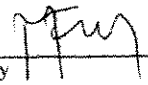
Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPA0002-01 Water	Sampled: 01/01/06 11:30	Instant Notification
Strontium 90-O	01/01/07 11:30	905.0, sub to Eberline

**Containers Supplied:**  
 1 gal Poly (IPA0002-01K)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By:  Date: 1/3/06 Time: \_\_\_\_\_ Received By:  Date: 01/04/06 Time: 9:45

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



17461 Denan Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-8586 Fax (619) 505-8689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IPA0002

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

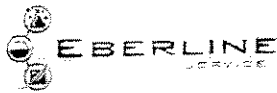
Analysis	Expiration	Comments
Sample ID: IPA0002-01 Water	Sampled: 01/01/06 11:30	Instant Notification
Level 4 + EDD-OUT	01/29/06 11:30	**LEVEL IV QC, ACCESS 7 EDD**
Strontium 90-O	01/01/07 11:30	905.0, sub to Eberline

Containers Supplied:  
 1 gal Poly (IPA0002-01K)

\* This request was added to the WOC, samples should have been received 1/11/06.  
 MC

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time



## RICHMOND, CA LABORATORY

### SAMPLE RECEIPT CHECKLIST

Client: DEL MAR City IRVINE State CA  
 Date/Time received 1/04/06 9:45 CoC No. # JPA 0002  
 Container I.D. No. BOX/STYR Requested TAT (Days) STD P.O. Received Yes [ ] No [ ]

#### INSPECTION

1. Custody seals on shipping container intact? Yes  No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes  No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A
5. Packing materials: Wet [ ] Dry
6. Number of samples in shipping container: 1 Sample Matrix W
7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes  No [ ]
9. Paperwork agrees with samples? Yes  No [ ]
10. Samples have Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels
11. Samples are: In good condition  Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: F reserved [ ] Not preserved  pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies:  
\_\_\_\_\_  
\_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
 15. Inspected by MFJ Date: 01/04/06 Time: 10:00

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ioni Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 16**

Outfall 003, January 1, 2006

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

MECX, LLC  
12260 East Vassar Drive  
Suite 500

Package ID B4RA1  
Task Order 1261.001D.01  
SDG No. IPA0002, IPA0101,  
IPA0102

Lakewood, CO 80226

No. of Analyses 3

Laboratory Eberline

Date: February 19, 2006

Reviewer P. Meeks

Reviewer's Signature  
P. Meeks

Analysis/Method Radionuclides

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications were assigned for the following: - Exceeded holding times - Low detector efficiency - Incorrect sample container - <u>Strontium aliquots filtered</u>
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



## DATA VALIDATION REPORT

NPDES Sampling  
Outfall 003 and  
Outfall 002 & Outfall 009 LARWQCB Split Samples

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS: IPA0002, IPA0101 & IPA0102

Prepared by

MECX, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>X</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPA0002, IPA0101, IPA0102  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 3  
Reviewer: P. Meeks  
Date of Review: February 19, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 903.1, 904.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Eberline)	Matrix	COC Method
Outfall 003	IPA0002-01	8637-001	Water	905.0
Outfall 003 RE1	IPA0002-01	8637-001	Water	905.0
Outfall 002 Split	IPA0101-01	8639-001	Water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 002 Split RE1	IPA0101-01	8639-001	Water	905.0
Outfall 009 Split	IPA0102-01	8640-001	Water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 009 Split RE1	IPA0102-01	8640-001	Water	905.0



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. The tritium samples for Outfall 002 Split and Outfall 009 Split were received unpreserved in plastic containers; therefore, both nondetected tritium results were qualified as estimated, "UJ."

According to the LARWQCB guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. Notations in an Eberline logbook indicated that all samples were filtered due to high concentrations of suspended solids but were not subsequently preserved. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. The radium-226 and radium-228 analyses for Outfall 002 Split and Outfall 009 Split were originally on HOLD. These analyses were requested on 01/10/06 by M. Chamberlain of Del Mar Analytical. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium samples were analyzed within 180 days of collection. As the gross alpha, gross beta, radium-226, radium-228, and strontium samples were not preserved (see section 2.1.1) and were analyzed beyond the five-day analytical holding time for unpreserved samples, all gross alpha, gross beta, radium-226, radium-228, and strontium results were qualified as estimated, "UJ," for nondetects and, "J," for detects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The gross alpha detector efficiencies were all less than 20%, therefore, these results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The remaining detector efficiencies were above 20%.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in January 2006. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-288 and was verified in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%. And the actinium chemical yields were greater than 50%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in these SDGs. The gross alpha recovery exceeded the 3-sigma limit; however, the recovery, 80%, was deemed acceptable. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on Outfall 002 Split for all analytes and on Outfall 003 for strontium. The Outfall 002 Split strontium RPD exceeded 20%; however, as the result was within the 3-sigma limit, it was deemed acceptable. The remaining results were within the 3-sigma limits with RPDs  $\leq$ 20%. No qualifications were necessary.

## 2.6 MATRIX SPIKES

The laboratory performed matrix spike analyses on Outfall 002 Split for gross alpha, gross beta, tritium, and radium-226. The recoveries for gross alpha, gross beta, and tritium exceeded the 3-sigma limit; however, the recoveries, 88%, 88%, and 95% were considered acceptable. The radium-226 recovery was within the 3-sigma limit. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted.

Due to high concentrations of sediments, the laboratory filtered the original strontium aliquots, Outfall 002 Split, Outfall 003, and Outfall 009 Split. According to the LARWQCB letter dated 1/12/05, these aliquots should not have been filtered; therefore, unfiltered strontium aliquots were reanalyzed. As the reanalysis results, Outfall 002 Split RE1, Outfall 003 RE1, and Outfall 009 Split RE1, were similar to the original results, all reanalysis results were rejected. "R." in favor of the original results. No further qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8648</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601023-01</u>	Contract <u>PROJECT# IPAG102</u>
Received Date <u>01/05/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
<i>Outfall 009 Split</i>							
IPAG102-01	8648-001	01/03/06	01/20/06	GrossAlpha	0.888 ± 0.61	pCi/L	0.686
			01/20/06	Gross Beta	3.15 ± 0.69	pCi/L	0.876
			01/21/06	Ra-228	0.293 ± 0.28	pCi/L	0.684
			01/17/06	H-3	-43.1 ± 110	pCi/L	182
			01/20/06	Ra-226	0.191 ± 0.33	pCi/L	0.569
			01/13/06	Sr-90	0.352 ± 0.39	pCi/L	0.763

Rev	Qual	Code
J		H, R
↓		↓
US		H
↓		X1
US		H
↓		H, #1

LEVEL IV

Certified by <u>MUM</u>
Report Date <u>01/27/06</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8640</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601023-01</u>	Contract <u>PROJECT# IPA0102</u>
Received Date <u>01/05/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rw Qual	Qual Code
<u>Sample ID</u>	<u>Sample ID</u>								
<u>Outfall 009 Split R54</u>									
IPA0102-01	8640-001	01/03/06	01/20/06	GrossAlpha	0.888 ± 0.61	pCi/L	0.888	*	
			01/20/06	Gross Beta	3.15 ± 0.69	pCi/L	0.976		
			01/21/06	Ra-228	0.293 ± 0.28	pCi/L	0.684		
			01/17/06	H-3	43.1 ± 110	pCi/L	182		
			01/20/06	Ra-226	0.191 ± 0.33	pCi/L	0.569		
			03/08/06	Sr-90	0.206 ± 0.30	pCi/L	0.590	R	D

\* Analysis not validated

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Eberline Services

ANALYSIS RESULTS

SDG <u>8639</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601022-01</u>	Contract <u>PROJECT# IPA0101</u>
Received Date <u>01/05/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
<u>IPA0101-01</u>	<u>8639-001</u>	<u>01/03/06</u>	<u>01/20/06</u>	GrossAlpha	0.858 ± 0.69	pCi/L	0.954	US	H,R
			<u>01/20/06</u>	Gross Beta	5.61 ± 1.2	pCi/L	1.74	J	↓
			<u>01/21/06</u>	Ra-228	0.436 ± 0.36	pCi/L	0.827	US	↓
			<u>01/17/06</u>	H-3	-30.5 ± 110	pCi/L	180	US	*I
			<u>01/20/06</u>	Ra-226	0.475 ± 0.52	pCi/L	0.845	US	H
			<u>01/13/06</u>	Sr-90	0.087 ± 0.34	pCi/L	0.770	↓	↓ *I

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Eberline Services

ANALYSIS RESULTS

SDG <u>8639</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601022-01</u>	Contract <u>PROJECT# IPA0101</u>
Received Date <u>01/05/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Low Qual	Good Code
<u>Sample ID</u>	<u>Sample ID</u>								
Outfall 002 split RE4									
IPA0101-01	8639-001	01/03/06	01/20/06	GrossAlpha	0.858 ± 0.69	pCi/L	0.954	*	
			01/20/06	Gross Beta	5.61 ± 1.2	pCi/L	1.74		
			01/21/06	Ra-228	0.436 ± 0.36	pCi/L	0.827		
			01/17/06	H-3	-30.5 ± 110	pCi/L	180		
			01/20/06	Ra-226	0.475 ± 0.52	pCi/L	0.845		
			03/03/06	Sr-90	0.181 ± 0.29	pCi/L	0.588	R	D

\* Analysis not validated

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Certified by [Signature]  
 Report Date 03/21/06  
 Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8537</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601009-01</u>	Contract <u>PROJECT# IPA0002</u>
Received Date <u>01/04/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Sample ID <u>Outfall 003</u> IPA0002-01	Sample ID 8537-001	01/01/06	01/26/06	Sr-90	0.687 ± 0.35	pCi/L	0.553	J	OK

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Certified by <u>MUM</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8637</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R601009-01</u>	Contract <u>PROJECT# IPA0002</u>
Received Date <u>01/04/06</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code
<u>Sample ID</u> Outfall 003 RE1 IPA0002-01	<u>Sample ID</u> 8637-001	01/01/06	03/08/06	Sr-90	0.659 ± 0.36	pCi/L	0.604	R	D

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/21/06</u>
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*See below*

## DATA VALIDATION REPORT

NPDES Sampling  
Outfall 003 and  
Outfall 002 & Outfall 009 LARWQCB Split Samples

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS: IPA0002, IPA0101 & IPA0102

Prepared by

MECX, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPA0002, IPA0101, IPA0102  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: February 19, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 903.1, 904.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Eberline)	Matrix	COC Method
Outfall 003	IPA0002-01	8637-001	Water	905.0
Outfall 002 Split	IPA0101-01	8639-001	Water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 009 Split	IPA0102-01	8640-001	Water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. The tritium samples for Outfall 002 Split and Outfall 009 Split were received unpreserved in plastic containers; therefore, both nondetected tritium results were qualified as estimated, "UJ."

According to the LARWQCB guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. Notations in an Eberline logbook indicated that all strontium samples were filtered due to high concentrations of suspended solids. As the filtration was a deviation from the NPDES permit, all nondetected strontium results were qualified as estimated, "UJ." No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. The radium-226 and radium-228 analyses for Outfall 002 Split and Outfall 009 Split were originally on HOLD. These analyses were requested on 01/10/06 by M. Chamberlin of Del Mar Analytical. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium samples were analyzed within 180 days of collection. As the gross alpha, gross beta, radium-226, radium-228, and strontium samples were not preserved (see section 2.1.1) and were analyzed beyond the five-day analytical holding time for unpreserved samples, all gross alpha, gross beta, radium-226, radium-228, and strontium results were qualified as estimated, "UJ," for nondetects and, "J," for detects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The gross alpha detector efficiencies were all less than 20%; therefore, these results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The remaining detector efficiencies were above 20%.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in January 2006. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-288 and was verified in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%. And the actinium chemical yields were greater than 50%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in these SDGs. The gross alpha recovery exceeded the 3-sigma limit; however, the recovery, 80%, was deemed acceptable. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on Outfall 002 Split for all analytes and on Outfall 003 for strontium. The Outfall 002 Split strontium RPD exceeded 20%; however, as the result was within the 3-sigma limit, it was deemed acceptable. The remaining results were within the 3-sigma limits with RPDs  $\leq 20\%$ . No qualifications were necessary.

## 2.6 MATRIX SPIKES

The laboratory performed matrix spike analyses on Outfall 002 Split for gross alpha, gross beta, tritium, and radium-226. The recoveries for gross alpha, gross beta, and tritium exceeded the 3-sigma limit; however, the recoveries, 88%, 88%, and 95% were considered acceptable. The radium-226 recovery was within the 3-sigma limit. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

# **APPENDIX A**

## **Section 17**

Outfall 003, February 19, 2006

Del Mar Analytical Laboratory Report





LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Annual Outfall 003

Sampled: 02/19/06  
Received: 02/19/06  
Revised: 03/28/06 17:54

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 3°C, on ice and with chain of custody documentation.
- HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers. Due to QC issues, the EPA 608 analysis was re-run and the results are included in this revised report.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IPB1818-01	Outfall 003	Water
IPB1818-02	Trip Blanks	Water

Reviewed By:

*Michele Chamberlin*

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

### CORRECTIVE ACTION REPORT

Department: Extractions

Date: 02/28/2006

Method: EPA 625

Matrix: Water

QC Batch: 6B24064

#### Identification and Definition of Problem:

The percent recovery for dimethylphthalate in the LCS was below method acceptance limits.

#### Determination of the Cause of the Problem:

A definitive cause for the QC failure has not been determined.

#### Corrective Action Taken:

All results reported for dimethylphthalate are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

Dave Dawes

Date: 03/14/2006 06:04 PM

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

### CORRECTIVE ACTION REPORT

Department: Pesticides

Date: 03/21/2006

Method: EPA 608

Matrix: Water

QC Batch: 6B24053

#### Identification and Definition of Problem:

A continuing calibration verification (CCV) standard containing AR1016 and AR1260 was not analyzed at the method-specified frequency.

#### Determination of the Cause of the Problem:

A definitive cause for the QC failure has not been determined.

#### Corrective Action Taken:

All affected samples were bracketed by passing CCVs containing AR1016 and AR1260. Although these aroclors were not analyzed, as required, between the bracketing CCVs, other aroclor standards were, indicating that the analytical run was still within calibration criteria for aroclors in general. All affected samples were re-analyzed in a run with acceptable CCV frequency and recovery to confirm original AR1016 and AR1260 results.

Quality Assurance Approval:

Dave Dawes

Date: 03/29/2006 10:18 AM

Del Mar Analytical - Irvine  
Michele Chamberfin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPB1818-01 (Outfall 003 - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	6C02009	0.28	1.0	ND	1	03/02/06	03/02/06	
Bromodichloromethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
Bromoform	EPA 624	6C02009	0.32	5.0	ND	1	03/02/06	03/02/06	
Bromomethane	EPA 624	6C02009	0.42	5.0	ND	1	03/02/06	03/02/06	
Carbon tetrachloride	EPA 624	6C02009	0.28	0.50	ND	1	03/02/06	03/02/06	
Chlorobenzene	EPA 624	6C02009	0.36	2.0	ND	1	03/02/06	03/02/06	
Chloroethane	EPA 624	6C02009	0.40	5.0	ND	1	03/02/06	03/02/06	
Chloroform	EPA 624	6C02009	0.33	2.0	ND	1	03/02/06	03/02/06	
Chloromethane	EPA 624	6C02009	0.30	5.0	ND	1	03/02/06	03/02/06	
Dibromochloromethane	EPA 624	6C02009	0.28	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichlorobenzene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
1,3-Dichlorobenzene	EPA 624	6C02009	0.35	2.0	ND	1	03/02/06	03/02/06	
1,4-Dichlorobenzene	EPA 624	6C02009	0.37	2.0	ND	1	03/02/06	03/02/06	
1,1-Dichloroethane	EPA 624	6C02009	0.27	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichloroethane	EPA 624	6C02009	0.28	0.50	ND	1	03/02/06	03/02/06	
1,1-Dichloroethene	EPA 624	6C02009	0.42	5.0	ND	1	03/02/06	03/02/06	
trans-1,2-Dichloroethene	EPA 624	6C02009	0.27	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichloropropane	EPA 624	6C02009	0.35	2.0	ND	1	03/02/06	03/02/06	
cis-1,3-Dichloropropene	EPA 624	6C02009	0.22	2.0	ND	1	03/02/06	03/02/06	
trans-1,3-Dichloropropene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
Ethylbenzene	EPA 624	6C02009	0.25	2.0	ND	1	03/02/06	03/02/06	
Methylene chloride	EPA 624	6C02009	0.70	5.0	ND	1	03/02/06	03/02/06	
1,1,2,2-Tetrachloroethane	EPA 624	6C02009	0.24	2.0	ND	1	03/02/06	03/02/06	L
Tetrachloroethene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
Toluene	EPA 624	6C02009	0.36	2.0	ND	1	03/02/06	03/02/06	
1,1,1-Trichloroethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
1,1,2-Trichloroethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
Trichloroethene	EPA 624	6C02009	0.26	2.0	ND	1	03/02/06	03/02/06	
Trichlorofluoromethane	EPA 624	6C02009	0.34	5.0	ND	1	03/02/06	03/02/06	
Vinyl chloride	EPA 624	6C02009	0.26	0.50	ND	1	03/02/06	03/02/06	
Xylenes, Total	EPA 624	6C02009	0.90	4.0	ND	1	03/02/06	03/02/06	
Trichlorotrifluoroethane (Freon 113)	EPA 624	6C02009	1.2	5.0	ND	1	03/02/06	03/02/06	
Surrogate: Dibromofluoromethane (80-120%)					110 %				
Surrogate: Toluene-d8 (80-120%)					108 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					100 %				

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPB1818-02 (Trip Blanks - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	6C02009	0.28	1.0	ND	1	03/02/06	03/02/06	
Bromodichloromethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
Bromoform	EPA 624	6C02009	0.32	5.0	ND	1	03/02/06	03/02/06	
Bromomethane	EPA 624	6C02009	0.42	5.0	ND	1	03/02/06	03/02/06	
Carbon tetrachloride	EPA 624	6C02009	0.28	0.50	ND	1	03/02/06	03/02/06	
Chlorobenzene	EPA 624	6C02009	0.36	2.0	ND	1	03/02/06	03/02/06	
Chloroethane	EPA 624	6C02009	0.40	5.0	ND	1	03/02/06	03/02/06	
Chloroform	EPA 624	6C02009	0.33	2.0	ND	1	03/02/06	03/02/06	
Chloromethane	EPA 624	6C02009	0.30	5.0	ND	1	03/02/06	03/02/06	
Dibromochloromethane	EPA 624	6C02009	0.28	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichlorobenzene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
1,3-Dichlorobenzene	EPA 624	6C02009	0.35	2.0	ND	1	03/02/06	03/02/06	
1,4-Dichlorobenzene	EPA 624	6C02009	0.37	2.0	ND	1	03/02/06	03/02/06	
1,1-Dichloroethane	EPA 624	6C02009	0.27	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichloroethane	EPA 624	6C02009	0.28	0.50	ND	1	03/02/06	03/02/06	
1,1-Dichloroethene	EPA 624	6C02009	0.42	5.0	ND	1	03/02/06	03/02/06	
trans-1,2-Dichloroethene	EPA 624	6C02009	0.27	2.0	ND	1	03/02/06	03/02/06	
1,2-Dichloropropane	EPA 624	6C02009	0.35	2.0	ND	1	03/02/06	03/02/06	
cis-1,3-Dichloropropene	EPA 624	6C02009	0.22	2.0	ND	1	03/02/06	03/02/06	
trans-1,3-Dichloropropene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
Ethylbenzene	EPA 624	6C02009	0.25	2.0	ND	1	03/02/06	03/02/06	
Methylene chloride	EPA 624	6C02009	0.70	5.0	ND	1	03/02/06	03/02/06	
1,1,2,2-Tetrachloroethane	EPA 624	6C02009	0.24	2.0	ND	1	03/02/06	03/02/06	L
Tetrachloroethene	EPA 624	6C02009	0.32	2.0	ND	1	03/02/06	03/02/06	
Toluene	EPA 624	6C02009	0.36	2.0	ND	1	03/02/06	03/02/06	
1,1,1-Trichloroethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
1,1,2-Trichloroethane	EPA 624	6C02009	0.30	2.0	ND	1	03/02/06	03/02/06	
Trichloroethene	EPA 624	6C02009	0.26	2.0	ND	1	03/02/06	03/02/06	
Trichlorofluoromethane	EPA 624	6C02009	0.34	5.0	ND	1	03/02/06	03/02/06	
Vinyl chloride	EPA 624	6C02009	0.26	0.50	ND	1	03/02/06	03/02/06	
Xylenes, Total	EPA 624	6C02009	0.90	4.0	ND	1	03/02/06	03/02/06	
Trichlorotrifluoroethane (Freon 113)	EPA 624	6C02009	1.2	5.0	ND	1	03/02/06	03/02/06	
Surrogate: Dibromofluoromethane (80-120%)									112 %
Surrogate: Toluene-d8 (80-120%)									110 %
Surrogate: 4-Bromofluorobenzene (80-120%)									102 %

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

**PURGEABLES-- GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	6B20035	4.6	50	ND	1	02/20/06	02/20/06	
Acrylonitrile	EPA 624	6B20035	0.70	50	ND	1	02/20/06	02/20/06	
2-Chloroethyl vinyl ether	EPA 624	6B20035	1.8	5.0	ND	1	02/20/06	02/20/06	
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					114 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					110 %				
<b>Sample ID: IPB1818-02 (Trip Blanks - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	6B20035	4.6	50	ND	1	02/20/06	02/20/06	
Acrylonitrile	EPA 624	6B20035	0.70	50	ND	1	02/20/06	02/20/06	
2-Chloroethyl vinyl ether	EPA 624	6B20035	1.8	5.0	ND	1	02/20/06	02/20/06	
Surrogate: Dibromofluoromethane (80-120%)					113 %				
Surrogate: Toluene-d8 (80-120%)					110 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					112 %				

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPB1818-01 (Outfall 003 - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	6B24064	4.1	9.5	ND	0.952	02/24/06	02/28/06	
Acenaphthylene	EPA 625	6B24064	3.0	9.5	ND	0.952	02/24/06	02/28/06	
Aniline	EPA 625	6B24064	2.8	9.5	ND	0.952	02/24/06	02/28/06	
Anthracene	EPA 625	6B24064	3.0	9.5	ND	0.952	02/24/06	02/28/06	
Benzidine	EPA 625	6B24064	5.0	19	ND	0.952	02/24/06	02/28/06	
Benzoic acid	EPA 625	6B24064	2.5	19	ND	0.952	02/24/06	02/28/06	
Benzo(a)anthracene	EPA 625	6B24064	3.5	9.5	ND	0.952	02/24/06	02/28/06	
Benzo(b)fluoranthene	EPA 625	6B24064	2.6	9.5	ND	0.952	02/24/06	02/28/06	
Benzo(k)fluoranthene	EPA 625	6B24064	3.2	9.5	ND	0.952	02/24/06	02/28/06	
Benzo(g,h,i)perylene	EPA 625	6B24064	5.0	9.5	ND	0.952	02/24/06	02/28/06	
Benzo(a)pyrene	EPA 625	6B24064	3.3	9.5	ND	0.952	02/24/06	02/28/06	
Benzyl alcohol	EPA 625	6B24064	2.4	19	ND	0.952	02/24/06	02/28/06	
Bis(2-chloroethoxy)methane	EPA 625	6B24064	3.7	9.5	ND	0.952	02/24/06	02/28/06	
Bis(2-chloroethyl)ether	EPA 625	6B24064	4.2	9.5	ND	0.952	02/24/06	02/28/06	
Bis(2-chloroisopropyl)ether	EPA 625	6B24064	4.4	9.5	ND	0.952	02/24/06	02/28/06	
Bis(2-ethylhexyl)phthalate	EPA 625	6B24064	5.0	48	ND	0.952	02/24/06	02/28/06	
4-Bromophenyl phenyl ether	EPA 625	6B24064	4.4	9.5	ND	0.952	02/24/06	02/28/06	
Butyl benzyl phthalate	EPA 625	6B24064	3.3	19	ND	0.952	02/24/06	02/28/06	
4-Chloroaniline	EPA 625	6B24064	5.7	9.5	ND	0.952	02/24/06	02/28/06	
2-Chloronaphthalene	EPA 625	6B24064	3.8	9.5	ND	0.952	02/24/06	02/28/06	
4-Chloro-3-methylphenol	EPA 625	6B24064	3.3	19	ND	0.952	02/24/06	02/28/06	
2-Chlorophenol	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	
4-Chlorophenyl phenyl ether	EPA 625	6B24064	2.9	9.5	ND	0.952	02/24/06	02/28/06	
Chrysene	EPA 625	6B24064	2.7	9.5	ND	0.952	02/24/06	02/28/06	
Dibenz(a,h)anthracene	EPA 625	6B24064	4.5	19	ND	0.952	02/24/06	02/28/06	
Dibenzofuran	EPA 625	6B24064	2.5	9.5	ND	0.952	02/24/06	02/28/06	
Di-n-butyl phthalate	EPA 625	6B24064	2.7	19	ND	0.952	02/24/06	02/28/06	
1,3-Dichlorobenzene	EPA 625	6B24064	3.9	9.5	ND	0.952	02/24/06	02/28/06	
1,4-Dichlorobenzene	EPA 625	6B24064	3.7	9.5	ND	0.952	02/24/06	02/28/06	
1,2-Dichlorobenzene	EPA 625	6B24064	4.3	9.5	ND	0.952	02/24/06	02/28/06	
3,3-Dichlorobenzidine	EPA 625	6B24064	10	19	ND	0.952	02/24/06	02/28/06	
2,4-Dichlorophenol	EPA 625	6B24064	3.9	9.5	ND	0.952	02/24/06	02/28/06	
Diethyl phthalate	EPA 625	6B24064	3.0	9.5	ND	0.952	02/24/06	02/28/06	
2,4-Dimethylphenol	EPA 625	6B24064	4.2	19	ND	0.952	02/24/06	02/28/06	
Dimethyl phthalate	EPA 625	6B24064	3.4	9.5	ND	0.952	02/24/06	02/28/06	L2
4,6-Dinitro-2-methylphenol	EPA 625	6B24064	4.9	19	ND	0.952	02/24/06	02/28/06	
2,4-Dinitrophenol	EPA 625	6B24064	5.0	19	ND	0.952	02/24/06	02/28/06	
2,4-Dinitrotoluene	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	
2,6-Dinitrotoluene	EPA 625	6B24064	3.0	9.5	ND	0.952	02/24/06	02/28/06	
Di-n-octyl phthalate	EPA 625	6B24064	4.5	19	ND	0.952	02/24/06	02/28/06	
Fluoranthene	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Fluorene	EPA 625	6B24064	3.7	9.5	ND	0.952	02/24/06	02/28/06	
Hexachlorobenzene	EPA 625	6B24064	4.6	9.5	ND	0.952	02/24/06	02/28/06	
Hexachlorobutadiene	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	
Hexachlorocyclopentadiene	EPA 625	6B24064	3.2	19	ND	0.952	02/24/06	02/28/06	
Hexachloroethane	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	
Indeno(1,2,3-cd)pyrene	EPA 625	6B24064	5.1	19	ND	0.952	02/24/06	02/28/06	
Isophorone	EPA 625	6B24064	3.5	9.5	ND	0.952	02/24/06	02/28/06	
2-Methylnaphthalene	EPA 625	6B24064	2.9	9.5	ND	0.952	02/24/06	02/28/06	
2-Methylphenol	EPA 625	6B24064	3.5	9.5	ND	0.952	02/24/06	02/28/06	
4-Methylphenol	EPA 625	6B24064	3.6	9.5	ND	0.952	02/24/06	02/28/06	
Naphthalene	EPA 625	6B24064	4.3	9.5	ND	0.952	02/24/06	02/28/06	
2-Nitroaniline	EPA 625	6B24064	3.7	19	ND	0.952	02/24/06	02/28/06	
3-Nitroaniline	EPA 625	6B24064	4.3	19	ND	0.952	02/24/06	02/28/06	
4-Nitroaniline	EPA 625	6B24064	4.7	19	ND	0.952	02/24/06	02/28/06	
Nitrobenzene	EPA 625	6B24064	4.0	19	ND	0.952	02/24/06	02/28/06	
2-Nitrophenol	EPA 625	6B24064	4.0	9.5	ND	0.952	02/24/06	02/28/06	
4-Nitrophenol	EPA 625	6B24064	6.3	19	ND	0.952	02/24/06	02/28/06	
N-Nitrosodiphenylamine	EPA 625	6B24064	3.8	9.5	ND	0.952	02/24/06	02/28/06	
N-Nitroso-di-n-propylamine	EPA 625	6B24064	3.4	9.5	ND	0.952	02/24/06	02/28/06	
Pentachlorophenol	EPA 625	6B24064	3.8	19	ND	0.952	02/24/06	02/28/06	
Phenanthrene	EPA 625	6B24064	3.1	9.5	ND	0.952	02/24/06	02/28/06	
Phenol	EPA 625	6B24064	3.8	9.5	ND	0.952	02/24/06	02/28/06	
Pyrene	EPA 625	6B24064	3.7	9.5	ND	0.952	02/24/06	02/28/06	
1,2,4-Trichlorobenzene	EPA 625	6B24064	4.2	9.5	ND	0.952	02/24/06	02/28/06	
2,4,5-Trichlorophenol	EPA 625	6B24064	3.4	19	ND	0.952	02/24/06	02/28/06	
2,4,6-Trichlorophenol	EPA 625	6B24064	3.9	19	ND	0.952	02/24/06	02/28/06	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	6B24064	4.8	19	ND	0.952	02/24/06	02/28/06	
N-Nitrosodimethylamine	EPA 625	6B24064	3.5	19	ND	0.952	02/24/06	02/28/06	
Surrogate: 2-Fluorophenol (30-120%)									58 %
Surrogate: Phenol-d6 (35-120%)									66 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									62 %
Surrogate: Nitrobenzene-d5 (45-120%)									67 %
Surrogate: 2-Fluorobiphenyl (45-120%)									72 %
Surrogate: Terphenyl-d14 (45-120%)									105 %

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 Michele Chamberlin  
 Project Manager





MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06

Received: 02/19/06

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	6B24053	0.029	0.096	ND	0.962	02/24/06	02/24/06	
alpha-BHC	EPA 608	6B24053	0.019	0.096	ND	0.962	02/24/06	02/24/06	
beta-BHC	EPA 608	6B24053	0.014	0.096	ND	0.962	02/24/06	02/24/06	
delta-BHC	EPA 608	6B24053	0.019	0.19	ND	0.962	02/24/06	02/24/06	
gamma-BHC (Lindane)	EPA 608	6B24053	0.019	0.096	ND	0.962	02/24/06	02/24/06	
Chlordane	EPA 608	6B24053	0.19	0.96	ND	0.962	02/24/06	02/24/06	
4,4'-DDD	EPA 608	6B24053	0.019	0.096	ND	0.962	02/24/06	02/24/06	
4,4'-DDE	EPA 608	6B24053	0.024	0.096	ND	0.962	02/24/06	02/24/06	
4,4'-DDT	EPA 608	6B24053	0.034	0.096	ND	0.962	02/24/06	02/24/06	
Dieldrin	EPA 608	6B24053	0.014	0.096	ND	0.962	02/24/06	02/24/06	
Endosulfan I	EPA 608	6B24053	0.014	0.096	ND	0.962	02/24/06	02/24/06	
Endosulfan II	EPA 608	6B24053	0.038	0.096	ND	0.962	02/24/06	02/24/06	
Endosulfan sulfate	EPA 608	6B24053	0.019	0.19	ND	0.962	02/24/06	02/24/06	
Endrin	EPA 608	6B24053	0.019	0.096	ND	0.962	02/24/06	02/24/06	
Endrin aldehyde	EPA 608	6B24053	0.043	0.096	ND	0.962	02/24/06	02/24/06	
Endrin ketone	EPA 608	6B24053	0.019	0.096	ND	0.962	02/24/06	02/24/06	
Heptachlor	EPA 608	6B24053	0.029	0.096	ND	0.962	02/24/06	02/24/06	
Heptachlor epoxide	EPA 608	6B24053	0.029	0.096	ND	0.962	02/24/06	02/24/06	
Methoxychlor	EPA 608	6B24053	0.034	0.096	ND	0.962	02/24/06	02/24/06	
Toxaphene	EPA 608	6B24053	1.4	4.8	ND	0.962	02/24/06	02/24/06	
Surrogate: Tetrachloro-m-xylene (35-115%)									72 %
Surrogate: Decachlorobiphenyl (45-120%)									89 %

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Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06

Received: 02/19/06

**TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	6B24053	0.19	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1221	EPA 608	6B24053	0.096	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1232	EPA 608	6B24053	0.24	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1242	EPA 608	6B24053	0.24	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1248	EPA 608	6B24053	0.24	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1254	EPA 608	6B24053	0.24	0.96	ND	0.962	02/24/06	02/25/06	
Aroclor 1260	EPA 608	6B24053	0.38	0.96	ND	0.962	02/24/06	02/25/06	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					89 %				

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager



# Del Mar Analytical

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 1014 E. Cooley Dr., Suite A, Citron, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Boron	EPA 200.7	6B20080	0.0074	0.050	ND	1	02/20/06	02/27/06	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.									
Reporting Units: ug/l									
Aluminum	EPA 200.7	6B20080	40	50	400	1	02/20/06	02/28/06	
Antimony	EPA 200.8	6B21089	0.18	2.0	1.4	1	02/21/06	02/22/06	J
Arsenic	EPA 200.7	6B20080	4.4	5.0	11	1	02/20/06	02/25/06	
Beryllium	EPA 200.7	6B20080	0.90	2.0	ND	1	02/20/06	02/25/06	
Cadmium	EPA 200.8	6B21089	0.015	1.0	0.044	1	02/21/06	02/22/06	J
Chromium	EPA 200.7	6B20080	2.0	5.0	2.1	1	02/20/06	02/25/06	J
Copper	EPA 200.8	6B21089	0.49	2.0	6.3	1	02/21/06	02/22/06	
Lead	EPA 200.8	6B21089	0.040	1.0	0.71	1	02/21/06	02/22/06	J
Mercury	EPA 245.1	6B21083	0.063	0.20	ND	1	02/21/06	02/21/06	
Nickel	EPA 200.7	6B20080	2.0	10	ND	1	02/20/06	02/25/06	
Selenium	EPA 200.7	6B20080	8.0	10	ND	1	02/20/06	02/25/06	
Silver	EPA 200.7	6B20080	3.0	10	ND	1	02/20/06	02/25/06	
Thallium	EPA 200.8	6B21089	0.075	1.0	ND	1	02/21/06	02/22/06	
Vanadium	EPA 200.7	6B20080	3.0	10	ND	1	02/20/06	02/25/06	
Zinc	EPA 200.7	6B20080	15	20	91	1	02/20/06	02/25/06	B

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 Michele Chamberlin  
 Project Manager

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# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	6B20053	0.26	0.50	22	1	02/20/06	02/20/06	
Nitrate/Nitrite-N	EPA 300.0	6B20053	0.072	0.26	0.74	1	02/20/06	02/20/06	
Oil & Grease	EPA 413.1	6B28050	0.90	4.8	ND	1	02/28/06	02/28/06	
Sulfate	EPA 300.0	6B20053	0.18	0.50	27	1	02/20/06	02/20/06	
Total Dissolved Solids	SM2540C	6B22069	10	10	140	1	02/22/06	02/22/06	
Total Suspended Solids	EPA 160.2	6B23099	10	10	ND	1	02/23/06	02/23/06	

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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPB1818-01 (Outfall 003 - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Total Cyanide	EPA 335.2	6B22127	2.2	5.0	ND	1	02/22/06	02/22/06	
Perchlorate	EPA 314.0	6B23071	0.80	4.0	ND	1	02/23/06	02/23/06	

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**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 003 (IPB1818-01) - Water</b>					
EPA 300.0	2	02/19/2006 10:30	02/19/2006 13:25	02/20/2006 07:00	02/20/2006 10:33
EPA 624	3	02/19/2006 10:30	02/19/2006 13:25	02/20/2006 00:00	02/20/2006 21:57
<b>Sample ID: Trip Blanks (IPB1818-02) - Water</b>					
EPA 624	3	02/19/2006 10:30	02/19/2006 13:25	02/20/2006 00:00	02/20/2006 22:49

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Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C02009 Extracted: 03/02/06</b>											
<b>Blank Analyzed: 03/02/2006 (6C02009-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.42	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.40	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.42	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.32	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.70	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.90	ug/l							
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	27.1			ug/l	25.0		108	80-120			
Surrogate: Toluene-d8	27.4			ug/l	25.0		110	80-120			
Surrogate: 4-Bromofluorobenzene	25.7			ug/l	25.0		103	80-120			

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C02009 Extracted: 03/02/06</b>											
<b>LCS Analyzed: 03/02/2006 (6C02009-BS1)</b>											
Benzene	27.0	1.0	0.28	ug/l	25.0		108	65-120			
Bromodichloromethane	28.0	2.0	0.30	ug/l	25.0		112	65-135			
Bromoform	22.8	5.0	0.32	ug/l	25.0		91	50-130			
Bromomethane	24.0	5.0	0.42	ug/l	25.0		96	60-140			
Carbon tetrachloride	28.7	0.50	0.28	ug/l	25.0		115	65-140			
Chlorobenzene	27.1	2.0	0.36	ug/l	25.0		108	70-125			
Chloroethane	27.6	5.0	0.40	ug/l	25.0		110	55-140			
Chloroform	27.5	2.0	0.33	ug/l	25.0		110	65-130			
Chloromethane	25.1	5.0	0.30	ug/l	25.0		100	40-140			
Dibromochloromethane	27.5	2.0	0.28	ug/l	25.0		110	65-140			
1,2-Dichlorobenzene	27.6	2.0	0.32	ug/l	25.0		110	70-120			
1,3-Dichlorobenzene	25.9	2.0	0.35	ug/l	25.0		104	70-125			
1,4-Dichlorobenzene	25.2	2.0	0.37	ug/l	25.0		101	70-125			
1,1-Dichloroethane	26.9	2.0	0.27	ug/l	25.0		108	65-130			
1,2-Dichloroethane	28.6	0.50	0.28	ug/l	25.0		114	60-140			
1,1-Dichloroethene	29.4	5.0	0.42	ug/l	25.0		118	70-130			
trans-1,2-Dichloroethene	28.4	2.0	0.27	ug/l	25.0		114	65-130			
1,2-Dichloropropane	27.5	2.0	0.35	ug/l	25.0		110	65-125			
cis-1,3-Dichloropropene	28.5	2.0	0.22	ug/l	25.0		114	70-130			
trans-1,3-Dichloropropene	28.9	2.0	0.32	ug/l	25.0		116	65-130			
Ethylbenzene	27.4	2.0	0.25	ug/l	25.0		110	70-125			
Methylene chloride	28.7	5.0	0.70	ug/l	25.0		115	60-130			
1,1,2,2-Tetrachloroethane	35.8	2.0	0.24	ug/l	25.0		143	55-130			L
Tetrachloroethene	27.1	2.0	0.32	ug/l	25.0		108	65-125			
Toluene	26.9	2.0	0.36	ug/l	25.0		108	70-125			
1,1,1-Trichloroethane	25.5	2.0	0.30	ug/l	25.0		102	65-135			
1,1,2-Trichloroethane	29.5	2.0	0.30	ug/l	25.0		118	65-125			
Trichloroethene	27.2	2.0	0.26	ug/l	25.0		109	70-125			
Trichlorofluoromethane	24.8	5.0	0.34	ug/l	25.0		99	60-140			
Vinyl chloride	25.4	0.50	0.26	ug/l	25.0		102	50-130			
Surrogate: Dibromofluoromethane	28.2			ug/l	25.0		113	80-120			
Surrogate: Toluene-d8	28.2			ug/l	25.0		113	80-120			
Surrogate: 4-Bromofluorobenzene	27.7			ug/l	25.0		111	80-120			

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager



MWH-Pasadena/Boeing  
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Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C02009 Extracted: 03/02/06</b>											
<b>Matrix Spike Analyzed: 03/02/2006 (6C02009-MS1)</b>						<b>Source: IPB2085-01</b>					
Benzene	26.4	1.0	0.28	ug/l	25.0	ND	106	60-125			
Bromodichloromethane	25.1	2.0	0.30	ug/l	25.0	ND	100	65-135			
Bromoform	16.8	5.0	0.32	ug/l	25.0	ND	67	50-135			
Bromomethane	23.8	5.0	0.42	ug/l	25.0	ND	95	50-145			
Carbon tetrachloride	25.5	0.50	0.28	ug/l	25.0	ND	102	65-140			
Chlorobenzene	25.9	2.0	0.36	ug/l	25.0	ND	104	70-125			
Chloroethane	28.2	5.0	0.40	ug/l	25.0	ND	113	50-140			
Chloroform	26.4	2.0	0.33	ug/l	25.0	ND	106	65-135			
Chloromethane	24.8	5.0	0.30	ug/l	25.0	ND	99	35-140			
Dibromochloromethane	22.5	2.0	0.28	ug/l	25.0	ND	90	60-140			
1,2-Dichlorobenzene	26.1	2.0	0.32	ug/l	25.0	ND	104	70-125			
1,3-Dichlorobenzene	25.2	2.0	0.35	ug/l	25.0	ND	101	70-125			
1,4-Dichlorobenzene	24.2	2.0	0.37	ug/l	25.0	ND	97	70-125			
1,1-Dichloroethane	26.1	2.0	0.27	ug/l	25.0	ND	104	60-130			
1,2-Dichloroethane	24.4	0.50	0.28	ug/l	25.0	ND	98	60-140			
1,1-Dichloroethene	28.5	5.0	0.42	ug/l	25.0	0.49	112	60-135			
trans-1,2-Dichloroethene	27.4	2.0	0.27	ug/l	25.0	ND	110	60-135			
1,2-Dichloropropane	26.2	2.0	0.35	ug/l	25.0	ND	105	60-125			
cis-1,3-Dichloropropene	25.0	2.0	0.22	ug/l	25.0	ND	100	65-135			
trans-1,3-Dichloropropene	24.3	2.0	0.32	ug/l	25.0	ND	97	65-140			
Ethylbenzene	26.6	2.0	0.25	ug/l	25.0	ND	106	65-130			
Methylene chloride	27.0	5.0	0.70	ug/l	25.0	ND	108	55-130			
1,1,1,2-Tetrachloroethane	28.0	2.0	0.24	ug/l	25.0	ND	112	55-140			
Tetrachloroethene	26.2	2.0	0.32	ug/l	25.0	0.43	103	60-130			
Toluene	25.9	2.0	0.36	ug/l	25.0	ND	104	65-125			
1,1,1-Trichloroethane	24.1	2.0	0.30	ug/l	25.0	ND	96	65-140			
1,1,2-Trichloroethane	25.4	2.0	0.30	ug/l	25.0	ND	102	60-130			
Trichloroethene	28.7	2.0	0.26	ug/l	25.0	2.5	105	60-125			
Trichlorofluoromethane	22.8	5.0	0.34	ug/l	25.0	ND	91	55-145			
Vinyl chloride	27.0	0.50	0.26	ug/l	25.0	ND	108	40-135			
Surrogate: Dibromofluoromethane	28.2			ug/l	25.0		113	80-120			
Surrogate: Toluene-d8	27.5			ug/l	25.0		110	80-120			
Surrogate: 4-Bromofluorobenzene	27.3			ug/l	25.0		109	80-120			

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 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C02009 Extracted: 03/02/06</b>											
<b>Matrix Spike Dup Analyzed: 03/02/2006 (6C02009-MSD1)</b>						<b>Source: IPB2085-01</b>					
Benzene	26.0	1.0	0.28	ug/l	25.0	ND	104	60-125	2	20	
Bromodichloromethane	26.0	2.0	0.30	ug/l	25.0	ND	104	65-135	4	20	
Bromoform	20.1	5.0	0.32	ug/l	25.0	ND	80	50-135	18	25	
Bromomethane	22.4	5.0	0.42	ug/l	25.0	ND	90	50-145	6	25	
Carbon tetrachloride	25.8	0.50	0.28	ug/l	25.0	ND	103	65-140	1	25	
Chlorobenzene	26.0	2.0	0.36	ug/l	25.0	ND	104	70-125	0	20	
Chloroethane	26.5	5.0	0.40	ug/l	25.0	ND	106	50-140	6	25	
Chloroform	26.4	2.0	0.33	ug/l	25.0	ND	106	65-135	0	20	
Chloromethane	23.6	5.0	0.30	ug/l	25.0	ND	94	35-140	5	25	
Dibromochloromethane	25.4	2.0	0.28	ug/l	25.0	ND	102	60-140	12	25	
1,2-Dichlorobenzene	26.9	2.0	0.32	ug/l	25.0	ND	108	70-125	3	20	
1,3-Dichlorobenzene	24.9	2.0	0.35	ug/l	25.0	ND	100	70-125	1	20	
1,4-Dichlorobenzene	24.2	2.0	0.37	ug/l	25.0	ND	97	70-125	0	20	
1,1-Dichloroethane	25.9	2.0	0.27	ug/l	25.0	ND	104	60-130	1	20	
1,2-Dichloroethane	26.6	0.50	0.28	ug/l	25.0	ND	106	60-140	9	20	
1,1-Dichloroethene	28.7	5.0	0.42	ug/l	25.0	0.49	113	60-135	1	20	
trans-1,2-Dichloroethene	27.5	2.0	0.27	ug/l	25.0	ND	110	60-135	0	20	
1,2-Dichloropropane	26.4	2.0	0.35	ug/l	25.0	ND	106	60-125	1	20	
cis-1,3-Dichloropropene	25.8	2.0	0.22	ug/l	25.0	ND	103	65-135	3	20	
trans-1,3-Dichloropropene	26.6	2.0	0.32	ug/l	25.0	ND	106	65-140	9	25	
Ethylbenzene	26.4	2.0	0.25	ug/l	25.0	ND	106	65-130	1	20	
Methylene chloride	27.4	5.0	0.70	ug/l	25.0	ND	110	55-130	1	20	
1,1,2,2-Tetrachloroethane	35.6	2.0	0.24	ug/l	25.0	ND	142	55-140	24	30	M7
Tetrachloroethene	26.3	2.0	0.32	ug/l	25.0	0.43	103	60-130	0	20	
Toluene	25.7	2.0	0.36	ug/l	25.0	ND	103	65-125	1	20	
1,1,1-Trichloroethane	24.2	2.0	0.30	ug/l	25.0	ND	97	65-140	0	20	
1,1,2-Trichloroethane	28.5	2.0	0.30	ug/l	25.0	ND	114	60-130	12	25	
Trichloroethene	28.3	2.0	0.26	ug/l	25.0	2.5	103	60-125	1	20	
Trichlorofluoromethane	23.3	5.0	0.34	ug/l	25.0	ND	93	55-145	2	25	
Vinyl chloride	23.9	0.50	0.26	ug/l	25.0	ND	96	40-135	12	30	
Surrogate: Dibromofluoromethane	28.1			ug/l	25.0		112	80-120			
Surrogate: Toluene-d8	27.5			ug/l	25.0		110	80-120			
Surrogate: 4-Bromofluorobenzene	27.6			ug/l	25.0		110	80-120			

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Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**PURGEABLES-- GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B20035 Extracted: 02/20/06</b>											
<b>Blank Analyzed: 02/20/2006 (6B20035-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	0.70	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.8	ug/l							
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	27.7			ug/l	25.0		111	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			
<b>LCS Analyzed: 02/20/2006 (6B20035-BS1)</b>											
2-Chloroethyl vinyl ether	38.8	5.0	1.8	ug/l	25.0		155	25-170			
Surrogate: Dibromofluoromethane	28.0			ug/l	25.0		112	80-120			
Surrogate: Toluene-d8	28.0			ug/l	25.0		112	80-120			
Surrogate: 4-Bromofluorobenzene	28.9			ug/l	25.0		116	80-120			
<b>Matrix Spike Analyzed: 02/20/2006 (6B20035-MS1) Source: IPB1817-01</b>											
2-Chloroethyl vinyl ether	34.2	5.0	1.8	ug/l	25.0	ND	137	25-170			
Surrogate: Dibromofluoromethane	27.4			ug/l	25.0		110	80-120			
Surrogate: Toluene-d8	28.2			ug/l	25.0		113	80-120			
Surrogate: 4-Bromofluorobenzene	27.8			ug/l	25.0		111	80-120			
<b>Matrix Spike Dup Analyzed: 02/20/2006 (6B20035-MSD1) Source: IPB1817-01</b>											
2-Chloroethyl vinyl ether	21.8	5.0	1.8	ug/l	25.0	ND	87	25-170	44	25	R
Surrogate: Dibromofluoromethane	24.0			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	27.3			ug/l	25.0		109	80-120			
Surrogate: 4-Bromofluorobenzene	25.9			ug/l	25.0		104	80-120			

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager



MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>Blank Analyzed: 02/27/2006 (6B24064-BLK1)</b>											
Acenaphthene	ND	10	4.3	ug/l							
Acenaphthylene	ND	10	3.2	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	10	3.2	ug/l							
Benzidine	ND	20	5.2	ug/l							
Benzoic acid	ND	20	2.6	ug/l							
Benzo(a)anthracene	ND	10	3.7	ug/l							
Benzo(b)fluoranthene	ND	10	2.7	ug/l							
Benzo(k)fluoranthene	ND	10	3.4	ug/l							
Benzo(g,h,i)perylene	ND	10	5.3	ug/l							
Benzo(a)pyrene	ND	10	3.5	ug/l							
Benzyl alcohol	ND	20	2.5	ug/l							
Bis(2-chloroethoxy)methane	ND	10	3.9	ug/l							
Bis(2-chloroethyl)ether	ND	10	4.4	ug/l							
Bis(2-chloroisopropyl)ether	ND	10	4.6	ug/l							
Bis(2-ethylhexyl)phthalate	ND	50	5.2	ug/l							
4-Bromophenyl phenyl ether	ND	10	4.6	ug/l							
Butyl benzyl phthalate	ND	20	3.5	ug/l							
4-Chloroaniline	ND	10	6.0	ug/l							
2-Chloronaphthalene	ND	10	4.0	ug/l							
4-Chloro-3-methylphenol	ND	20	3.5	ug/l							
2-Chlorophenol	ND	10	4.2	ug/l							
4-Chlorophenyl phenyl ether	ND	10	3.0	ug/l							
Chrysene	ND	10	2.8	ug/l							
Dibenz(a,h)anthracene	ND	20	4.7	ug/l							
Dibenzofuran	ND	10	2.6	ug/l							
Di-n-butyl phthalate	ND	20	2.8	ug/l							
1,3-Dichlorobenzene	ND	10	4.1	ug/l							
1,4-Dichlorobenzene	ND	10	3.9	ug/l							
1,2-Dichlorobenzene	ND	10	4.5	ug/l							
3,3-Dichlorobenzidine	ND	20	11	ug/l							
2,4-Dichlorophenol	ND	10	4.1	ug/l							
Diethyl phthalate	ND	10	3.1	ug/l							
2,4-Dimethylphenol	ND	20	4.4	ug/l							
Dimethyl phthalate	ND	10	3.6	ug/l							

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager



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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

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Sampled: 02/19/06  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>										
<b>Blank Analyzed: 02/27/2006 (6B24064-BLK1)</b>										
4,6-Dinitro-2-methylphenol	ND	20	5.1	ug/l						
2,4-Dinitrophenol	ND	20	5.3	ug/l						
2,4-Dinitrotoluene	ND	10	4.2	ug/l						
2,6-Dinitrotoluene	ND	10	3.2	ug/l						
Di-n-octyl phthalate	ND	20	4.7	ug/l						
Fluoranthene	ND	10	4.2	ug/l						
Fluorene	ND	10	3.9	ug/l						
Hexachlorobenzene	ND	10	4.8	ug/l						
Hexachlorobutadiene	ND	10	4.2	ug/l						
Hexachlorocyclopentadiene	ND	20	3.4	ug/l						
Hexachloroethane	ND	10	4.2	ug/l						
Indeno(1,2,3-cd)pyrene	ND	20	5.4	ug/l						
Isophorone	ND	10	3.7	ug/l						
2-Methylnaphthalene	ND	10	3.0	ug/l						
2-Methylphenol	ND	10	3.7	ug/l						
4-Methylphenol	ND	10	3.8	ug/l						
Naphthalene	ND	10	4.5	ug/l						
2-Nitroaniline	ND	20	3.9	ug/l						
3-Nitroaniline	ND	20	4.5	ug/l						
4-Nitroaniline	ND	20	4.9	ug/l						
Nitrobenzene	ND	20	4.2	ug/l						
2-Nitrophenol	ND	10	4.2	ug/l						
4-Nitrophenol	ND	20	6.6	ug/l						
N-Nitrosodiphenylamine	ND	10	4.0	ug/l						
N-Nitroso-di-n-propylamine	ND	10	3.6	ug/l						
Pentachlorophenol	ND	20	4.0	ug/l						
Phenanthrene	ND	10	3.3	ug/l						
Phenol	ND	10	4.0	ug/l						
Pyrene	ND	10	3.9	ug/l						
1,2,4-Trichlorobenzene	ND	10	4.4	ug/l						
2,4,5-Trichlorophenol	ND	20	3.6	ug/l						
2,4,6-Trichlorophenol	ND	20	4.1	ug/l						
1,2-Diphenylhydrazine/Azobenzene	ND	20	5.0	ug/l						
N-Nitrosodimethylamine	ND	20	3.7	ug/l						
Surrogate: 2-Fluorophenol	114			ug/l	200		57		30-120	

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 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>Blank Analyzed: 02/27/2006 (6B24064-BLK1)</b>											
Surrogate: Phenol-d6	132			ug/l	200		66	35-120			
Surrogate: 2,4,6-Tribromophenol	150			ug/l	200		75	45-120			
Surrogate: Nitrobenzene-d5	53.3			ug/l	100		53	45-120			
Surrogate: 2-Fluorobiphenyl	56.1			ug/l	100		56	45-120			
Surrogate: Terphenyl-d14	81.8			ug/l	100		82	45-120			
<b>LCS Analyzed: 02/27/2006 (6B24064-BS1)</b>											
Acenaphthene	79.6	10	4.3	ug/l	100		80	55-120			M-NR1
Acenaphthylene	87.8	10	3.2	ug/l	100		88	55-120			
Aniline	73.9	10	2.9	ug/l	100		74	35-120			
Anthracene	90.3	10	3.2	ug/l	100		90	55-120			
Benzidine	94.5	20	5.2	ug/l	100		94	20-160			
Benzoic acid	80.6	20	2.6	ug/l	100		81	35-120			
Benzo(a)anthracene	90.6	10	3.7	ug/l	100		91	60-120			
Benzo(b)fluoranthene	86.4	10	2.7	ug/l	100		86	50-120			
Benzo(k)fluoranthene	87.7	10	3.4	ug/l	100		88	50-120			
Benzo(g,h,i)perylene	91.5	10	5.3	ug/l	100		92	40-125			
Benzo(a)pyrene	87.5	10	3.5	ug/l	100		88	55-120			
Benzyl alcohol	73.8	20	2.5	ug/l	100		74	45-120			
Bis(2-chloroethoxy)methane	73.2	10	3.9	ug/l	100		73	55-120			
Bis(2-chloroethyl)ether	71.6	10	4.4	ug/l	100		72	50-120			
Bis(2-chloroisopropyl)ether	75.5	10	4.6	ug/l	100		76	45-120			
Bis(2-ethylhexyl)phthalate	89.3	50	5.2	ug/l	100		89	60-130			
4-Bromophenyl phenyl ether	79.6	10	4.6	ug/l	100		80	50-120			
Butyl benzyl phthalate	87.4	20	3.5	ug/l	100		87	55-125			
4-Chloroaniline	75.1	10	6.0	ug/l	100		75	50-120			
2-Chloronaphthalene	76.6	10	4.0	ug/l	100		77	55-120			
4-Chloro-3-methylphenol	78.9	20	3.5	ug/l	100		79	60-120			
2-Chlorophenol	71.5	10	4.2	ug/l	100		72	45-120			
4-Chlorophenyl phenyl ether	87.4	10	3.0	ug/l	100		87	55-120			
Chrysene	94.1	10	2.8	ug/l	100		94	60-120			
Dibenz(a,h)anthracene	96.7	20	4.7	ug/l	100		97	45-130			
Dibenzofuran	81.4	10	2.6	ug/l	100		81	60-120			
Di-n-butyl phthalate	87.1	20	2.8	ug/l	100		87	55-125			
1,3-Dichlorobenzene	43.4	10	4.1	ug/l	100		43	35-120			
1,4-Dichlorobenzene	48.0	10	3.9	ug/l	100		48	35-120			

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>LCS Analyzed: 02/27/2006 (6B24064-BS1)</b>											
1,2-Dichlorobenzene	49.7	10	4.5	ug/l	100	50	35-120				M-NR1
3,3-Dichlorobenzidine	103	20	11	ug/l	100	103	45-130				
2,4-Dichlorophenol	71.1	10	4.1	ug/l	100	71	55-120				
Diethyl phthalate	62.2	10	3.1	ug/l	100	62	55-120				
2,4-Dimethylphenol	63.6	20	4.4	ug/l	100	64	30-120				
Dimethyl phthalate	28.8	10	3.6	ug/l	100	29	30-120				L2
4,6-Dinitro-2-methylphenol	82.9	20	5.1	ug/l	100	83	50-120				
2,4-Dinitrophenol	87.6	20	5.3	ug/l	100	88	40-120				
2,4-Dinitrotoluene	87.8	10	4.2	ug/l	100	88	60-120				
2,6-Dinitrotoluene	81.6	10	3.2	ug/l	100	82	60-120				
Di-n-octyl phthalate	81.7	20	4.7	ug/l	100	82	60-130				
Fluoranthene	92.2	10	4.2	ug/l	100	92	55-120				
Fluorene	86.5	10	3.9	ug/l	100	86	60-120				
Hexachlorobenzene	87.4	10	4.8	ug/l	100	87	50-120				
Hexachlorobutadiene	50.0	10	4.2	ug/l	100	50	40-120				
Hexachlorocyclopentadiene	69.2	20	3.4	ug/l	100	69	15-120				
Hexachloroethane	42.1	10	4.2	ug/l	100	42	35-120				
Indeno(1,2,3-cd)pyrene	89.1	20	5.4	ug/l	100	89	40-130				
Isophorone	67.7	10	3.7	ug/l	100	68	50-120				
2-Methylnaphthalene	69.4	10	3.0	ug/l	100	69	50-120				
2-Methylphenol	74.0	10	3.7	ug/l	100	74	45-120				
4-Methylphenol	77.3	10	3.8	ug/l	100	77	45-120				
Naphthalene	65.9	10	4.5	ug/l	100	66	50-120				
2-Nitroaniline	89.4	20	3.9	ug/l	100	89	60-120				
3-Nitroaniline	94.0	20	4.5	ug/l	100	94	55-120				
4-Nitroaniline	98.6	20	4.9	ug/l	100	99	50-125				
Nitrobenzene	68.0	20	4.2	ug/l	100	68	50-120				
2-Nitrophenol	72.7	10	4.2	ug/l	100	73	55-120				
4-Nitrophenol	91.3	20	6.6	ug/l	100	91	45-120				
N-Nitrosodiphenylamine	82.7	10	4.0	ug/l	100	83	55-120				
N-Nitroso-di-n-propylamine	79.2	10	3.6	ug/l	100	79	45-120				
Pentachlorophenol	97.1	20	4.0	ug/l	100	97	50-120				
Phenanthrene	88.3	10	3.3	ug/l	100	88	55-120				
Phenol	73.6	10	4.0	ug/l	100	74	45-120				
Pyrene	89.7	10	3.9	ug/l	100	90	50-120				

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager





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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>LCS Analyzed: 02/27/2006 (6B24064-BS1)</b>											
1,2,4-Trichlorobenzene	52.5	10	4.4	ug/l	100		52	45-120			M-NRI
2,4,5-Trichlorophenol	82.7	20	3.6	ug/l	100		83	60-120			
2,4,6-Trichlorophenol	81.8	20	4.1	ug/l	100		82	60-120			
1,2-Diphenylhydrazine/Azobenzene	89.5	20	5.0	ug/l	100		90	60-120			
N-Nitrosodimethylamine	67.5	20	3.7	ug/l	100		68	40-120			
Surrogate: 2-Fluorophenol	125			ug/l	200		62	30-120			
Surrogate: Phenol-d6	145			ug/l	200		72	35-120			
Surrogate: 2,4,6-Tribromophenol	166			ug/l	200		83	45-120			
Surrogate: Nitrobenzene-d5	67.5			ug/l	100		68	45-120			
Surrogate: 2-Fluorobiphenyl	75.0			ug/l	100		75	45-120			
Surrogate: Terphenyl-d14	87.3			ug/l	100		87	45-120			
<b>LCS Dup Analyzed: 02/27/2006 (6B24064-BSD1)</b>											
Acenaphthene	92.1	10	4.3	ug/l	100		92	55-120	15	20	
Acenaphthylene	100	10	3.2	ug/l	100		100	55-120	13	20	
Aniline	76.1	10	2.9	ug/l	100		76	35-120	3	25	
Anthracene	102	10	3.2	ug/l	100		102	55-120	12	20	
Benzidine	117	20	5.2	ug/l	100		117	20-160	21	35	
Benzoic acid	86.0	20	2.6	ug/l	100		86	35-120	6	30	
Benzo(a)anthracene	99.9	10	3.7	ug/l	100		100	60-120	10	20	
Benzo(b)fluoranthene	100	10	2.7	ug/l	100		100	50-120	15	25	
Benzo(k)fluoranthene	97.5	10	3.4	ug/l	100		98	50-120	11	20	
Benzo(g,h,i)perylene	105	10	5.3	ug/l	100		105	40-125	14	25	
Benzo(a)pyrene	101	10	3.5	ug/l	100		101	55-120	14	25	
Benzyl alcohol	80.5	20	2.5	ug/l	100		80	45-120	9	20	
Bis(2-chloroethoxy)methane	79.9	10	3.9	ug/l	100		80	55-120	9	20	
Bis(2-chloroethyl)ether	73.4	10	4.4	ug/l	100		73	50-120	2	20	
Bis(2-chloroisopropyl)ether	76.9	10	4.6	ug/l	100		77	45-120	2	20	
Bis(2-ethylhexyl)phthalate	98.7	50	5.2	ug/l	100		99	60-130	10	20	
4-Bromophenyl phenyl ether	90.7	10	4.6	ug/l	100		91	50-120	13	25	
Butyl benzyl phthalate	94.3	20	3.5	ug/l	100		94	55-125	8	20	
4-Chloroaniline	84.2	10	6.0	ug/l	100		84	50-120	11	25	
2-Chloronaphthalene	90.1	10	4.0	ug/l	100		90	55-120	16	20	
4-Chloro-3-methylphenol	88.2	20	3.5	ug/l	100		88	60-120	11	25	
2-Chlorophenol	77.5	10	4.2	ug/l	100		78	45-120	8	25	
4-Chlorophenyl phenyl ether	99.9	10	3.0	ug/l	100		100	55-120	13	20	

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Michele Chamberlin  
Project Manager

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Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>LCS Dup Analyzed: 02/27/2006 (6B24064-BSD1)</b>											
Chrysene	102	10	2.8	ug/l	100	102	60-120	8	20		
Dibenz(a,h)anthracene	109	20	4.7	ug/l	100	109	45-130	12	25		
Dibenzofuran	92.6	10	2.6	ug/l	100	93	60-120	13	20		
Di-n-butyl phthalate	96.4	20	2.8	ug/l	100	96	55-125	10	20		
1,3-Dichlorobenzene	46.7	10	4.1	ug/l	100	47	35-120	7	25		
1,4-Dichlorobenzene	48.9	10	3.9	ug/l	100	49	35-120	2	25		
1,2-Dichlorobenzene	52.2	10	4.5	ug/l	100	52	35-120	5	25		
3,3-Dichlorobenzidine	114	20	11	ug/l	100	114	45-130	10	25		
2,4-Dichlorophenol	78.6	10	4.1	ug/l	100	79	55-120	10	20		
Diethyl phthalate	74.0	10	3.1	ug/l	100	74	55-120	17	20		
2,4-Dimethylphenol	70.0	20	4.4	ug/l	100	70	30-120	10	25		
Dimethyl phthalate	31.1	10	3.6	ug/l	100	31	30-120	8	20		
4,6-Dinitro-2-methylphenol	87.3	20	5.1	ug/l	100	87	50-120	5	25		
2,4-Dinitrophenol	89.0	20	5.3	ug/l	100	89	40-120	2	25		
2,4-Dinitrotoluene	97.7	10	4.2	ug/l	100	98	60-120	11	20		
2,6-Dinitrotoluene	95.7	10	3.2	ug/l	100	96	60-120	16	20		
Di-n-octyl phthalate	91.3	20	4.7	ug/l	100	91	60-130	11	20		
Fluoranthene	101	10	4.2	ug/l	100	101	55-120	9	20		
Fluorene	94.5	10	3.9	ug/l	100	94	60-120	9	20		
Hexachlorobenzene	94.6	10	4.8	ug/l	100	95	50-120	8	20		
Hexachlorobutadiene	57.0	10	4.2	ug/l	100	57	40-120	13	25		
Hexachlorocyclopentadiene	79.8	20	3.4	ug/l	100	80	15-120	14	30		
Hexachloroethane	43.6	10	4.2	ug/l	100	44	35-120	4	25		
Indeno(1,2,3-cd)pyrene	102	20	5.4	ug/l	100	102	40-130	14	25		
Isophorone	75.5	10	3.7	ug/l	100	76	50-120	11	20		
2-Methylnaphthalene	79.5	10	3.0	ug/l	100	80	50-120	14	20		
2-Methylphenol	79.0	10	3.7	ug/l	100	79	45-120	7	20		
4-Methylphenol	82.8	10	3.8	ug/l	100	83	45-120	7	20		
Naphthalene	72.8	10	4.5	ug/l	100	73	50-120	10	20		
2-Nitroaniline	99.2	20	3.9	ug/l	100	99	60-120	10	20		
3-Nitroaniline	103	20	4.5	ug/l	100	103	55-120	9	25		
4-Nitroaniline	111	20	4.9	ug/l	100	111	50-125	12	20		
Nitrobenzene	75.0	20	4.2	ug/l	100	75	50-120	10	25		
2-Nitrophenol	77.3	10	4.2	ug/l	100	77	55-120	6	25		
4-Nitrophenol	90.5	20	6.6	ug/l	100	90	45-120	1	25		

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Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24064 Extracted: 02/24/06</b>											
<b>LCS Dup Analyzed: 02/27/2006 (6B24064-BSD1)</b>											
N-Nitrosodiphenylamine	93.2	10	4.0	ug/l	100	93	55-120	12	20		
N-Nitroso-di-n-propylamine	80.0	10	3.6	ug/l	100	80	45-120	1	20		
Pentachlorophenol	95.4	20	4.0	ug/l	100	95	50-120	2	25		
Phenanthrene	99.3	10	3.3	ug/l	100	99	55-120	12	20		
Phenol	78.3	10	4.0	ug/l	100	78	45-120	6	25		
Pyrene	94.8	10	3.9	ug/l	100	95	50-120	6	25		
1,2,4-Trichlorobenzene	60.1	10	4.4	ug/l	100	60	45-120	13	20		
2,4,5-Trichlorophenol	89.0	20	3.6	ug/l	100	89	60-120	7	20		
2,4,6-Trichlorophenol	86.6	20	4.1	ug/l	100	87	60-120	6	20		
1,2-Diphenylhydrazine/Azobenzene	95.6	20	5.0	ug/l	100	96	60-120	7	25		
N-Nitrosodimethylamine	66.8	20	3.7	ug/l	100	67	40-120	1	20		
Surrogate: 2-Fluorophenol	129			ug/l	200	64	30-120				
Surrogate: Phenol-d6	150			ug/l	200	75	35-120				
Surrogate: 2,4,6-Tribromophenol	170			ug/l	200	85	45-120				
Surrogate: Nitrobenzene-d5	71.8			ug/l	100	72	45-120				
Surrogate: 2-Fluorobiphenyl	86.0			ug/l	100	86	45-120				
Surrogate: Terphenyl-d14	92.4			ug/l	100	92	45-120				

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
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Batch: 6B24053 Extracted: 02/24/06

Blank Analyzed: 02/24/2006 (6B24053-BLK1)

Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.020	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.020	ug/l						
4,4'-DDE	ND	0.10	0.025	ug/l						
4,4'-DDT	ND	0.10	0.035	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.020	ug/l						
Endrin	ND	0.10	0.020	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.030	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.376			ug/l	0.500		75		35-115	
Surrogate: Decachlorobiphenyl	0.480			ug/l	0.500		96		45-120	

LCS Analyzed: 02/24/2006 (6B24053-BS1)

M-NR1

Aldrin	0.470	0.10	0.030	ug/l	0.500		94		35-120	
alpha-BHC	0.506	0.10	0.020	ug/l	0.500		101		45-120	
beta-BHC	0.495	0.10	0.015	ug/l	0.500		99		50-120	
delta-BHC	0.558	0.20	0.020	ug/l	0.500		112		50-120	
gamma-BHC (Lindane)	0.510	0.10	0.020	ug/l	0.500		102		40-120	
4,4'-DDD	0.540	0.10	0.020	ug/l	0.500		108		55-120	
4,4'-DDE	0.531	0.10	0.025	ug/l	0.500		106		50-120	
4,4'-DDT	0.554	0.10	0.035	ug/l	0.500		111		55-120	
Dieldrin	0.525	0.10	0.015	ug/l	0.500		105		50-120	
Endosulfan I	0.457	0.10	0.015	ug/l	0.500		91		50-120	
Endosulfan II	0.528	0.10	0.040	ug/l	0.500		106		55-120	
Endosulfan sulfate	0.559	0.20	0.020	ug/l	0.500		112		60-120	

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24053 Extracted: 02/24/06</b>											
<b>LCS Analyzed: 02/24/2006 (6B24053-BS1)</b>											
Endrin	0.547	0.10	0.020	ug/l	0.500		109	55-120			M-NR1
Endrin aldehyde	0.538	0.10	0.045	ug/l	0.500		108	55-120			
Endrin ketone	0.550	0.10	0.020	ug/l	0.500		110	55-120			
Heptachlor	0.481	0.10	0.030	ug/l	0.500		96	40-115			
Heptachlor epoxide	0.502	0.10	0.030	ug/l	0.500		100	50-120			
Methoxychlor	0.587	0.10	0.035	ug/l	0.500		117	55-120			
Surrogate: Tetrachloro-m-xylene	0.399			ug/l	0.500		80	35-115			
Surrogate: Decachlorobiphenyl	0.519			ug/l	0.500		104	45-120			
<b>LCS Dup Analyzed: 02/24/2006 (6B24053-BSD1)</b>											
Aldrin	0.439	0.10	0.030	ug/l	0.500		88	35-120	7	30	
alpha-BHC	0.465	0.10	0.020	ug/l	0.500		93	45-120	8	30	
beta-BHC	0.464	0.10	0.015	ug/l	0.500		93	50-120	6	30	
delta-BHC	0.521	0.20	0.020	ug/l	0.500		104	50-120	7	30	
gamma-BHC (Lindane)	0.472	0.10	0.020	ug/l	0.500		94	40-120	8	30	
4,4'-DDD	0.514	0.10	0.020	ug/l	0.500		103	55-120	5	30	
4,4'-DDE	0.493	0.10	0.025	ug/l	0.500		99	50-120	7	30	
4,4'-DDT	0.524	0.10	0.035	ug/l	0.500		105	55-120	6	30	
Dieldrin	0.497	0.10	0.015	ug/l	0.500		99	50-120	5	30	
Endosulfan I	0.432	0.10	0.015	ug/l	0.500		86	50-120	6	30	
Endosulfan II	0.505	0.10	0.040	ug/l	0.500		101	55-120	4	30	
Endosulfan sulfate	0.532	0.20	0.020	ug/l	0.500		106	60-120	5	30	
Endrin	0.516	0.10	0.020	ug/l	0.500		103	55-120	6	30	
Endrin aldehyde	0.503	0.10	0.045	ug/l	0.500		101	55-120	7	30	
Endrin ketone	0.523	0.10	0.020	ug/l	0.500		105	55-120	5	30	
Heptachlor	0.444	0.10	0.030	ug/l	0.500		89	40-115	8	30	
Heptachlor epoxide	0.464	0.10	0.030	ug/l	0.500		93	50-120	8	30	
Methoxychlor	0.551	0.10	0.035	ug/l	0.500		110	55-120	6	30	
Surrogate: Tetrachloro-m-xylene	0.364			ug/l	0.500		73	35-115			
Surrogate: Decachlorobiphenyl	0.492			ug/l	0.500		98	45-120			

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METHOD BLANK/QC DATA

TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B24053 Extracted: 02/24/06</b>											
<b>Blank Analyzed: 02/26/2006 (6B24053-BLK1)</b>											
Aroclor 1016	ND	1.0	0.20	ug/l							
Aroclor 1221	ND	1.0	0.10	ug/l							
Aroclor 1232	ND	1.0	0.25	ug/l							
Aroclor 1242	ND	1.0	0.25	ug/l							
Aroclor 1248	ND	1.0	0.25	ug/l							
Aroclor 1254	ND	1.0	0.25	ug/l							
Aroclor 1260	ND	1.0	0.40	ug/l							
Surrogate: Decachlorobiphenyl	0.473			ug/l	0.500		95	45-120			
<b>LCS Analyzed: 02/26/2006 (6B24053-BS2)</b>											
Aroclor 1016	4.07	1.0	0.20	ug/l	4.00		102	45-115			M-NR1
Aroclor 1260	4.15	1.0	0.40	ug/l	4.00		104	55-115			
Surrogate: Decachlorobiphenyl	0.459			ug/l	0.500		92	45-120			
<b>LCS Dup Analyzed: 02/26/2006 (6B24053-BSD2)</b>											
Aroclor 1016	3.93	1.0	0.20	ug/l	4.00		98	45-115	4	30	
Aroclor 1260	4.01	1.0	0.40	ug/l	4.00		100	55-115	3	25	
Surrogate: Decachlorobiphenyl	0.449			ug/l	0.500		90	45-120			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B20080 Extracted: 02/20/06</b>										
<b>Blank Analyzed: 02/25/2006-02/27/2006 (6B20080-BLK1)</b>										
Aluminum	ND	50	40	ug/l						
Arsenic	ND	5.0	4.4	ug/l						
Beryllium	ND	2.0	0.90	ug/l						
Boron	ND	0.050	0.0080	mg/l						
Chromium	ND	5.0	2.0	ug/l						
Nickel	ND	10	2.0	ug/l						
Selenium	ND	10	8.0	ug/l						
Silver	ND	10	3.0	ug/l						
Vanadium	ND	10	3.0	ug/l						
Zinc	15.6	20	15	ug/l						J

**LCS Analyzed: 02/25/2006-02/27/2006 (6B20080-BS1)**

Aluminum	531	50	40	ug/l	500		106	85-115		
Arsenic	535	5.0	4.4	ug/l	500		107	85-115		
Beryllium	548	2.0	0.90	ug/l	500		110	85-115		
Boron	0.481	0.050	0.0080	mg/l	0.500		96	85-115		
Chromium	537	5.0	2.0	ug/l	500		107	85-115		
Nickel	528	10	2.0	ug/l	500		106	85-115		
Selenium	517	10	8.0	ug/l	500		103	85-115		
Silver	275	10	3.0	ug/l	250		110	85-115		
Vanadium	547	10	3.0	ug/l	500		109	85-115		
Zinc	572	20	15	ug/l	500		114	85-115		

**Matrix Spike Analyzed: 02/25/2006-02/27/2006 (6B20080-MS1)**

Source: IPB1673-01

Aluminum	591	50	40	ug/l	500	ND	118	70-130		
Arsenic	558	5.0	4.4	ug/l	500	ND	112	70-130		
Beryllium	560	2.0	0.90	ug/l	500	ND	112	70-130		
Boron	0.487	0.050	0.0080	mg/l	0.500	ND	97	70-130		
Chromium	561	5.0	2.0	ug/l	500	ND	112	70-130		
Nickel	545	10	2.0	ug/l	500	3.6	108	70-130		
Selenium	537	10	8.0	ug/l	500	ND	107	70-130		
Silver	285	10	3.0	ug/l	250	ND	114	70-130		
Vanadium	566	10	3.0	ug/l	500	ND	113	70-130		
Zinc	634	20	15	ug/l	500	150	97	70-130		

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B20080 Extracted: 02/20/06</b>											
<b>Matrix Spike Analyzed: 02/25/2006-02/27/2006 (6B20080-MS2)</b>						<b>Source: IPB1673-02</b>					
Aluminum	526	50	40	ug/l	500	ND	105	70-130			
Arsenic	529	5.0	4.4	ug/l	500	ND	106	70-130			
Beryllium	536	2.0	0.90	ug/l	500	ND	107	70-130			
Boron	0.488	0.050	0.0080	mg/l	0.500	ND	98	70-130			
Chromium	533	5.0	2.0	ug/l	500	2.9	106	70-130			
Nickel	519	10	2.0	ug/l	500	2.9	103	70-130			
Selenium	517	10	8.0	ug/l	500	ND	103	70-130			
Silver	272	10	3.0	ug/l	250	ND	109	70-130			
Vanadium	538	10	3.0	ug/l	500	ND	108	70-130			
Zinc	662	20	15	ug/l	500	190	94	70-130			
<b>Matrix Spike Dup Analyzed: 02/25/2006-02/27/2006 (6B20080-MSD1)</b>						<b>Source: IPB1673-01</b>					
Aluminum	540	50	40	ug/l	500	ND	108	70-130	9	20	
Arsenic	532	5.0	4.4	ug/l	500	ND	106	70-130	5	20	
Beryllium	544	2.0	0.90	ug/l	500	ND	109	70-130	3	20	
Boron	0.500	0.050	0.0080	mg/l	0.500	ND	100	70-130	3	20	
Chromium	534	5.0	2.0	ug/l	500	ND	107	70-130	5	20	
Nickel	520	10	2.0	ug/l	500	3.6	103	70-130	5	20	
Selenium	507	10	8.0	ug/l	500	ND	101	70-130	6	20	
Silver	272	10	3.0	ug/l	250	ND	109	70-130	5	20	
Vanadium	540	10	3.0	ug/l	500	ND	108	70-130	5	20	
Zinc	893	20	15	ug/l	500	150	149	70-130	34	20	MI
<b>Batch: 6B21083 Extracted: 02/21/06</b>											
<b>Blank Analyzed: 02/21/2006 (6B21083-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B21083 Extracted: 02/21/06</b>											
<b>LCS Analyzed: 02/21/2006 (6B21083-BS1)</b>											
Mercury	8.63	0.20	0.050	ug/l	8.00		108	85-115			
<b>Matrix Spike Analyzed: 02/21/2006 (6B21083-MS1) Source: IPB1786-01</b>											
Mercury	8.06	0.20	0.050	ug/l	8.00	ND	101	70-130			
<b>Matrix Spike Dup Analyzed: 02/21/2006 (6B21083-MSD1) Source: IPB1786-01</b>											
Mercury	8.48	0.20	0.050	ug/l	8.00	ND	106	70-130	5	20	
<b>Batch: 6B21089 Extracted: 02/21/06</b>											
<b>Blank Analyzed: 02/22/2006 (6B21089-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	0.281	2.0	0.25	ug/l							J
Lead	ND	1.0	0.040	ug/l							
Thallium	ND	1.0	0.075	ug/l							
<b>LCS Analyzed: 02/22/2006 (6B21089-BS1)</b>											
Antimony	81.3	2.0	0.050	ug/l	80.0		102	85-115			
Cadmium	81.7	1.0	0.025	ug/l	80.0		102	85-115			
Copper	79.2	2.0	0.25	ug/l	80.0		99	85-115			
Lead	80.3	1.0	0.040	ug/l	80.0		100	85-115			
Thallium	80.4	1.0	0.075	ug/l	80.0		100	85-115			
<b>Matrix Spike Analyzed: 02/22/2006 (6B21089-MS1) Source: IPB1597-01</b>											
Antimony	82.7	2.0	0.050	ug/l	80.0	0.089	103	70-130			
Cadmium	79.4	1.0	0.025	ug/l	80.0	ND	99	70-130			
Copper	132	2.0	0.25	ug/l	80.0	62	88	70-130			
Lead	84.8	1.0	0.040	ug/l	80.0	6.8	98	70-130			
Thallium	79.5	1.0	0.075	ug/l	80.0	ND	99	70-130			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B21089 Extracted: 02/21/06</b>											
<b>Matrix Spike Analyzed: 02/22/2006 (6B21089-MS2)</b>						<b>Source: IPB1597-02</b>					
Antimony	82.9	2.0	0.050	ug/l	80.0	0.071	104	70-130			
Cadmium	79.6	1.0	0.025	ug/l	80.0	ND	100	70-130			
Copper	95.6	2.0	0.25	ug/l	80.0	22	92	70-130			
Lead	82.3	1.0	0.040	ug/l	80.0	2.4	100	70-130			
Thallium	80.9	1.0	0.075	ug/l	80.0	ND	101	70-130			
<b>Matrix Spike Dup Analyzed: 02/22/2006 (6B21089-MSD1)</b>						<b>Source: IPB1597-01</b>					
Antimony	83.9	2.0	0.050	ug/l	80.0	0.089	105	70-130	1	20	
Cadmium	80.4	1.0	0.025	ug/l	80.0	ND	100	70-130	1	20	
Copper	134	2.0	0.25	ug/l	80.0	62	90	70-130	2	20	
Lead	87.4	1.0	0.040	ug/l	80.0	6.8	101	70-130	3	20	
Thallium	81.4	1.0	0.075	ug/l	80.0	ND	102	70-130	2	20	

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B20053 Extracted: 02/20/06</b>											
<b>Blank Analyzed: 02/20/2006 (6B20053-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 02/20/2006 (6B20053-BS1)</b>											
Chloride	4.91	0.50	0.26	mg/l	5.00		98	90-110			
Sulfate	9.96	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 02/20/2006 (6B20053-MS1) Source: IPB1817-01</b>											
Chloride	22.7	0.50	0.26	mg/l	5.00	18	94	80-120			
Sulfate	24.5	0.50	0.18	mg/l	10.0	14	105	80-120			
<b>Matrix Spike Dup Analyzed: 02/20/2006 (6B20053-MSD1) Source: IPB1817-01</b>											
Chloride	22.6	0.50	0.26	mg/l	5.00	18	92	80-120	0	20	
Sulfate	24.4	0.50	0.18	mg/l	10.0	14	104	80-120	0	20	
<b>Batch: 6B22069 Extracted: 02/22/06</b>											
<b>Blank Analyzed: 02/22/2006 (6B22069-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/22/2006 (6B22069-BS1)</b>											
Total Dissolved Solids	982	10	10	mg/l	1000		98	90-110			
<b>Duplicate Analyzed: 02/22/2006 (6B22069-DUP1) Source: IPB1656-01</b>											
Total Dissolved Solids	500	10	10	mg/l		490			2	10	

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
 Report Number: IPB1818

Sampled: 02/19/06  
 Received: 02/19/06

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B22127 Extracted: 02/22/06</b>											
<b>Blank Analyzed: 02/22/2006 (6B22127-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 02/22/2006 (6B22127-BS1)</b>											
Total Cyanide	194	5.0	2.2	ug/l	200		97	90-110			
<b>Matrix Spike Analyzed: 02/22/2006 (6B22127-MS1)</b>											
						<b>Source: IPB1567-02</b>					
Total Cyanide	177	5.0	2.2	ug/l	200	2.5	87	70-115			
<b>Matrix Spike Dup Analyzed: 02/22/2006 (6B22127-MSD1)</b>											
						<b>Source: IPB1567-02</b>					
Total Cyanide	175	5.0	2.2	ug/l	200	2.5	86	70-115	1	15	
<b>Batch: 6B23071 Extracted: 02/23/06</b>											
<b>Blank Analyzed: 02/23/2006 (6B23071-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 02/23/2006 (6B23071-BS1)</b>											
Perchlorate	50.9	4.0	0.80	ug/l	50.0		102	85-115			
<b>Matrix Spike Analyzed: 02/23/2006 (6B23071-MS1)</b>											
						<b>Source: IPB1972-03</b>					
Perchlorate	61.6	4.0	0.80	ug/l	50.0	13	97	80-120			
<b>Matrix Spike Dup Analyzed: 02/23/2006 (6B23071-MSD1)</b>											
						<b>Source: IPB1972-03</b>					
Perchlorate	63.5	4.0	0.80	ug/l	50.0	13	101	80-120	3	20	
<b>Batch: 6B23099 Extracted: 02/23/06</b>											
<b>Blank Analyzed: 02/23/2006 (6B23099-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

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 Michele Chamberlin  
 Project Manager

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300 North Lake Avenue, Suite 1200  
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Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6B23099 Extracted: 02/23/06</b>											
<b>LCS Analyzed: 02/23/2006 (6B23099-BS1)</b>											
Total Suspended Solids	1020	10	10	mg/l	1000		102	85-115			
<b>Duplicate Analyzed: 02/23/2006 (6B23099-DUP1)</b>											
Total Suspended Solids	640	10	10	mg/l		Source: IPB1805-01 600			6	10	
<b>Batch: 6B28050 Extracted: 02/28/06</b>											
<b>Blank Analyzed: 02/28/2006 (6B28050-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 02/28/2006 (6B28050-BS1)</b>											
Oil & Grease	17.0	5.0	0.94	mg/l	20.0		85	65-120			M-NR1
<b>LCS Dup Analyzed: 02/28/2006 (6B28050-BSD1)</b>											
Oil & Grease	17.2	5.0	0.94	mg/l	20.0		86	65-120	1	20	

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Michele Chamberlin  
Project Manager



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Sampled: 02/19/06  
Received: 02/19/06

**Compliance Check**

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IPB1818-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.48	4.8	15
IPB1818-01	Antimony-200.8	Antimony	ug/l	1.40	2.0	6.00
IPB1818-01	Boron-200.7	Boron	mg/l	0	0.050	1.00
IPB1818-01	Cadmium-200.8	Cadmium	ug/l	0.044	1.0	4.00
IPB1818-01	Chloride - 300.0	Chloride	mg/l	22	0.50	150
IPB1818-01	Copper-200.8	Copper	ug/l	6.30	2.0	14
IPB1818-01	Mercury - 245.1	Mercury	ug/l	0	0.20	0.20
IPB1818-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.74	0.26	10.00
IPB1818-01	Perchlorate 314.0	Perchlorate	ug/l	0.26	4.0	6.00
IPB1818-01	Sulfate-300.0	Sulfate	mg/l	27	0.50	250
IPB1818-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	140	10	850
IPB1818-01	Thallium-200.8	Thallium	ug/l	0	1.0	2.00

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Project Manager



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### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- L** Laboratory Control Sample recovery was above the method control limits. Analyte not detected, data not impacted.
- L2** Laboratory Control Sample recovery was below method control limits.
- M1** The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M7** The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R** The RPD exceeded the method control limit due to sample matrix effects. The individual analyte QA/QC recoveries, however, were within acceptance limits.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003  
Report Number: IPB1818

Sampled: 02/19/06  
Received: 02/19/06

## Certification Summary

### Del Mar Analytical - Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	N/A	X
EPA 335.2	Water	X	X
EPA 413.1	Water	X	X
EPA 608	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 900.0	Water		
EPA 905.0	Water		
Haz Waste Scree	Water		
SM2540C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.testamericainc.com](http://www.testamericainc.com)

### Subcontracted Laboratories

#### Alta Analytical NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta  
Samples: IPB1818-01

Analysis Performed: Level 4 + EDD  
Samples: IPB1818-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IPB1818-01

### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IPB1818-01

Analysis Performed: Gross Alpha  
Samples: IPB1818-01

Analysis Performed: Gross Beta  
Samples: IPB1818-01

### Del Mar Analytical - Irvine

Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Annual Outfall 003

Report Number: IPB1818

Sampled: 02/19/06

Received: 02/19/06

## Eberline Services

2030 Wright Avenue - Richmond, CA 94804

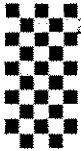
Analysis Performed: Strontium 90

Samples: IPB1818-01

**Del Mar Analytical - Irvine**  
Michele Chamberlin  
Project Manager

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**IPB1818 <Page 41 of 41>**



**F A X**



300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 02/20/06

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
Krissi McIlvanna / MWH 925-975-3412

From: Bronwyn K. Kelly

sign:

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 1  
(Including cover)

**Per Request:**  
Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IPB1818	Annual Outfall 003	02/19/06		Gross Alpha, Gross Beta, Sr-90 as part of the 13267 study.
IPB1818 IPB1817 IPB1811 IPB1810	Annual Outfall 003, 004, 006 & 009	02/19/06		Analyze for Total combined RA-226 & 228 only if Gross Alpha and Gross Beta exceed a permit limit (15 & 50 pCi/L respectively).
IPB1818	Annual Outfall 003	02/19/06		Analyze for Tritium only if RA-226 & 228 exceed a permit limit (5 pCi/L).
IPB1817 IPB1811 IPB1810	Annual Outfall 004, 006 & 009	2/19/06		Analyze for Tritium & Sr-90 only if RA-226 & 228 exceed a permit limit (5 pCi/L).

The reason for these changes:

- Incorrectly marked on COC form* \_\_\_\_\_
- Lack of sample volume* \_\_\_\_\_
- MWH office personnel require this change* \_\_\_\_\_ X \_\_\_\_\_
- Other: Containers mislabeled* \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you

2PB 1818

Del Mar Analytical Version 01/24/06 CHAIN OF CUSTODY FORM

Client Name/Address:		Project:		ANALYSIS REQUIRED												Field readings:						
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Annual Outfall 003 Stormwater at RMHF		Total Recoverable Metals: <input type="checkbox"/> Pb, <input type="checkbox"/> Cd, <input type="checkbox"/> Cu, <input type="checkbox"/> Hg, <input type="checkbox"/> B, <input type="checkbox"/> V, <input type="checkbox"/> Al, <input type="checkbox"/> PP TCDD (and all congeners) <input type="checkbox"/> Oil & Grease (EPA 413.1) <input type="checkbox"/> Cl-, SO4, NO3+NO2-N, Perchlorate <input type="checkbox"/> TDS, TSS <input type="checkbox"/> VOCs (624), NPDES + PP <input type="checkbox"/> VOCs A+A+2C+VE <input type="checkbox"/> Pesticides/PCBs - PP <input type="checkbox"/> Gross Alpha, Gross Beta, Tritium (906.0*, Sr-90 (905) Total Combined Radium 226 & 228 <input type="checkbox"/> SVOCs - PP <input type="checkbox"/> Acute Toxicity <input type="checkbox"/> Cyanide <input type="checkbox"/>												Temp = 52.2 pH = 7.3						
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	1A	1B	2A, 2B	3A, 3B	4A, 4B	5A, 5B	6A, 6B, 6C	7A, 7B, 7C	8A, 8B	9A	10A, 10B	11A	12	13A, 13B, 13C	14A, 14B, 14C	Comments	
Outfall 003	W	1L Poly	1	2/19/06 08:30	HNO3	X																
Outfall 003-Dup	W	1L Poly	1		HNO3	X																
Outfall 003	W	1L Amber	2		None																	
Outfall 003	W	1L Amber	2		HCl			X														
Outfall 003	W	Poly-500 ml	2		None				X													
Outfall 003	W	Poly-500 ml	2		None					X												
Outfall 003	W	VOAs	3		HCl						X											
Outfall 003	W	VOAs	3		None									X								
Outfall 003	W	1L Amber	2		None																	
Outfall 003	W	2.5 Gal Cube 100 ml Amber VOAs	1 3		None											X						
Outfall 003	W	1L Amber	2		None																	
Outfall 003	W	1 Gal Poly	1		None																	
Outfall 003	W	500ml Poly	1		NaOH																	
Trip Blanks	W	VOAs	3		None														X			
Trip Blank	W	VOAs	3		HCl																	

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Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check)  On Ice:  3°C

Received By: *Shirley Hays* Date/Time: 2/19/06 13:25  
 Received By: *Tommy Lee* Date/Time: 2/19/06 13:25  
 Received By: *SL* Date/Time: 2/14/06 1800

Relinquished By: *Shirley Hays* Date/Time: 2/19/06 13:25  
 Relinquished By: *Tommy Lee* Date/Time: 2/19/06 13:25  
 Relinquished By: *SL* Date/Time: 2/20/06 0600

Relinquished By: *SL* Date/Time: 2/20/06 0600



March 03, 2006

**Alta Project I.D.: 27311**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on February 21, 2006 under your Project Name "IPB1818". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



**Section I: Sample Inventory Report**

**Date Received: 2/21/2006**

Alta Lab. ID

Client Sample ID

27311-001

IPB1818-01

**SECTION II**



Method Blank		EPA Method 1613			
Matrix:	Aqueous	QC Batch No.:	7782	Lab Sample:	0-MB001
Sample Size:	1.00 L	Date Extracted:	23-Feb-06	Date Analyzed DB-5:	25-Feb-06
				Date Analyzed DB-225:	NA
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.00000121		77.9	25 - 164
1,2,3,7,8-PeCDD	ND	0.00000169		79.6	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000158		71.3	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000166		77.6	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000157		65.5	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.00000137		35.1	17 - 157
OCDD	0.00000377			85.3	24 - 169
2,3,7,8-TCDF	ND	0.00000151	J	92.7	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000212		97.9	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000198		76.4	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000509		66.4	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000514		79.6	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000550		75.0	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.000000998		62.0	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.00000130		70.3	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.00000125		44.2	17 - 157
OCDF	ND		0.00000518	95.0	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.00000121			
Total PeCDD	ND	0.00000169			
Total HxCDD	ND	0.00000160			
Total HpCDD	ND	0.00000137			
Total TCDF	ND	0.00000151			
Total PeCDF	ND	0.00000205			
Total HxCDF	ND	0.000000611			
Total HpCDF	ND	0.00000128			
<b>Footnotes</b>					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					

Analyst: RAS

Approved By: Martha M. Maier 02-Mar-2006 11:01



**EPA Method 1613**

OPR Results		Lab Sample: 0-OPR001		Date Analyzed DB-5: 24-Feb-06		Date Analyzed DB-225: NA	
Matrix:	Aqueous	QC Batch No.:	7782	Sample Size:	1.00 L	Date Extracted:	23-Feb-06
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL	
2,3,7,8-TCDD	10.0	10.0	6.7 - 15.8	<u>IS</u> 13C-2,3,7,8-TCDD	70.1	25 - 164	
1,2,3,7,8-PeCDD	50.0	57.5	35 - 71	13C-1,2,3,7,8-PeCDD	73.4	25 - 181	
1,2,3,4,7,8-HxCDD	50.0	53.3	35 - 82	13C-1,2,3,4,7,8-HxCDD	63.8	32 - 141	
1,2,3,6,7,8-HxCDD	50.0	53.1	38 - 67	13C-1,2,3,6,7,8-HxCDD	69.0	28 - 130	
1,2,3,7,8,9-HxCDD	50.0	52.8	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	58.3	23 - 140	
1,2,3,4,6,7,8-HpCDD	50.0	53.1	35 - 70	13C-OCDD	34.1	17 - 157	
OCDD	100	106	78 - 144	13C-2,3,7,8-TCDF	75.7	24 - 169	
2,3,7,8-TCDF	10.0	10.3	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	81.7	24 - 185	
1,2,3,7,8-PeCDF	50.0	50.0	40 - 67	13C-2,3,4,7,8-PeCDF	85.2	21 - 178	
2,3,4,7,8-PeCDF	50.0	51.3	34 - 80	13C-1,2,3,4,7,8-HxCDF	68.1	26 - 152	
1,2,3,4,7,8-HxCDF	50.0	51.4	36 - 67	13C-1,2,3,6,7,8-HxCDF	66.4	26 - 123	
1,2,3,6,7,8-HxCDF	50.0	52.1	42 - 65	13C-2,3,4,6,7,8-HxCDF	69.5	28 - 136	
2,3,4,6,7,8-HxCDF	50.0	51.5	35 - 78	13C-1,2,3,7,8,9-HxCDF	70.1	29 - 147	
1,2,3,7,8,9-HxCDF	50.0	50.1	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	55.0	28 - 143	
1,2,3,4,6,7,8-HpCDF	50.0	50.3	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	62.6	26 - 138	
1,2,3,4,7,8,9-HpCDF	50.0	52.7	39 - 69	13C-OCDF	42.4	17 - 157	
OCDF	100	97.3	63 - 170	<u>CRS</u> 37Cl-2,3,7,8-TCDD	83.6	35 - 197	

Analyst: RAS

Approved By: Martha M. Maier 02-Mar-2006 11:01





Sample ID: IPB1818-01		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name: Del Mar Analytical, Irvine Project: IPB1818 Date Collected: 19-Feb-06 Time Collected: 1030	Matrix: Aqueous Sample Size: 1.01 L	Lab Sample: 27311-001 QC Batch No.: 7782 Date Analyzed DB-5: 25-Feb-06	Date Received: 21-Feb-06 Date Extracted: 23-Feb-06 Date Analyzed DB-225: NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.0000141			68.8 25 - 164
1,2,3,7,8-PeCDD	ND	0.0000246			71.9 25 - 181
1,2,3,4,7,8-HxCDD	ND	0.0000140			62.6 32 - 141
1,2,3,6,7,8-HxCDD	ND	0.0000145			70.1 28 - 130
1,2,3,7,8,9-HxCDD	ND	0.0000138			58.9 23 - 140
1,2,3,4,6,7,8-HpCDD	0.0000109			J	39.2 17 - 157
OCDD	0.000111			B	81.2 24 - 169
2,3,7,8-TCDF	ND	0.0000177			79.5 24 - 185
1,2,3,7,8-PeCDF	ND	0.0000346			84.6 21 - 178
2,3,4,7,8-PeCDF	ND	0.0000307			67.2 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.00000857			68.5 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.00000885			69.4 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.00000506			65.3 29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000909			57.4 28 - 143
1,2,3,4,6,7,8-HpCDF	0.0000275			J	61.6 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.0000109			46.7 17 - 157
OCDF	0.0000426				87.1 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.0000141			
Total PeCDD	ND		0.0000254		
Total HxCDD	0.0000403				
Total HpCDD	0.0000295				
Total TCDF	ND	0.0000177			
Total PeCDF	ND	0.0000327			
Total HxCDF	ND	0.0000107			
Total HpCDF	0.0000556				
<b>Footnotes</b>					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					

Analyst: RAS

Approved By: Martha M. Maier 02-Mar-2006 11:01

**APPENDIX**

### DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 506-8596 Fax (619) 506-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Street Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IPB1818

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 673-0106 <div style="text-align: right; font-size: 2em; font-family: cursive;">             27311              O.2C           </div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IPB1818-01</b> Water <b>Sampled: 02/19/06 10:30</b> 1613-Dioxin-HR-Alta    02/26/06 10:30 Level 4 + EDD-OUT    03/19/06 10:30	<b>Instant Notification</b> J flags, 17 congeners, no TEQ, ug/L, sub=Alta Excel EDD email to pm, Include Std logs for Lvl IV	
<b>Containers Supplied:</b> 1 L Amber (IPB1818-01C) 1 L Amber (IPB1818-01D)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice::	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

Released By: C. R.    Date: 2-20-06    Time: 1700    Received By: Bettina Benedict    Date: 2/20/06    Time: 0910

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27311

Samples Arrival:	Date/Time 2/21/06 0910	Initials: JBB	Location: WR-2
Logged In:	Date/Time 2/21/06 1552	Initials: JBB	Location: WR-2
Delivered By:	<u>FedEx</u> UPS	Cal	DHL Hand Delivered Other
Preservation:	<u>Ice</u>	Blue Ice	Dry Ice None
Temp °C	0.2°C	Time: 1000	Thermometer ID: DT-20

		YES	NO	NA
Adequate Sample Volume Received?		✓		
Holding Time Acceptable?		✓		
Shipping Container(s) Intact?		✓		
Shipping Custody Seals Intact?		✓		
Shipping Documentation Present?		✓		
Airbill	Trk # 7913 8038 2475	✓		
Sample Container Intact?		✓		
Sample Custody Seals Intact?				✓
Chain of Custody / Sample Documentation Present?		✓		
COC Anomaly/Sample Acceptance Form completed?			✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?				✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?		COC	Sample Container	<u>None</u>
Shipping Container	Alta <u>Client</u>	Retain	<u>Return</u>	Dispose

Comments:

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** February 26, 2006  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Ave., Suite 100  
Irvine, CA 92614  
Attn: Michele Chamberlin

**Laboratory No.:** A-06022002-001  
**Sample ID.:** IPB1818-01

**Sample Control:** The sample was received by ATL within the recommended hold time, in a chilled state, and with the chain of custody record attached.

Date Sampled: 02/19/06  
Date Received: 02/20/06  
Temp. Received: 4°C  
Chlorine (TRC): 0.0 mg/l  
Date Tested: 02/20/06 to 02/24/06

**Sample Analysis:** The following analyses were performed on your sample:  
Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0).  
Attached are the test data generated from the analysis of your sample.

## Result Summary:

<u>Sample ID.</u>	<u>Results</u>
IPB1818-01	100% Survival (TU <sub>a</sub> = 0.0)

**Quality Control:** Reviewed and approved by:



Joseph A. LeMay  
Laboratory Director

**FATHEAD MINNOW PERCENT SURVIVAL TEST**  
**EPA Method 2000.0**



Lab No.: A-06022002-001  
 Client/ID: Del Mar - IPB1818-01

Start Date: 02/20/2006

**TEST SUMMARY**

Species: *Pimephales promelas*.  
 Age: 14 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-060202.

**TEST DATA**

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.5	8.6	7.8	0	0	JM 1100
	100%	19.5	10.0	7.5	0	0	
24 Hr	Control	19.3	8.0	7.5	0	0	LR 1030
	100%	19.5	8.0	7.9	0	0	
48 Hr	Control	19.5	7.3	7.4	0	0	LR 1130
	100%	19.4	7.7	7.4	0	0	
Renewal	Control	19.8	8.8	7.8	0	0	LR 1130
	100%	19.2	11.0	7.4	0	0	
72 Hr	Control	19.8	7.6	7.5	0	0	LR 1130
	100%	19.8	8.0	7.4	0	0	
96 Hr	Control	19.9	7.7	7.6	0	0	LR 1130
	100%	19.9	7.8	7.3	0	0	

Comments:

Sample as received: Chlorine: 0.0 mg/l; pH: 7.5; Conductivity: 256 umho; Temp: 4°C;  
 DO: 10.0 mg/l; Alkalinity: 45 mg/l; Hardness: 48 mg/l; NH<sub>3</sub>-N: 0.3 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No  
 Control: Alkalinity: 54 mg/l; Hardness: 94 mg/l; Conductivity: 325 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes /  No  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

**RESULTS**

Percent Survival In: Control: 100 %    100% Sample: 100 %





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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IPB1818

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone : (805) 650-0546 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPB1818-01 Water	Sampled: 02/19/06 10:30	Instant Notification
Bioassay-Acute 96hr	02/20/06 22:30	FH minnow, EPA/821-R02-012, Sub to AqTox Labs
Containers Supplied: 1 gal Poly (IPB1818-01Y)		

SAMPLE INTEGRITY:					
All containers intact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Samples Preserved Properly:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	4°C	

C. R.	02/20/06	800	E. Chamberlin	02/20/06	800
Released By	Date	Time	Received By	Date	Time
E. Chamberlin	02/24/06	10:23	[Signature]	2-20-06	10:23
Released By	Date	Time	Received By	Date	Time

**FATHEAD MINNOW ACUTE**  
**Method 2000.0**  
**Reference Toxicant - SDS**



QA/QC Batch No.: RT-060202

**TEST SUMMARY**

Species: *Pimephales promelas*.  
 Age: 10 days old.  
 Regulations: NPDES.  
 Test chamber volume: 250 ml.  
 Feeding: Prior to renewal at 48 hrs.  
 Temperature: 20 +/- 1°C.  
 Number of replicates: 2.  
 Dilution water: MHSF.

Source: In-lab culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: LC50 at 96 hrs.  
 Test chamber: 600 ml glass beakers.  
 Aeration: None.  
 Number of organisms per chamber: 10.  
 Photoperiod: 16/8 hrs light/dark.

**TEST DATA**

Date/Time:	INITIAL			24 Hr					48 Hr				
	<u>2-2-06 1200</u>			<u>2-3-06 1100</u>					<u>2-4-06 1130</u>				
	<u>1200</u>			<u>1200</u>					<u>1200</u>				
	°C	DO	pH	°C	DO	pH	# Dead		°C	DO	pH	# Dead	
A							B	A				B	
Control	20.9	8.7	7.8	20.8	5.5	7.5	0	0	20.9	5.5	7.5	0	0
1.0 mg/l	20.9	8.8	7.8	20.8	5.2	7.4	0	0	20.8	5.1	7.4	0	0
2.0 mg/l	21.0	8.8	7.8	20.7	5.4	7.2	0	0	20.8	5.0	7.4	0	0
4.0 mg/l	21.0	8.9	7.8	20.7	5.1	7.2	0	0	20.9	5.1	7.3	0	1
8.0 mg/l	21.0	8.9	7.8	20.8	4.3	7.0	10	10	-	-	-	-	-

Date/Time:	RENEWAL			72 Hr					96 Hr				
	<u>2-4-06 1130</u>			<u>2-5-06 1100</u>					<u>2-6-06 1100</u>				
	<u>1200</u>			<u>1200</u>					<u>1200</u>				
	°C	DO	pH	°C	DO	pH	# Dead		°C	DO	pH	# Dead	
A							B	A				B	
Control	21.0	8.6	7.8	20.8	6.5	7.4	0	0	20.2	7.0	7.4	0	0
1.0 mg/l	20.9	8.7	7.8	20.8	6.6	7.4	0	0	20.2	7.0	7.4	0	0
2.0 mg/l	20.9	8.8	7.8	20.7	5.9	7.4	0	0	20.1	6.8	7.4	0	0
4.0 mg/l	20.9	8.8	7.8	20.7	6.2	7.4	0	0	20.2	6.9	7.4	0	0
8.0 mg/l	-	-	-	-	-	-	-	-	-	-	-	-	-

**Comments:**

Control: Alkalinity: 54 mg/l; Hardness: 94 mg/l; Conductivity: 325 umho.  
 SDS: Alkalinity: 53 mg/l; Hardness: 95 mg/l; Conductivity: 330 umho.

**Acute Fish Test-96 Hr Survival**

Start Date: 02 Feb-06 12:00	Test ID: RT-060202	Sample ID: REF-Ref Toxicant
End Date: 06 Feb-06 11:00	Lab ID: CAATL-Aquatic Testing Labs	Sample Type: SDS-Sodium dodecyl sulfate
Sample Date: 02 Feb-06 00:00	Protocol: EPAA 91-EPA Acute	Test Species: PP-Pimephales promelas

Comments:

Conc-mg/L	1	2
D-Control	1.0000	1.0000
1	1.0000	1.0000
2	1.0000	1.0000
4	1.0000	0.9000
8	0.0000	0.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				N	Number Resp	Total Number
			Mean	Min	Max	CV%			
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
1	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
2	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
4	0.9500	0.9500	1.3305	1.2490	1.4120	8.661	2	1	20
8	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

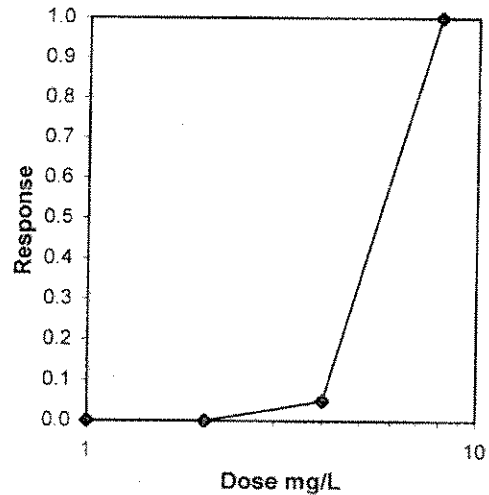
**Auxiliary Tests**

Normality of the data set cannot be confirmed  
 Equality of variance cannot be confirmed

Statistic	Critical	Skew	Kurt
-----------	----------	------	------

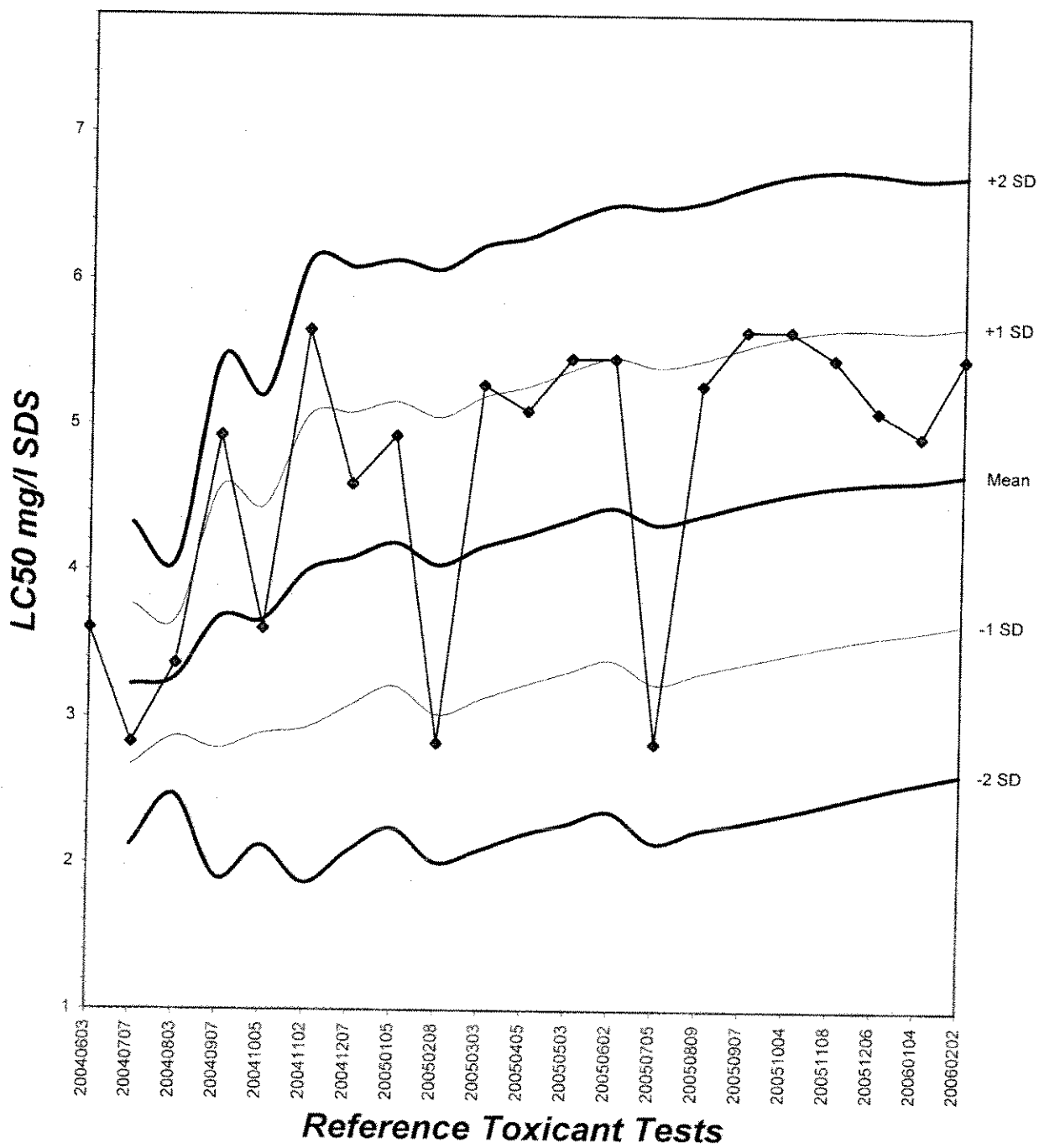
**Trimmed Spearman-Kärber**

Trim Level	EC50	95% CL	
0.0%	5.4642	5.1072	5.8461
5.0%	5.5546	5.3505	5.7664
10.0%	5.5546	5.3505	5.7664
20.0%	5.5546	5.3505	5.7664
Auto-0.0%	5.4642	5.1072	5.8461



# Fathead Minnow Acute Laboratory Control Chart

CV% = 21.9



# TEST ORGANISM LOG



## FATHEAD MINNOW - LARVAL (*Pimephales promelas*)

QA/QC BATCH NO.: RT-060202

SOURCE: In-Lab Culture

DATE HATCHED: 1-23-06

APPROXIMATE QUANTITY: 400

GENERAL APPEARANCE: good

# MORTALITIES 48 HOURS PRIOR TO  
TO USE IN TESTING: 0

DATES USED IN LAB: 2/2/6  
to  
-1-1-

AVERAGE FISH WEIGHT: 0.006 gm

TEST LOADING LIMITS: 0.65 gm/liter

200 ml test solution volume = 0.013 gm mean fish weight limit

250 ml test solution volume = 0.016 gm mean fish weight limit

### ACCLIMATION WATER QUALITY:

Temp.: 20.9 °C      pH: 7.8      Ammonia: 0.2 mg/l NH<sub>3</sub>-N  
DO: 8.7 mg/l      Alkalinity: 53 mg/l      Hardness: 94 mg/l

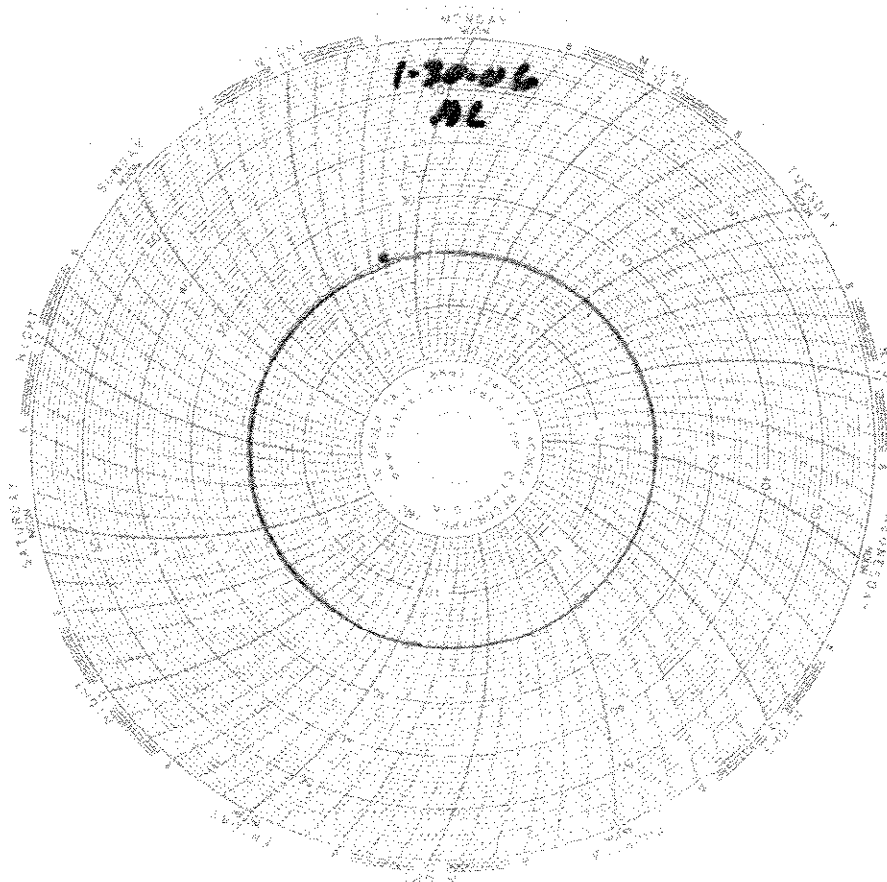
READINGS RECORDED BY: [Signature]      DATE: 2-6-06

# Laboratory Temperature Chart

*QA/QC Batch No: RT-060202*

*Date Tested: 02/02/06 to 02/06/06*

*Acceptable Range: 20 $\pm$ 1 $^{\circ}$ C*





# EBERLINE

SERVICES

March 20, 2006

Ms. Michele Chamberlin  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IPB1818  
Eberline Services NELAP Cert #01120CA (exp. 01/31/07)  
Eberline Services Report R602147-8653

Dear Ms. Chamberlin:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 21, 2006. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), and strontium-90 (Sr-90, EPA905.0). The batch QC LCS, blank analyses, sample duplicates, and matrix spike results were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice


Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8653</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R602147-01</u>	Contract <u>PROJECT# IPB1818</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IPH1818-01	8653-001	02/19/06	03/14/06	GrossAlpha	0.735 ± 0.45	pCi/L	0.587
			03/14/06	Gross Beta	7.03 ± 0.74	pCi/L	0.906
			03/08/06	Sr-90	0.317 ± 0.31	pCi/L	0.594

Certified by   
Report Date 03/20/06  
Page 1



# Eberline Services

## QC RESULTS

SDG <u>8653</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502147-01</u>	Contract <u>PROJECT# IPB1818</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>


Lab						
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results</u>	<u>Units</u>	<u>Amount Added</u>	<u>MDA</u>	<u>Evaluation</u>
<u>LCS</u>						
8653-002	GrossAlpha	9.32 ± 0.63	pCi/Smpl	10.2	0.306	91% recovery
	Gross Beta	9.96 ± 0.37	pCi/Smpl	9.83	0.271	101% recovery
	Sr-90	11.2 ± 0.61	pCi/Smpl	10.8	0.229	104% recovery
<u>BLANK</u>						
8653-003	GrossAlpha	-0.408 ± 0.18	pCi/Smpl	NA	0.376	<MDA
	Gross Beta	0.080 ± 0.24	pCi/Smpl	NA	0.414	<MDA
	Sr-90	-0.073 ± 0.16	pCi/Smpl	NA	0.418	<MDA

<u>DUPLICATES</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>
8653-004	GrossAlpha	6.122 ± 0.53	0.893
	Gross Beta	6.92 ± 0.71	0.869
	Sr-90	0.358 ± 0.39	0.771

<u>ORIGINALS</u>				3σ	
<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>RPD (Tot)</u>	<u>Eval</u>	
8653-001	0.735 ± 0.45	0.587	143	249	satis.
	7.03 ± 0.74	0.906	2	48	satis.
	0.317 ± 0.31	0.594	-	0	satis.

<u>SPIKED SAMPLE</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>
8653-005	GrossAlpha	74.0 ± 2.9	0.626
	Gross Beta	66.0 ± 1.7	0.891

<u>ORIGINAL SAMPLE</u>					
<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>Added</u>	<u>%Recv</u>	
8653-001	0.735 ± 0.45	0.587	71.4	103	
	7.03 ± 0.74	0.906	65.5	90	

Certified by <u></u>
Report Date <u>03/20/06</u>
Page 2



17461 Derian Ave, Suite 100, Irvine, CA 92614 Ph: (949) 261-1022 Fax: (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Corona, CA 92724 Ph: (909) 570-4957 Fax: (909) 570-1048  
 3484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph: (619) 505-6696 Fax: (619) 505-6698  
 9830 South 61st Street, Suite B-120, Phoenix, AZ 85044 Ph: (480) 785-0045 Fax: (480) 785-0681  
 1520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph: (702) 790-3620 Fax: (702) 706-9021

### SUBCONTRACT ORDER - PROJECT # IPB1818

<b>SENDING LABORATORY:</b> Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	<b>RECEIVING LABORATORY:</b> Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438
---	---

Standard TAT is requested unless specific due date is requested => Due Date: 4 weeks Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPB1818-01 Water	Sampled: 02/19/06 10:30	Instant Notification
EDD + Level 4	03/19/06 10:30	
Gross Alpha-O	02/19/07 10:30	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/19/07 10:30	900.0, IF RESULT>50 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/19/07 10:30	HOLD for Gross A&B results; EPA 903.1 & 904.0
Strontium 90-O	02/19/07 10:30	<del>HOLD for Ra 226+Ra 228 results, EPA 905.0</del> - analyze
Tritium-O	02/19/07 10:30	HOLD for Ra 226+Ra 228 results, EPA 906.0

Containers Supplied:  
 2.5 gal Poly (IPB1818-01S)  
 40 ml Amber Voa Vial (IPB1818-01T)  
 40 ml Amber Voa Vial (IPB1818-01U)  
 40 ml Amber Voa Vial (IPB1818-01V)

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: [Signature] Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



**RICHMOND, CA LABORATORY**

**SAMPLE RECEIPT CHECKLIST**

Client: DEL MAR ANALYT City IRVINE State CA

Date/Time received 2/21/06 10:00 CoC No. 1PB1818

Container I.D. No. BOX Requested TAT (Days) STAND P.O. Received Yes [ ] No [ ]

**INSPECTION**

- 1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [✓]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [✓]
- 5. Packing material is: Wet [ ] Dry [ ] N/A [✓]
- 6. Number of samples in shipping container: 1 Sample Matrix WATER
- 7. Number of containers per sample: 4 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [✓] No [ ]
- 9. Paperwork agrees with samples? Yes [✓] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
- 11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [✓] Not preserved [ ] pH 2 Preservative \_\_\_\_\_
- 13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_

15. Inspected by AK Date: 2/21/06 Time: 11:20

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 18**

Outfall 003, February 19, 2006

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

MEC<sup>x</sup>  
 12269 East Vassar Drive  
 Aurora, CO 80014

Package ID: B4RA2  
 Task Order: 1261.001D.05  
 SDG No.: Multiple

No. of Analyses: 4

Laboratory: Ebeline  
 Reviewer: P. Meeks  
 Analysis/Method: Radionuclides

Date: April 1, 2006  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
Case Narrative	
Deficiencies	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	<u>Qualifications were applied for preservation and low detector efficiencies.</u>
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Sampling  
Multiple Outfalls

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS: IPB1810, IPB1811, IPB1817,  
IPB1818

Prepared by

MECX, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>X</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPB1810, IPB1811, IPB1817, IPB1818  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 1, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94). Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample identification

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 004	IPB1810-01	8650-001	water	900.0
Outfall 009	IPB1811-01	8651-001	water	900.0
Outfall 006	IPB1817-01	8652-001	water	900.0
Outfall 003	IPB1818-01	8653-001	water	900.0, 905.0



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4 \pm 2^\circ\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. The samples in these SDGs were preserved but were not filtered. As the requirements of the permit were not met, all results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. The strontium analysis for Outfall 003 was requested in a memo from MWH personnel dated 2/20/06. No qualifications were required.

#### 2.1.3 Holding Times

All samples were analyzed within the 180-day analytical holding time for preserved samples. No qualifications were required.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability. All gross alpha detector efficiencies were less than 20%; therefore, all gross alpha results were qualified as estimated, "J," for detects and, "UJ," for nondetects. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No further qualifications were required.

### 2.3 BLANKS

No measurable activities were detected in the method blanks, therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in these SDGs. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on Outfall 003. All results were within the 3-sigma limit limits. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses on Outfall 003 for gross alpha and gross beta. Both recoveries were within the 3-sigma limits. Analyses that involve the yielding of an analytical tracer do not require matrix spike analyses; therefore, no strontium matrix spike was performed. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these SDGs. The sample results and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8650</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>8602144-01</u>	Contract <u>PROJECT# IPB1810</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analysed	Isotopes	Results ± SD	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 004</u>								
IPB1810-01	8650-001		02/15/06	03/14/06	Gross Alpha	0.926 ± 0.63	pCi/L	0.916	U3	R, X1
				03/14/06	Gross Beta	21.4 ± 1.0	pCi/L	0.873	J	↓

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/19/06</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SNS 8651	Client DEL MAR ANAL
Work Order R692145-01	Contract PROJECT# IPB1811
Received Date 02/21/06	Matrix WATER

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± SD	Units	MDA	Rev Dwg	Rev Code
Outfall IPB1811-01	009	8651-001	02/18/06	03/14/06	Gross Alpha	16.3 ± 2.2	pCi/L	1.38	J	R, #1
				03/14/06	Gross Beta	21.8 ± 1.4	pCi/L	1.43	J	↓

LEVEL IV

Certified by <u>[Signature]</u>
Report Date 03/20/06
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# Eberline Services

## ANALYSIS RESULTS

SDG <u>8652</u>	Client <u>DEL MAR ANNL</u>
Work Order <u>8602146-01</u>	Contract <u>PROJECT# IPB1817</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>

Client	Lab								Raw Qual	Raw/ Code
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>			
Outfall 006 IPB1817-01	8652-001	02/29/06	03/14/06	Gross Alpha	-0.117 ± 0.44	pCi/L	0.798		US	R, XI
			03/14/06	Gross Beta	4.33 ± 0.66	pCi/L	0.885		J	↓

LEVEL II

Certified by <u></u> Report Date <u>03/20/06</u> Page 1
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**Eberline Services**  
**ANALYSIS RESULTS**

SDG <u>8053</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>8602147-01</u>	Contract <u>PROJECT# IPB1818</u>
Received Date <u>02/21/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± SD	Units	MDA
Outfall 003								
IPB1818-01	8653-001		02/19/06	03/14/06	Gross Alpha	0.735 ± 0.45	pCi/L	0.587
				03/14/06	Gross Beta	7.03 ± 0.74	pCi/L	0.905
				03/08/06	Sr-90	0.317 ± 0.31	pCi/L	0.594

REL GUS	QSA CODE
D P S	↓

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/20/06</u>
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# **APPENDIX A**

## **Section 19**

Outfall 003, March 1, 2006

Del Mar Analytical Laboratory Report



**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 03/01/06  
Received: 03/01/06  
Revised: 03/20/06 16:52

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.*

*This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

ADDITIONAL INFORMATION: Report reissued with Project Number only.

LABORATORY ID	CLIENT ID	MATRIX
IPC0164-01	Outfall 003	Water

Reviewed By:

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager





MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPC0164-01 (Outfall 003 - Water)</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	6C04030	0.050	2.0	0.53	1	03/04/06	03/07/06	J
Cadmium	EPA 200.8	6C04030	0.025	1.0	0.10	1	03/04/06	03/07/06	J
Copper	EPA 200.8	6C04030	0.25	2.0	4.9	1	03/04/06	03/07/06	
Lead	EPA 200.8	6C04030	0.040	1.0	0.53	1	03/04/06	03/07/06	J
Mercury	EPA 245.1	6C02097	0.050	0.20	ND	1	03/02/06	03/02/06	

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IPC0164-01 (Outfall 003 - Water) - cont.</b>									
Reporting Units: mg/l									
Chloride	EPA 300.0	6C02051	0.15	0.50	25	1	03/02/06	03/02/06	
Nitrate/Nitrite-N	EPA 300.0	6C02051	0.080	0.15	1.6	1	03/02/06	03/02/06	
Oil & Grease	EPA 413.1	6C13044	0.90	4.8	ND	1	03/13/06	03/13/06	
Sulfate	EPA 300.0	6C02051	0.90	1.0	63	2	03/02/06	03/03/06	
Total Dissolved Solids	SM2540C	6C06069	10	10	270	1	03/06/06	03/06/06	
Total Suspended Solids	EPA 160.2	6C07078	10	10	ND	1	03/07/06	03/07/06	

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

**SHORT HOLD TIME DETAIL REPORT**

Sample ID: Outfall 003 (IPC0164-01) - Water EPA 300.0	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
	2	03/01/2006 08:05	03/01/2006 19:00	03/02/2006 08:00	03/02/2006 11:30

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
 Report Number: IPC0164

Sampled: 03/01/06  
 Received: 03/01/06

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 6C02097 Extracted: 03/02/06</b>											
<b>Blank Analyzed: 03/02/2006 (6C02097-BLK1)</b>											
Mercury	ND	0.20	0.050	ug/l							
<b>LCS Analyzed: 03/02/2006 (6C02097-BS1)</b>											
Mercury	7.88	0.20	0.050	ug/l	8.00		98	85-115			
<b>Matrix Spike Analyzed: 03/02/2006 (6C02097-MS1) Source: IPB2608-01</b>											
Mercury	7.84	0.20	0.050	ug/l	8.00	ND	98	70-130			
<b>Matrix Spike Dup Analyzed: 03/02/2006 (6C02097-MSD1) Source: IPB2608-01</b>											
Mercury	7.88	0.20	0.050	ug/l	8.00	ND	98	70-130	1	20	
<b>Batch: 6C04030 Extracted: 03/04/06</b>											
<b>Blank Analyzed: 03/07/2006 (6C04030-BLK1)</b>											
Antimony	ND	2.0	0.050	ug/l							
Cadmium	ND	1.0	0.025	ug/l							
Copper	ND	2.0	0.25	ug/l							
Lead	ND	1.0	0.040	ug/l							
<b>LCS Analyzed: 03/07/2006 (6C04030-BS1)</b>											
Antimony	80.4	2.0	0.050	ug/l	80.0		100	85-115			
Cadmium	82.2	1.0	0.025	ug/l	80.0		103	85-115			
Copper	82.2	2.0	0.25	ug/l	80.0		103	85-115			
Lead	78.1	1.0	0.040	ug/l	80.0		98	85-115			
<b>Matrix Spike Analyzed: 03/07/2006 (6C04030-MS1) Source: IPC0303-01</b>											
Antimony	80.9	2.0	0.050	ug/l	80.0	ND	101	70-130			
Cadmium	80.4	1.0	0.025	ug/l	80.0	ND	100	70-130			
Copper	80.2	2.0	0.25	ug/l	80.0	0.45	100	70-130			
Lead	77.8	1.0	0.040	ug/l	80.0	0.044	97	70-130			

Del Mar Analytical - Irvine  
 Sushmitha Reddy For Michele Chamberlin  
 Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 6C04030 Extracted: 03/04/06</b>											
<b>Matrix Spike Analyzed: 03/07/2006 (6C04030-MS2)</b>						<b>Source: IPC0303-02</b>					
Antimony	80.8	2.0	0.050	ug/l	80.0	0.087	101	70-130			
Cadmium	79.7	1.0	0.025	ug/l	80.0	0.13	99	70-130			
Copper	81.0	2.0	0.25	ug/l	80.0	1.2	100	70-130			
Lead	77.6	1.0	0.040	ug/l	80.0	0.15	97	70-130			
<b>Matrix Spike Dup Analyzed: 03/07/2006 (6C04030-MSD1)</b>						<b>Source: IPC0303-01</b>					
Antimony	81.0	2.0	0.050	ug/l	80.0	ND	101	70-130	0	20	
Cadmium	80.1	1.0	0.025	ug/l	80.0	ND	100	70-130	0	20	
Copper	79.7	2.0	0.25	ug/l	80.0	0.45	99	70-130	1	20	
Lead	77.8	1.0	0.040	ug/l	80.0	0.044	97	70-130	0	20	

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 6C02051 Extracted: 03/02/06</b>											
<b>Blank Analyzed: 03/02/2006 (6C02051-BLK1)</b>											
Chloride	ND	0.50	0.15	mg/l							
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	ND	0.50	0.45	mg/l							
<b>LCS Analyzed: 03/02/2006 (6C02051-BS1)</b>											
Chloride	4.75	0.50	0.15	mg/l	5.00		95	90-110			
Sulfate	9.68	0.50	0.45	mg/l	10.0		97	90-110			
<b>Matrix Spike Analyzed: 03/02/2006 (6C02051-MS1) Source: IPC0165-01</b>											
Chloride	27.1	0.50	0.15	mg/l	5.00	22	102	80-120			
Sulfate	17.0	0.50	0.45	mg/l	10.0	6.7	103	80-120			
<b>Matrix Spike Dup Analyzed: 03/02/2006 (6C02051-MSD1) Source: IPC0165-01</b>											
Chloride	26.2	0.50	0.15	mg/l	5.00	22	84	80-120	3	20	
Sulfate	16.5	0.50	0.45	mg/l	10.0	6.7	98	80-120	3	20	
<b>Batch: 6C06069 Extracted: 03/06/06</b>											
<b>Blank Analyzed: 03/06/2006 (6C06069-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/06/2006 (6C06069-BS1)</b>											
Total Dissolved Solids	992	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 03/06/2006 (6C06069-DUP1) Source: IPC0087-01</b>											
Total Dissolved Solids	865	10	10	mg/l		860			1	10	

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Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
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Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003  
Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 6C07078 Extracted: 03/07/06</b>											
<b>Blank Analyzed: 03/07/2006 (6C07078-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/07/2006 (6C07078-BS1)</b>											
Total Suspended Solids	966	10	10	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 03/07/2006 (6C07078-DUP1)</b>											
						<b>Source: IPC0093-01</b>					
Total Suspended Solids	ND	10	10	mg/l		ND				10	
<b>Batch: 6C13044 Extracted: 03/13/06</b>											
<b>Blank Analyzed: 03/13/2006 (6C13044-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/13/2006 (6C13044-BS1)</b>											
Oil & Grease	19.6	5.0	0.94	mg/l	20.0		98	65-120			M-NR1
<b>LCS Dup Analyzed: 03/13/2006 (6C13044-BSD1)</b>											
Oil & Grease	19.2	5.0	0.94	mg/l	20.0		96	65-120	2	20	

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IPC0164-01	413.1 Oil and Grease	Oil & Grease	mg/l	0.48	4.8	15
IPC0164-01	Antimony-200.8	Antimony	ug/l	0.53	2.0	6.00
IPC0164-01	Cadmium-200.8	Cadmium	ug/l	0.100	1.0	4.00
IPC0164-01	Chloride - 300.0	Chloride	mg/l	25	0.50	150
IPC0164-01	Copper-200.8	Copper	ug/l	4.90	2.0	14
IPC0164-01	Lead-200.8	Lead	ug/l	0.53	1.0	5.20
IPC0164-01	Mercury - 245.1	Mercury	ug/l	0.020	0.20	0.20
IPC0164-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	1.60	0.15	10.00
IPC0164-01	Sulfate-300.0	Sulfate	mg/l	63	1.0	250
IPC0164-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	270	10	850

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager





MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical - Irvine  
Sushmitha Reddy For Michele Chamberlin  
Project Manager



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC0164

Sampled: 03/01/06  
Received: 03/01/06

## Certification Summary

### Del Mar Analytical - Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.testamericainc.com](http://www.testamericainc.com)*

### Subcontracted Laboratories

#### Alta Analytical *NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta  
Samples: IPC0164-01

Analysis Performed: EDD + Level 4  
Samples: IPC0164-01

#### Eberline Services

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Level 4 + EDD  
Samples: IPC0164-01

Analysis Performed: Strontium 90  
Samples: IPC0164-01

### Del Mar Analytical - Irvine

Sushmitha Reddy For Michele Chamberlin  
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

**Del Mar Analytical** Version 10/21/05 **CHAIN OF CUSTODY FORM**

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101			<b>Project:</b> Boeing-SSFL NPDES Routine Outfall 003 Stormwater at RMHF			<b>ANALYSIS REQUIRED</b> TDS, TSS Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N Oil & Grease (EPA 413.1) TCDD (and all congeners) Sb, Cd, Cu, Pb, Hg Total Recoverable Metals:			Field readings: Temp = 57.4° pH = 7.2			
<b>Project Manager:</b> Bronwyn Kelly Sampler: <i>Shirley</i>			Phone Number: (626) 568-6691 Fax Number: (626) 568-6515			SR-90 (905.0)			Comments			
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals	Oil & Grease (EPA 413.1)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N	TDS, TSS	SR-90 (905.0)	Field readings
Outfall 003	W	1L Poly	1	3/1/06 6:25	HNO3	1A	X					
Outfall 003-Dup	W	1L Poly	1		HNO3	1B	X					
Outfall 003	W	1L Amber	2		None	2A, 2B						
Outfall 003	W	1L Amber	2		HCl	3A, 3B		X				
Outfall 003	W	Poly-500 ml	2		None	4A, 4B			X			
Outfall 003	W	Poly-500 ml	2		None	5A, 5B				X		
Outfall 003	W	Poly-1 gal	1		None	6A, 6B					X	unfiltered analysis
Relinquished By				Date/Time: 3/1/06 1545	Received By			Date/Time: 3/1/06 1545				Turn around Time: (check) 24 Hours _____ 5 Days _____
Relinquished By				Date/Time: 3/1/06 1900	Received By			Date/Time:				48 Hours _____ 10 Days _____
Relinquished By				Date/Time:	Received By			Date/Time:				72 Hours _____ Normal _____
						Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input type="checkbox"/>						

*Shirley* 3/1/06 1545  
*Shirley* 3/1/06 1900  
*Shirley* 3/1/06 1900  
 Received By: *Shirley* 3/1/06 1900  
 Received By: *Shirley* 3/1/06 1900  
 Received By: *Shirley* 3/1/06 1900  
 SR-90 (905.0)



March 08, 2006

**Alta Project I.D.: 27367**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 03, 2006 under your Project Name "IPC0164". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



**Section I: Sample Inventory Report**

**Date Received: 3/3/2006**

Alta Lab. ID

Client Sample ID

27367-001

IPC0164-01

**SECTION II**

Method Blank		EPA Method 1613					
Matrix:	Aqueous	QC Batch No.:	7807	Lab Sample:	0-MB001		
Sample Size:	1.00 L	Date Extracted:	5-Mar-06	Date Analyzed DB-5:	7-Mar-06		
				Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000119		IS 13C-2,3,7,8-TCDD	82.1	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000130		13C-1,2,3,7,8-PeCDD	84.5	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000161		13C-1,2,3,4,7,8-HxCDD	82.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000170		13C-1,2,3,6,7,8-HxCDD	81.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000161		13C-1,2,3,4,6,7,8-HpCDD	79.4	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000167		13C-OCDD	54.4	17 - 157	
OCDD	ND	0.00000485		13C-2,3,7,8-TCDF	85.8	24 - 169	
2,3,7,8-TCDF	ND	0.00000138		13C-1,2,3,7,8-PeCDF	89.7	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000126		13C-2,3,4,7,8-PeCDF	92.9	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000115		13C-1,2,3,4,7,8-HxCDF	82.7	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000677		13C-1,2,3,6,7,8-HxCDF	82.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000623		13C-2,3,4,6,7,8-HxCDF	83.9	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000697		13C-1,2,3,7,8,9-HxCDF	77.1	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000951		13C-1,2,3,4,6,7,8-HpCDF	71.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.00000890		13C-1,2,3,4,7,8,9-HpCDF	80.8	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000780		13C-OCDF	59.4	17 - 157	
OCDF	ND	0.00000335		CRS 37Cl-2,3,7,8-TCDD	90.3	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.00000119					
Total PeCDD	ND	0.00000130					
Total HxCDD	ND	0.00000164					
Total HpCDD	ND	0.00000167					
Total TCDF	ND	0.00000138					
Total PeCDF	ND	0.00000120					
Total HxCDF	ND	0.000000725					
Total HpCDF	ND	0.000000836					
<b>Footnotes</b> a. Sample specific estimated detection limit. b. Estimated maximum possible concentration. c. Method detection limit d. Lower control limit - upper control limit.							

Analyst: JMH  
Approved By: Martha M. Maier  
08-Mar-2006 14:55

OPR Results		EPA Method 1613				
Matrix	Aqueous	QC Batch No.	7807	Lab Sample	0-OPR001	
Sample Size	1.00 L	Date Extracted	5-Mar-06	Date Analyzed DB-5:	7-Mar-06	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	11.1	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	77.8	25 - 164
1,2,3,7,8-PeCDD	50.0	56.7	35 - 71	13C-1,2,3,7,8-PeCDD	81.0	25 - 181
1,2,3,4,7,8-HxCDD	50.0	54.3	35 - 82	13C-1,2,3,4,7,8-HxCDD	74.4	32 - 141
1,2,3,6,7,8-HxCDD	50.0	53.3	38 - 67	13C-1,2,3,6,7,8-HxCDD	76.6	28 - 130
1,2,3,7,8,9-HxCDD	50.0	52.4	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	74.2	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	55.2	35 - 70	13C-OCDD	52.1	17 - 157
OCDD	100	109	78 - 144	13C-2,3,7,8-TCDF	78.6	24 - 169
2,3,7,8-TCDF	10.0	11.2	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	84.3	24 - 185
1,2,3,7,8-PeCDF	50.0	55.2	40 - 67	13C-2,3,4,7,8-PeCDF	87.3	21 - 178
2,3,4,7,8-PeCDF	50.0	56.1	34 - 80	13C-1,2,3,4,7,8-HxCDF	76.8	26 - 152
1,2,3,4,7,8-HxCDF	50.0	55.2	36 - 67	13C-1,2,3,6,7,8-HxCDF	76.9	26 - 123
1,2,3,6,7,8-HxCDF	50.0	56.7	42 - 65	13C-2,3,4,6,7,8-HxCDF	76.3	28 - 136
2,3,4,6,7,8-HxCDF	50.0	56.4	35 - 78	13C-1,2,3,7,8,9-HxCDF	69.6	29 - 147
1,2,3,7,8,9-HxCDF	50.0	54.9	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	70.6	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	55.1	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	74.0	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	55.0	39 - 69	13C-OCDF	57.0	17 - 157
OCDF	100	105	63 - 170	CRS 37Cl-2,3,7,8-TCDD	94.1	35 - 197

Analyst: JMH

Approved By: Martha M. Maier 08-Mar-2006 14:55



Sample ID: <b>IPC0164-01</b>		EPA Method 1613			
Client Data		Laboratory Data		Qualifiers	
Name	Del Mar Analytical, Irvine	Lab Sample	27367-001	Date Received	3-Mar-06
Project	IPC0164	QC Batch No.	7807	Date Extracted	5-Mar-06
Date Collected	1-Mar-06	Date Analyzed DB-5	8-Mar-06	Date Analyzed DB-225	NA
Time Collected	0805				
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup>
2,3,7,8-TCDD	ND	0.00000114		69.3	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000878		68.9	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.00000224		60.4	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.00000229		61.7	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.00000220		60.3	23 - 140
1,2,3,4,6,7,8-HpCDD	0.00000515			40.7	17 - 157
OCDD	0.0000476		J	69.9	24 - 169
2,3,7,8-TCDF	ND	0.00000147		76.0	24 - 185
1,2,3,7,8-PeCDF	ND	0.00000143		73.3	21 - 178
2,3,4,7,8-PeCDF	ND	0.00000136		56.5	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000886		56.8	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000826		56.9	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000895		61.0	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.00000117		56.0	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.00000151		60.6	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.00000141		45.2	17 - 157
OCDF	ND	0.00000380		86.2	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.00000114			
Total PeCDD	ND	0.000000878			
Total HxCDD	ND	0.00000224			
Total HpCDD	0.0000113				
Total TCDF	ND	0.00000147			
Total PeCDF	ND	0.00000140			
Total HxCDF	ND	0.000000937			
Total HpCDF	ND	0.00000146			

Matrix: Aqueous  
Sample Size: 0.997 L

Labeled Standard: IS  
13C-2,3,7,8-TCDD  
13C-1,2,3,7,8-PeCDD  
13C-1,2,3,4,7,8-HxCDD  
13C-1,2,3,6,7,8-HxCDD  
13C-1,2,3,4,6,7,8-HpCDD  
13C-OCDD  
13C-2,3,7,8-TCDF  
13C-1,2,3,7,8-PeCDF  
13C-2,3,4,7,8-PeCDF  
13C-1,2,3,4,7,8-HxCDF  
13C-1,2,3,6,7,8-HxCDF  
13C-2,3,4,6,7,8-HxCDF  
13C-1,2,3,7,8,9-HpCDF  
13C-1,2,3,4,6,7,8-HpCDF  
13C-OCDF  
CRS 37C1-2,3,7,8-TCDD

Footnotes:  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit - concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



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 9484 Chesapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9599  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Suncoast Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IPC0164**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Alta Analytical - SUB 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 673-0106  <i>27367</i> <i>0.4°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IPC0164-01 Water	Sampled: 03/01/06 08:05	Instant Notification
1613-Dioxin-HR-Alta	03/08/06 08:05	J flags, 17 congeners, no TEQ, ug/L, sub=Alta
EDD + Level 4	03/29/06 08:05	Excel EDD email to pm, include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IPC0164-01C)		
1 L Amber (IPC0164-01D)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Customary Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

*Feb - Ex 3-2-06*

Released By:	Date: _____	Time: _____	Received By: <i>Bettina J. Benedict</i>	Date: <i>3/3/06</i>	Time: <i>0855</i>
Released By: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27367

Samples Arrival:	Date/Time 3/3/06 0855	Initials: BBB	Location: WR-2
Logged In:	Date/Time 3/3/06 1313	Initials: BBB	Location: WR-2
Delivered By:	<u>FedEx</u> UPS Cal DHL	Hand Delivered	Other
Preservation:	<u>Ice</u> Blue Ice Dry Ice	None	
Temp °C	0.4	Time: 1000	Thermometer ID: DT-20

		YES	NO	NA
Adequate Sample Volume Received?		✓		
Holding Time Acceptable?		✓		
Shipping Container(s) Intact?		✓		
Shipping Custody Seals Intact?				✓
Shipping Documentation Present?		✓		
Airbill	Trk # 7920 3239 5438	✓		
Sample Container Intact?		✓		
Sample Custody Seals Intact?				✓
Chain of Custody / Sample Documentation Present?		✓		
COC Anomaly/Sample Acceptance Form completed?			✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?				✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?	COC	Sample Container	<u>None</u>	
Shipping Container	Alta <u>Client</u> Retain	<u>Return</u>	Dispose	

Comments:

# **APPENDIX A**

## **Section 20**

Outfall 003, March 1, 2006

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

MEC<sup>x</sup>  
 12269 East Vassar Drive  
 Aurora, CO 80014

Package ID: B4RA4  
 Task Order: 1261.001D.01  
 SDG No.: IPC0164, IPC1333

No. of Analyses: 2

Laboratory: Eberline  
 Reviewer: P. Meeks  
 Analysis/Method: Radionuclides

Date: April 13, 2006  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
<b>Case Narrative</b>	
<b>Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	





# DATA VALIDATION REPORT

NPDES Sampling  
Multiple Outfalls

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS: IPC0164 & IPC1333

Prepared by

MEC<sup>X</sup>, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPC0164, IPC1333  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 13, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IPC0164-01	8668-001	water	905.0
Outfall 003	IPC1333-01	8669-001	water	905.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Both samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4 \pm 2^\circ\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. The samples in these SDGs were not preserved or filtered. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

Both samples were analyzed beyond the five day holding time for unpreserved samples; therefore, strontium detected in the samples was qualified as estimated, "J." No further qualifications were required.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability. All strontium chemical yields were at least 75% and were considered acceptable. No further qualifications were required.

### 2.3 BLANKS

No measurable activities were detected in the method blanks, therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Aqueous blank spikes were analyzed in association with the samples in these SDGs. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses on both samples in these SDGs. Both results were within the 3-sigma limit limits. No qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Analyses that involve the yielding of an analytical tracer do not require matrix spike analyses; therefore, no strontium matrix spike was performed. No qualifications were required.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these SDGs. The sample results and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8668</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R603040-01</u>	Contract <u>PROJECTS IPC0164</u>
Received Date <u>03/03/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDB	Rev Qual	Qual Code
		<i>Outfall 003</i>								
IPC0164-01	8668-001		03/01/06	03/17/06	SR-90	1.28 ± 0.40	pCi/L	0.511	J	H

LEVEL IV

Certified by <i>[Signature]</i>
Report Date <u>04/06/06</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8669</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>2603083-01</u>	Contract <u>PROJECT# IPC1133</u>
Received Date <u>03/14/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Row	Col
		<u>044611 003</u>								
IPC1133-01	8669-001	03/11/06	03/23/06	Sr-90	1.64 ± 0.47	pCi/L	0.590	J	H	

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>04/06/06</u>
Page 1

# **APPENDIX A**

## **Section 21**

Outfall 003, March 11, 2006

Del Mar Analytical Laboratory Report





**LABORATORY REPORT**

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 003

Sampled: 03/11/06  
Received: 03/11/06  
Issued: 03/24/06 17:26

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.  
This entire report was reviewed and approved for release.*

**SAMPLE CROSS REFERENCE**

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IPC1333-01	Outfall 003	Water

Reviewed By:

*Michele Chamberlin*

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPC1333-01 (Outfall 003 - Water)									
Reporting Units: ug/l									
Antimony	EPA 200.8	6C14081	0.050	2.0	<b>0.88</b>	1	03/14/06	03/15/06	J
Cadmium	EPA 200.8	6C14081	0.025	1.0	<b>0.058</b>	1	03/14/06	03/15/06	J
Copper	EPA 200.8	6C14081	0.25	2.0	<b>2.6</b>	1	03/14/06	03/15/06	
Lead	EPA 200.8	6C14081	0.040	1.0	<b>0.66</b>	1	03/14/06	03/15/06	J
Mercury	EPA 245.1	6C14077	0.050	0.20	ND	1	03/14/06	03/14/06	
Thallium	EPA 200.8	6C14081	0.15	1.0	ND	1	03/14/06	03/15/06	

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager

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# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IPC1333-01 (Outfall 003 - Water) - cont.									
Reporting Units: mg/l									
Chloride	EPA 300.0	6C11028	0.30	1.0	<b>40</b>	2	03/11/06	03/11/06	
Nitrate/Nitrite-N	EPA 300.0	6C11028	0.080	0.15	<b>0.71</b>	1	03/11/06	03/11/06	
Oil & Grease	EPA 413.1	6C21053	0.89	4.7	<b>1.3</b>	1	03/21/06	03/21/06	J
Sulfate	EPA 300.0	6C11028	0.45	0.50	<b>43</b>	1	03/11/06	03/11/06	
Total Dissolved Solids	SM2540C	6C16069	10	10	<b>310</b>	1	03/16/06	03/16/06	
Total Suspended Solids	EPA 160.2	6C16125	10	10	ND	1	03/16/06	03/16/06	

Del Mar Analytical - Irvine  
 Michele Chamberlin  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: Outfall 003 (IPC1333-01) - Water EPA 300.0	2	03/11/2006 10:15	03/11/2006 15:30	03/11/2006 16:15	03/11/2006 16:25

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06  
Received: 03/11/06

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C14077 Extracted: 03/14/06</b>										
<b>Blank Analyzed: 03/14/2006 (6C14077-BLK1)</b>										
Mercury	ND	0.20	0.050	ug/l						
<b>LCS Analyzed: 03/14/2006 (6C14077-BS1)</b>										
Mercury	8.30	0.20	0.050	ug/l	8.00		104 85-115			
<b>Matrix Spike Analyzed: 03/14/2006 (6C14077-MS1)</b>										
						<b>Source: IPC1217-01</b>				
Mercury	8.34	0.20	0.050	ug/l	8.00	ND	104 70-130			
<b>Matrix Spike Dup Analyzed: 03/14/2006 (6C14077-MSD1)</b>										
						<b>Source: IPC1217-01</b>				
Mercury	8.33	0.20	0.050	ug/l	8.00	ND	104 70-130	0	20	
<b>Batch: 6C14081 Extracted: 03/14/06</b>										
<b>Blank Analyzed: 03/15/2006 (6C14081-BLK1)</b>										
Antimony	ND	2.0	0.050	ug/l						
Cadmium	ND	1.0	0.025	ug/l						
Copper	ND	2.0	0.25	ug/l						
Lead	ND	1.0	0.040	ug/l						
Thallium	ND	1.0	0.15	ug/l						
<b>LCS Analyzed: 03/15/2006 (6C14081-BS1)</b>										
Antimony	77.6	2.0	0.050	ug/l	80.0		97 85-115			
Cadmium	76.1	1.0	0.025	ug/l	80.0		95 85-115			
Copper	77.2	2.0	0.25	ug/l	80.0		96 85-115			
Lead	78.2	1.0	0.040	ug/l	80.0		98 85-115			
Thallium	77.6	1.0	0.15	ug/l	80.0		97 85-115			

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06  
Received: 03/11/06

METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C14081 Extracted: 03/14/06</b>											
<b>Matrix Spike Analyzed: 03/15/2006 (6C14081-MS1)</b>						<b>Source: IPC0677-01</b>					
Antimony	77.1	2.0	0.050	ug/l	80.0	0.21	96	70-130			
Cadmium	74.1	1.0	0.025	ug/l	80.0	0.13	92	70-130			
Copper	75.3	2.0	0.25	ug/l	80.0	ND	94	70-130			
Lead	78.1	1.0	0.040	ug/l	80.0	0.14	97	70-130			
Thallium	77.9	1.0	0.15	ug/l	80.0	0.30	97	70-130			
<b>Matrix Spike Analyzed: 03/15/2006 (6C14081-MS2)</b>						<b>Source: IPC1061-02</b>					
Antimony	76.7	2.0	0.050	ug/l	80.0	0.32	95	70-130			
Cadmium	71.0	1.0	0.025	ug/l	80.0	0.075	89	70-130			
Copper	78.4	2.0	0.25	ug/l	80.0	4.9	92	70-130			
Lead	73.0	1.0	0.040	ug/l	80.0	0.25	91	70-130			
Thallium	73.0	1.0	0.15	ug/l	80.0	0.15	91	70-130			
<b>Matrix Spike Dup Analyzed: 03/15/2006 (6C14081-MSD1)</b>						<b>Source: IPC0677-01</b>					
Antimony	79.5	2.0	0.050	ug/l	80.0	0.21	99	70-130	3	20	
Cadmium	77.0	1.0	0.025	ug/l	80.0	0.13	96	70-130	4	20	
Copper	77.5	2.0	0.25	ug/l	80.0	ND	97	70-130	3	20	
Lead	77.8	1.0	0.040	ug/l	80.0	0.14	97	70-130	0	20	
Thallium	78.4	1.0	0.15	ug/l	80.0	0.30	98	70-130	1	20	

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06  
Received: 03/11/06

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C11028 Extracted: 03/11/06</b>											
<b>Blank Analyzed: 03/11/2006 (6C11028-BLK1)</b>											
Chloride	ND	0.50	0.15	mg/l							
Nitrate/Nitrite-N	ND	0.15	0.080	mg/l							
Sulfate	ND	0.50	0.45	mg/l							
<b>LCS Analyzed: 03/11/2006 (6C11028-BS1)</b>											
Chloride	4.84	0.50	0.15	mg/l	5.00		97	90-110			
Sulfate	9.85	0.50	0.45	mg/l	10.0		98	90-110			M-3
<b>Matrix Spike Analyzed: 03/11/2006 (6C11028-MS1)</b>											
					<b>Source: IPC1298-01</b>						
Chloride	55.1	2.5	0.75	mg/l	5.00	51	82	80-120			
<b>Matrix Spike Dup Analyzed: 03/11/2006 (6C11028-MSD1)</b>											
					<b>Source: IPC1298-01</b>						
Chloride	55.3	2.5	0.75	mg/l	5.00	51	86	80-120	0	20	
<b>Batch: 6C16069 Extracted: 03/16/06</b>											
<b>Blank Analyzed: 03/16/2006 (6C16069-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/16/2006 (6C16069-BS1)</b>											
Total Dissolved Solids	1000	10	10	mg/l	1000		100	90-110			
<b>Duplicate Analyzed: 03/16/2006 (6C16069-DUP1)</b>											
					<b>Source: IPC1296-01</b>						
Total Dissolved Solids	325	10	10	mg/l		320			2	10	
<b>Batch: 6C16125 Extracted: 03/16/06</b>											
<b>Blank Analyzed: 03/16/2006 (6C16125-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 6C16125 Extracted: 03/16/06</b>											
<b>LCS Analyzed: 03/16/2006 (6C16125-BS1)</b>											
Total Suspended Solids	921	10	10	mg/l	1000		92	85-115			
<b>Duplicate Analyzed: 03/16/2006 (6C16125-DUP1)</b>											
Total Suspended Solids	270	10	10	mg/l		260			4	10	
<b>Source: IPC1288-01</b>											
<b>Batch: 6C21053 Extracted: 03/21/06</b>											
<b>Blank Analyzed: 03/21/2006 (6C21053-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/21/2006 (6C21053-BS1)</b>											
Oil & Grease	17.2	5.0	0.94	mg/l	20.0		86	65-120			M-NR1
<b>LCS Dup Analyzed: 03/21/2006 (6C21053-BSD1)</b>											
Oil & Grease	17.0	5.0	0.94	mg/l	20.0		85	65-120	1	20	

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.





MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06  
Received: 03/11/06

**Compliance Check**

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

LabNumber	Analysis	Analyte	Units	Result	MRL	Compliance Limit
IPC1333-01	413.1 Oil and Grease	Oil & Grease	mg/l	1.30	4.7	15
IPC1333-01	Antimony-200.8	Antimony	ug/l	0.88	2.0	6.00
IPC1333-01	Cadmium-200.8	Cadmium	ug/l	0.058	1.0	4.00
IPC1333-01	Chloride - 300.0	Chloride	mg/l	40	1.0	150
IPC1333-01	Copper-200.8	Copper	ug/l	2.60	2.0	14
IPC1333-01	Lead-200.8	Lead	ug/l	0.66	1.0	5.20
IPC1333-01	Mercury - 245.1	Mercury	ug/l	0.026	0.20	0.20
IPC1333-01	Nitrogen, NO3+NO2 -N	Nitrate/Nitrite-N	mg/l	0.71	0.15	10.00
IPC1333-01	Sulfate-300.0	Sulfate	mg/l	43	0.50	250
IPC1333-01	TDS - SM 2540C	Total Dissolved Solids	mg/l	310	10	850
IPC1333-01	Thallium-200.8	Thallium	ug/l	0.027	1.0	2.00

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

### DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical - Irvine  
Michele Chamberlin  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IPC1333

Sampled: 03/11/06

Received: 03/11/06

### Certification Summary

#### Del Mar Analytical - Irvine

Method	Matrix	Nelac	California
1613A/1613B	Water		
EDD + Level 4	Water		
EPA 160.2	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 413.1	Water	X	X
EPA 905.0	Water		
SM2540C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.testamericainc.com](http://www.testamericainc.com)*

#### Subcontracted Laboratories

##### **Alta Analytical** *NELAC Cert #02102CA, California Cert #1640, Nevada Cert #CA-413*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR-Alta  
Samples: IPC1333-01

Analysis Performed: EDD + Level 4  
Samples: IPC1333-01

##### **Eberline Services**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Level 4 + EDD  
Samples: IPC1333-01

Analysis Performed: Strontium 90  
Samples: IPC1333-01

**Del Mar Analytical - Irvine**  
Michele Chamberlin  
Project Manager

IPC 1333

ANALYSIS REQUIRED

Client Name/Address:  
**MWH-Pasadena**  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Project Manager: Bronwyn Kelly  
 Sampler:

Project:  
**Boeing-SSFL NPDES  
 Routine Outfall 003  
 Stormwater at RMHF**  
 Phone Number:  
 (626) 568-6691  
 Fax Number:  
 (626) 568-6515

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Sb, Ca, Cu, Pb, Hg, Ti	TCCD (and all congeners)	Oil & Grease (EPA 413.1)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N	TDS, TSS	Sr-90 (90S.0)	Comments
Outfall 003	W	1L Poly	1	3-11-06 10:15	HNO3	1A	X						Field readings: Temp = 57.7 pH = 7.7
Outfall 003-Dup	W	1L Poly	1		HNO3	1B	X						
Outfall 003	W	1L Amber	2		None	2A, 2B		X					
Outfall 003	W	1L Amber	2		HCl	3A, 3B		X					
Outfall 003	W	Poly-500 ml	2		None	4A, 4B			X				
Outfall 003	W	Poly-500 ml	2		None	5A, 5B				X			
Outfall 003	W	Poly-1 gal	1	3-11-06 10:15	None	6A, 6B					X		unfiltered and unpreserved analysis

Relinquished By: *[Signature]* Date/Time: 3-11-06 1315  
 Received By: *[Signature]* Date/Time: 3-11-06 1315

Relinquished By: *[Signature]* Date/Time: 3-11-06 1530  
 Received By: *[Signature]* Date/Time: 3-11-06 1530

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check)  On Ice:





March 17, 2006

**Alta Project I.D.: 27408**

Ms. Michele Chamberlin  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Chamberlin,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 14, 2006 under your Project Name "IPC1333". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



**Section I: Sample Inventory Report**

**Date Received: 3/14/2006**

Alta Lab. ID

Client Sample ID

27408-001

IPC1333-01

**SECTION II**

Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	7831	Lab Sample:	0-MB001			
Sample Size:	1.00 L	Date Extracted:	15-Mar-06	Date Analyzed DB-5:	16-Mar-06			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.00000114			13C-2,3,7,8-TCDD	84.5	25 - 164	
1,2,3,7,8-PeCDD	ND	0.00000107			13C-1,2,3,7,8-PeCDD	89.5	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000125			13C-1,2,3,4,7,8-HxCDD	78.5	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000127			13C-1,2,3,6,7,8-HxCDD	81.6	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000122			13C-1,2,3,4,6,7,8-HpCDD	76.3	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.00000151			13C-OCDD	46.5	17 - 157	
OCDD	ND	0.00000230			13C-2,3,7,8-TCDF	87.5	24 - 169	
2,3,7,8-TCDF	ND	0.00000947			13C-1,2,3,7,8-PeCDF	96.4	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000115			13C-2,3,4,7,8-PeCDF	99.6	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000110			13C-1,2,3,4,7,8-HxCDF	82.4	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000529			13C-1,2,3,6,7,8-HxCDF	89.4	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000483			13C-2,3,4,6,7,8-HxCDF	86.8	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000528			13C-1,2,3,7,8,9-HxCDF	81.7	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000739			13C-1,2,3,4,6,7,8-HpCDF	74.0	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.00000972			13C-1,2,3,4,7,8,9-HpCDF	79.7	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.00000916			13C-OCDF	54.0	17 - 157	
OCDF	ND	0.00000319			CRS 37Cl-2,3,7,8-TCDD	99.1	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.00000114						
Total PeCDD	ND	0.00000107						
Total HxCDD	ND	0.00000124						
Total HpCDD	ND	0.00000151						
Total TCDF	ND	0.00000947						
Total PeCDF	ND	0.00000112						
Total HxCDF	ND	0.00000560						
Total HpCDF	ND	0.00000946						

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: RAS  
 Approved By: William J. Luksemburg 17-Mar-2006 11:36



**EPA Method 1613**

OPR Results		Lab Sample: 0-OPR001		Date Analyzed DB-5: 16-Mar-06		Date Analyzed DB-225: NA	
Matrix:	Aqueous	QC Batch No:	7831				
Sample Size:	1.00 L	Date Extracted:	15-Mar-06				
Analyte	Spike Conc. (ug/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL		
2,3,7,8-TCDD	10.0	6.7 - 15.8	IS 13C-2,3,7,8-1CDD	73.8	25 - 164		
1,2,3,7,8-PeCDD	50.0	35 - 71	13C-1,2,3,7,8-PeCDD	78.9	25 - 181		
1,2,3,4,7,8-HxCDD	50.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	71.7	32 - 141		
1,2,3,6,7,8-HxCDD	50.0	38 - 67	13C-1,2,3,6,7,8-HxCDD	72.7	28 - 130		
1,2,3,7,8,9-HxCDD	50.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	60.1	23 - 140		
1,2,3,4,6,7,8-HpCDD	50.0	35 - 70	13C-OCDD	45.3	17 - 157		
OCDD	100	78 - 144	13C-2,3,7,8-TCDF	75.3	24 - 169		
2,3,7,8-TCDF	10.0	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	83.4	24 - 185		
1,2,3,7,8-PeCDF	50.0	40 - 67	13C-2,3,4,7,8-PeCDF	88.7	21 - 178		
2,3,4,7,8-PeCDF	50.0	34 - 80	13C-1,2,3,4,7,8-HxCDF	72.8	26 - 152		
1,2,3,4,7,8-HxCDF	50.0	36 - 67	13C-1,2,3,6,7,8-HxCDF	79.4	26 - 123		
1,2,3,6,7,8-HxCDF	50.0	42 - 65	13C-2,3,4,6,7,8-HxCDF	76.6	28 - 136		
2,3,4,6,7,8-HxCDF	50.0	35 - 78	13C-1,2,3,7,8,9-HxCDF	70.9	29 - 147		
1,2,3,7,8,9-HxCDF	50.0	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	62.2	28 - 143		
1,2,3,4,6,7,8-HpCDF	50.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	63.7	26 - 138		
1,2,3,4,7,8,9-HpCDF	50.0	39 - 69	13C-OCDF	51.1	17 - 157		
OCDF	100	63 - 170	CRS 37C1-2,3,7,8-TCDD	95.5	35 - 197		

Analyst: DMS  
 Approved By: William J. Luksemburg 17-Mar-2006 11:36



**Sample ID: IPC1333-01** **EPA Method 1613**

<b>Client Data</b>		<b>Laboratory Data</b>	
Name	Del Mar Analytical, Irvine	Lab Sample	27408-001
Project	IPC1333	QC Batch No.	7831
Date Collected	11-Mar-06	Date Analyzed DB-5	16-Mar-06
Time Collected	1015	Date Analyzed DB-225	NA
		Date Received	14-Mar-06
		Date Extracted	15-Mar-06

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000999			IS 13C-2,3,7,8-TCDD	68.8	25 - 104	
1,2,3,7,8-PeCDD	ND	0.00000115			13C-1,2,3,7,8-PeCDD	69.8	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.00000179			13C-1,2,3,4,7,8-HxCDD	60.6	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.00000184			13C-1,2,3,6,7,8-HxCDD	64.3	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.00000175			13C-1,2,3,4,6,7,8-HpCDD	59.4	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.0000116			J	13C-OCDD	42.7	17 - 157	
OCDD	0.000122				13C-2,3,7,8-TCDF	73.9	24 - 169	
2,3,7,8-TCDF	ND	0.000000843			13C-1,2,3,7,8-PeCDF	80.4	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000101			13C-2,3,4,7,8-PeCDF	78.5	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000952			13C-1,2,3,4,7,8-HxCDF	62.6	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000546			13C-1,2,3,6,7,8-HxCDF	66.9	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000508			13C-2,3,4,6,7,8-HxCDF	64.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000556			13C-1,2,3,7,8,9-HxCDF	61.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.000000778			13C-1,2,3,4,6,7,8-HpCDF	58.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000202			J	13C-1,2,3,4,7,8,9-HpCDF	61.4	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000707			13C-OCDF	46.0	17 - 157	
OCDF	ND		0.00000761		CRS 37Cl-2,3,7,8-TCDD	91.9	35 - 197	

Totals		EMPC <sup>b</sup>		Qualifiers	
Total TCDD	ND	0.000000999			
Total PeCDD	ND	0.00000115			
Total HxCDD	0.00000197		0.00000289		
Total HpCDD	0.0000257				
Total TCDF	ND	0.000000843			
Total PeCDF	ND	0.000000979			
Total HxCDF	ND		0.000000423		
Total HpCDF	0.00000533				

**Footnotes**

- a. Sample specific estimated detection limit
- b. Estimated maximum possible concentration
- c. Method detection limit
- d. Lower control limit - upper control limit

Analyst: RAS  
 Approved By: William J. Luksemburg  
 17-Mar-2006 11:36

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit -- concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

**CERTIFICATIONS**

<b>Accrediting Authority</b>	<b>Certificate Number</b>
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4657 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-0596 Fax (619) 505-0688  
 6830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0251  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IPC1333**

<p><b>SENDING LABORATORY:</b>          Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Chamberlin</p>	<p><b>RECEIVING LABORATORY:</b>          Alta Analytical - SUB          1104 Windfield Way          El Dorado Hills, CA 95762          Phone: (916) 933-1640          Fax: (916) 673-0106</p> <p style="text-align: right; font-size: 1.5em;">27408</p> <p style="text-align: right; font-size: 1.5em;"><del>5000</del> -0.3°C</p> <p style="text-align: right; font-size: 1.5em;">BIB 3/14/06</p>
--	--

Standard TAT is requested unless specific due date is requested => Due Date: 3/27/06 Initials: UC

Analysis	Expiration	Comments
Sample ID: IPC1333-01 Water	Sampled: 03/11/06 10:15	unfiltered and unpreserved analysis
1613-Dioxin-HR-Alta	03/18/06 10:15	J flags, 17 congeners, no TEQ, ug/L, sub=Alta
EDD + Level 4	04/08/06 10:15	Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IPC1333-01C)		
1 L Amber (IPC1333-01D)		

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: Michele Chamberlin Date: 3/13/06 Time: 0915  
 Received By: Bethina L. Benedict Date: 3/14/06 Time: 0915

**SAMPLE LOG-IN CHECKLIST**

Alta Project #: 27408

Samples Arrival:	Date/Time 3/14/06 0915	Initials: BLB	Location: WR-2
Logged In:	Date/Time 3/14/06 1106	Initials: BLB	Location: WR-2
Delivered By:	<u>FedEx</u> UPS Cal DHL	Hand Delivered	Other
Preservation:	<u>Ice</u> Blue Ice Dry Ice	None	
Temp °C	-0.3°C	Time: 0935	Thermometer ID: DT-20

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill	✓		
Trk #	7920 4114 7994		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Preservation Documented?	COC	Sample Container	<u>None</u>
Shipping Container	Alta <u>Client</u>	Retain	<u>Return</u> Dispose

Comments:





# EBERLINE SERVICES

April 6, 2006

Ms. Michele Chamberlin  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IPC1333  
Eberline Services NELAP Cert #01120CA (exp. 01/31/07)  
Eberline Services Report R603083-8669

Dear Ms. Chamberlin:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 14, 2006. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analysis was strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analysis, and duplicate analysis results for the analysis were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require a matrix spike analysis to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8669</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R603083-01</u>	Contract <u>PROJECT# IPC1333</u>
Received Date <u>03/14/06</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>Sample ID</u>	<u>Sample ID</u>						
IPC1333-01	8669-001	03/11/06	03/23/06	Sr-90	1.64 ± 0.47	pCi/L	0.580

Certified by <u><i>[Signature]</i></u>
Report Date <u>04/06/06</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8669</u> Work Order <u>R603083-01</u> Received Date <u>03/14/06</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IPC1333</u> Matrix <u>WATER</u>
--	---

Lab	<u>Sample ID</u>	<u>Nuclide</u>	<u>Results</u>	<u>Units</u>	<u>Amount Added</u>	<u>MDA</u>	<u>Evaluation</u>
<u>LCS</u>							
	8669-002	Sr-90	9.91 ± 0.76	pCi/Smpl		0.319	
<u>BLANK</u>							
	8669-003	Sr-90	-0.056 ± 0.21	pCi/Smpl	NA	0.517	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>RPD (Tot) Eval</u>
8669-004	Sr-90	1.57 ± 0.46	0.554	8669-001	1.64 ± 0.47	0.580	4 65 satis.

Certified by <u><i>[Signature]</i></u> Report Date <u>04/06/06</u> Page 2
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RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: DELMAR City IRVINE State CA  
Date/Time received 03/14/06 9:15 CoC No. IPC 1333  
Container I.D. No. Box / 517PC Requested TAT (Days) ASAP P.O. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]
- 5. Packing material is: Wet [ ] Dry [X]
- 6. Number of samples in shipping container: 1 Sample Matrix W
- 7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [X] No [ ]
- 9. Paperwork agrees with samples? Yes [X] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
- 11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [ ] Not preserved [X] pH \_\_\_\_\_ Preservative \_\_\_\_\_
- 13. Describe any anomalies:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
15. Inspected by MEM Date: 03/14/06 Time: 10:00

Customer Sample No.	cpm	mR/hr	Wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



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 9484 Chesapeake Drive, Suite 605, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-8689  
 9930 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IPC1333

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Chamberlin	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438 <div style="text-align: right; font-size: 2em; font-family: cursive;">8669</div>

Standard TAT is requested unless specific due date is requested => Due Date: AS SOON AS POSSIBLE - RUSH Initials: MC

Analysis	Expiration	Comments
Sample ID: IPC1333-01 Water	Sampled: 03/11/06 10:15	unfiltered and unpreserved analysis
Level 4 + EDD-OUT	04/08/06 10:15	**LEVEL IV QC, ACCESS 7 EDD**
* Strontium 90-O	03/11/07 10:15	905.0, sub to Eberline

**Containers Supplied:**  
 1 gal Poly (IPC1333-01K)

\* Please do not filter or preserve this sample. Dilution is okay or dissolution if necessary.

MC 3/13/06

SAMPLE INTEGRITY:					
All containers intact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
			Samples Received at (temp):	_____	

<i>Michele Chamberlin</i>			<i>JFY</i>	03/14/06	9:15
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time

# **APPENDIX A**

## **Section 22**

Outfall 003, March 11, 2006

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

MEC<sup>x</sup>  
 12269 East Vassar Drive  
 Aurora, CO 80014

Package ID: B4RA4  
 Task Order: 1261.001D.01  
 SDG No.: IPC0164, IPC1333

No. of Analyses: 2

Laboratory: Eberline  
 Reviewer: P. Meeks  
 Analysis/Method: Radionuclides

Date: April 13, 2006  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
Case Narrative	_____
Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g.,	_____
Holding Times	_____
GC/MS Tune/Inst. Performance	_____
Calibration	_____
Method blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification	_____
Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	<u>Acceptable as reviewed.</u>
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Sampling  
Multiple Outfalls

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS: IPC0164 & IPC1333

Prepared by

MECX, LLC  
12269 East Vassar Drive  
Aurora, CO 80014



## 1. INTRODUCTION

Task Order Title: NPDES Sampling  
MEC<sup>x</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPC0164, IPC1333  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 13, 2006

The samples listed in Table 1 were validated based on the guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003	IPC0164-01	8668-001	water	905.0
Outfall 003	IPC1333-01	8669-001	water	905.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Both samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4 \pm 2^\circ\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition.

According to the Los Angeles Regional Water Quality Control Board's (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. The samples in these SDGs were not preserved or filtered. No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

Both samples were analyzed beyond the five day holding time for unpreserved samples; therefore, strontium detected in the samples was qualified as estimated, "J." No further qualifications were required.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability. All strontium chemical yields were at least 75% and were considered acceptable. No further qualifications were required.

### 2.3 BLANKS

No measurable activities were detected in the method blanks, therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Aqueous blank spikes were analyzed in association with the samples in these SDGs. The blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses on both samples in these SDGs. Both results were within the 3-sigma limit limits. No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Analyses that involve the yielding of an analytical tracer do not require matrix spike analyses; therefore, no strontium matrix spike was performed. No qualifications were required.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these SDGs. The sample results and MDAs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8668</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>8603040-01</u>	Contract <u>PROJECT# IPC0164</u>
Received Date <u>01/03/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<i>Outfall 003</i>								
IPC0164-01	8668-001		01/01/06	03/17/06	Sr-90	1.28 ± 0.40	pCi/L	0.511	J	H

Level IV

Certified by <u>[Signature]</u>
Report Date <u>04/08/06</u>
Page 1

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8669</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>8601083-01</u>	Contract <u>PROJECT# IPC1333</u>
Received Date <u>01/14/06</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Req Stat	Qual Code
		<u>Outfall 003</u>								
IPC1333-01	8669-001	03/11/06	03/23/06	Sr-90	1.64 ± 0.47	pCi/L	0.590		J	H

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>24/06/06</u>
Page 1

# **APPENDIX A**

## **Section 23**

Outfall 011, January 4, 2005

Del Mar Analytical Laboratory Report



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Quarterly Outfall 011 + 13267

Sampled: 01/04/05  
Received: 01/04/05  
Issued: 03/08/05 16:13

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 3 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 4°C, on ice and with chain of custody documentation.
- HOLDING TIMES: Not all holding times were met. Results were qualified where the sample analysis did not occur within method specified holding time requirements.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged. There was a dilution for the MBAS analysis due to emulsion.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID

IOA0121-01  
IOA0121-02

CLIENT ID

Outfall 011 - grab  
Trip Blank

MATRIX

Water  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager





MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

### CORRECTIVE ACTION REPORT

Department: Extractions

Date: 01/14/2005

Method: EPA 625

Matrix: Water

QC Batch: 5A05039

#### Identification and Definition of Problem:

The percent recoveries for benzidine in the LCS and LCSD were below method acceptance limits.

#### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

#### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:



Dave Dawes

Date: 01/18/2005 09:20 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water)					Sampled: 01/04/05				
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5A06070	0.31	1.0	ND	1	01/06/05	01/06/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5A06045	0.082	0.50	ND	0.962	01/06/05	01/07/05	
Surrogate: n-Octacosane (40-125%)					59 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.</b>					<b>Sampled: 01/04/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	
Surrogate: 4-BFB (FID) (65-140%)					84 %				
<b>Sample ID: IOA0121-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	
Surrogate: 4-BFB (FID) (65-140%)					85 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A05017	1.2	5.0	ND	1	01/05/05	01/05/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					100 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					101 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					97 %				
<b>Sample ID: IOA0121-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A05017	1.2	5.0	ND	1	01/05/05	01/05/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					98 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					98 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					97 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water)					Sampled: 01/04/05				
Reporting Units: ug/l									
Benzene	EPA 624	5A05017	0.28	1.0	ND	1	01/05/05	01/05/05	
Bromodichloromethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
Bromoform	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	
Bromomethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	
Carbon tetrachloride	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	
Chlorobenzene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	
Chloroethane	EPA 624	5A05017	0.33	5.0	ND	1	01/05/05	01/05/05	
Chloroform	EPA 624	5A05017	0.33	2.0	ND	1	01/05/05	01/05/05	
Chloromethane	EPA 624	5A05017	0.30	5.0	ND	1	01/05/05	01/05/05	
Dibromochloromethane	EPA 624	5A05017	0.28	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichlorobenzene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	
1,3-Dichlorobenzene	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	
1,4-Dichlorobenzene	EPA 624	5A05017	0.37	2.0	ND	1	01/05/05	01/05/05	
1,1-Dichloroethane	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichloroethane	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	
1,1-Dichloroethene	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	
trans-1,2-Dichloroethene	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichloropropane	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	
cis-1,3-Dichloropropene	EPA 624	5A05017	0.22	2.0	ND	1	01/05/05	01/05/05	
trans-1,3-Dichloropropene	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	
Ethylbenzene	EPA 624	5A05017	0.25	2.0	ND	1	01/05/05	01/05/05	
Methylene chloride	EPA 624	5A05017	0.48	5.0	ND	1	01/05/05	01/05/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	
Tetrachloroethene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	
Toluene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	
1,1,1-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
1,1,2-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
Trichloroethene	EPA 624	5A05017	0.26	2.0	ND	1	01/05/05	01/05/05	
Trichlorofluoromethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	
Vinyl chloride	EPA 624	5A05017	0.26	0.50	ND	1	01/05/05	01/05/05	
Xylenes, Total	EPA 624	5A05017	0.52	4.0	ND	1	01/05/05	01/05/05	
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-02 (Trip Blank - Water)					Sampled: 01/04/05				
Reporting Units: ug/l									
Benzene	EPA 624	5A05017	0.28	1.0	ND	1	01/05/05	01/05/05	
Bromodichloromethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
Bromoform	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	
Bromomethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	
Carbon tetrachloride	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	
Chlorobenzene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	
Chloroethane	EPA 624	5A05017	0.33	5.0	ND	1	01/05/05	01/05/05	
Chloroform	EPA 624	5A05017	0.33	2.0	ND	1	01/05/05	01/05/05	
Chloromethane	EPA 624	5A05017	0.30	5.0	ND	1	01/05/05	01/05/05	
Dibromochloromethane	EPA 624	5A05017	0.28	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichlorobenzene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	
1,3-Dichlorobenzene	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	
1,4-Dichlorobenzene	EPA 624	5A05017	0.37	2.0	ND	1	01/05/05	01/05/05	
1,1-Dichloroethane	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichloroethane	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	
1,1-Dichloroethene	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	
trans-1,2-Dichloroethene	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	
1,2-Dichloropropane	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	
cis-1,3-Dichloropropene	EPA 624	5A05017	0.22	2.0	ND	1	01/05/05	01/05/05	
trans-1,3-Dichloropropene	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	
Ethylbenzene	EPA 624	5A05017	0.25	2.0	ND	1	01/05/05	01/05/05	
<b>Methylene chloride</b>	EPA 624	5A05017	0.48	5.0	<b>0.50</b>	1	01/05/05	01/05/05	J
1,1,2,2-Tetrachloroethane	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	
Tetrachloroethene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	
Toluene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	
1,1,1-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
1,1,2-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	
Trichloroethene	EPA 624	5A05017	0.26	2.0	ND	1	01/05/05	01/05/05	
Trichlorofluoromethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	
Vinyl chloride	EPA 624	5A05017	0.26	0.50	ND	1	01/05/05	01/05/05	
Xylenes, Total	EPA 624	5A05017	0.52	4.0	ND	1	01/05/05	01/05/05	
Surrogate: Dibromofluoromethane (80-120%)					98 %				
Surrogate: Toluene-d8 (80-120%)					98 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
Acrolein	EPA 624	5A05012	4.6	50	ND	1	01/05/05	01/05/05	
Acrylonitrile	EPA 624	5A05012	5.1	50	ND	1	01/05/05	01/05/05	
2-Chloroethyl vinyl ether	EPA 624	5A05012	1.3	5.0	ND	1	01/05/05	01/05/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					103 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					102 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					99 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + I3267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	
Cyclohexane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	
<b>Sample ID: IOA0121-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	
Cyclohexane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	

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Michele Harper  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5A05039	0.10	0.50	ND	0.962	01/05/05	01/14/05	
Acenaphthylene	EPA 625	5A05039	0.10	0.50	ND	0.962	01/05/05	01/14/05	
Aniline	EPA 625	5A05039	2.9	10	ND	0.962	01/05/05	01/14/05	
Anthracene	EPA 625	5A05039	0.083	0.50	ND	0.962	01/05/05	01/14/05	
Benidine	EPA 625	5A05039	2.4	5.0	ND	0.962	01/05/05	01/14/05	L2
Benzoic acid	EPA 625	5A05039	3.7	20	ND	0.962	01/05/05	01/14/05	
Benzo(a)anthracene	EPA 625	5A05039	0.038	5.0	ND	0.962	01/05/05	01/14/05	
Benzo(a)pyrene	EPA 625	5A05039	0.14	2.0	ND	0.962	01/05/05	01/14/05	
Benzo(b)fluoranthene	EPA 625	5A05039	0.050	2.0	ND	0.962	01/05/05	01/14/05	
Benzo(g,h,i)perylene	EPA 625	5A05039	0.059	5.0	ND	0.962	01/05/05	01/14/05	
Benzo(k)fluoranthene	EPA 625	5A05039	0.053	0.50	ND	0.962	01/05/05	01/14/05	
<b>Benzyl alcohol</b>	EPA 625	5A05039	0.21	5.0	<b>0.27</b>	0.962	01/05/05	01/14/05	J
Bis(2-chloroethoxy)methane	EPA 625	5A05039	0.072	0.50	ND	0.962	01/05/05	01/14/05	
Bis(2-chloroethyl)ether	EPA 625	5A05039	0.084	0.50	ND	0.962	01/05/05	01/14/05	
Bis(2-chloroisopropyl)ether	EPA 625	5A05039	0.11	0.50	ND	0.962	01/05/05	01/14/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5A05039	1.1	5.0	ND	0.962	01/05/05	01/14/05	
4-Bromophenyl phenyl ether	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	
Butyl benzyl phthalate	EPA 625	5A05039	0.34	5.0	ND	0.962	01/05/05	01/14/05	
4-Chloroaniline	EPA 625	5A05039	0.20	2.0	ND	0.962	01/05/05	01/14/05	
2-Chloronaphthalene	EPA 625	5A05039	0.059	0.50	ND	0.962	01/05/05	01/14/05	
4-Chloro-3-methylphenol	EPA 625	5A05039	0.34	2.0	ND	0.962	01/05/05	01/14/05	
4-Chlorophenyl phenyl ether	EPA 625	5A05039	0.056	0.50	ND	0.962	01/05/05	01/14/05	
2-Chlorophenol	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	
Chrysene	EPA 625	5A05039	0.072	0.50	ND	0.962	01/05/05	01/14/05	
Dibenz(a,h)anthracene	EPA 625	5A05039	0.083	0.50	ND	0.962	01/05/05	01/14/05	
Dibenzofuran	EPA 625	5A05039	0.075	0.50	ND	0.962	01/05/05	01/14/05	
Di-n-butyl phthalate	EPA 625	5A05039	0.26	2.0	ND	0.962	01/05/05	01/14/05	
1,2-Dichlorobenzene	EPA 625	5A05039	0.11	0.50	ND	0.962	01/05/05	01/14/05	
1,3-Dichlorobenzene	EPA 625	5A05039	0.13	0.50	ND	0.962	01/05/05	01/14/05	
1,4-Dichlorobenzene	EPA 625	5A05039	0.050	0.50	ND	0.962	01/05/05	01/14/05	
3,3-Dichlorobenzidine	EPA 625	5A05039	0.93	5.0	ND	0.962	01/05/05	01/14/05	
2,4-Dichlorophenol	EPA 625	5A05039	0.21	2.0	ND	0.962	01/05/05	01/14/05	
Diethyl phthalate	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	
2,4-Dimethylphenol	EPA 625	5A05039	0.31	2.0	ND	0.962	01/05/05	01/14/05	
Dimethyl phthalate	EPA 625	5A05039	0.081	0.50	ND	0.962	01/05/05	01/14/05	
4,6-Dinitro-2-methylphenol	EPA 625	5A05039	0.38	5.0	ND	0.962	01/05/05	01/14/05	
2,4-Dinitrophenol	EPA 625	5A05039	2.7	5.0	ND	0.962	01/05/05	01/14/05	L
2,4-Dinitrotoluene	EPA 625	5A05039	0.23	5.0	ND	0.962	01/05/05	01/14/05	
2,6-Dinitrotoluene	EPA 625	5A05039	0.24	5.0	ND	0.962	01/05/05	01/14/05	
Di-n-octyl phthalate	EPA 625	5A05039	0.17	5.0	ND	0.962	01/05/05	01/14/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A05039	0.087	1.0	ND	0.962	01/05/05	01/14/05	

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Fluoranthene	EPA 625	5A05039	0.089	0.50	ND	0.962	01/05/05	01/14/05	
Fluorene	EPA 625	5A05039	0.075	0.50	ND	0.962	01/05/05	01/14/05	
Hexachlorobenzene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	
Hexachlorobutadiene	EPA 625	5A05039	0.38	2.0	ND	0.962	01/05/05	01/14/05	
Hexachlorocyclopentadiene	EPA 625	5A05039	1.8	5.0	ND	0.962	01/05/05	01/14/05	
Hexachloroethane	EPA 625	5A05039	0.51	3.0	ND	0.962	01/05/05	01/14/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5A05039	0.19	2.0	ND	0.962	01/05/05	01/14/05	
<b>Isophorone</b>	EPA 625	5A05039	0.059	1.0	<b>0.12</b>	0.962	01/05/05	01/14/05	J
2-Methylnaphthalene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	
2-Methylphenol	EPA 625	5A05039	0.28	2.0	ND	0.962	01/05/05	01/14/05	
4-Methylphenol	EPA 625	5A05039	0.20	5.0	ND	0.962	01/05/05	01/14/05	
Naphthalene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	
2-Nitroaniline	EPA 625	5A05039	0.18	5.0	ND	0.962	01/05/05	01/14/05	
3-Nitroaniline	EPA 625	5A05039	0.35	5.0	ND	0.962	01/05/05	01/14/05	
4-Nitroaniline	EPA 625	5A05039	0.49	5.0	ND	0.962	01/05/05	01/14/05	
Nitrobenzene	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	
2-Nitrophenol	EPA 625	5A05039	0.23	2.0	ND	0.962	01/05/05	01/14/05	
4-Nitrophenol	EPA 625	5A05039	0.73	5.0	ND	0.962	01/05/05	01/14/05	
N-Nitrosodimethylamine	EPA 625	5A05039	0.22	2.0	ND	0.962	01/05/05	01/14/05	
N-Nitroso-di-n-propylamine	EPA 625	5A05039	0.18	2.0	ND	0.962	01/05/05	01/14/05	
N-Nitrosodiphenylamine	EPA 625	5A05039	0.077	1.0	ND	0.962	01/05/05	01/14/05	
Pentachlorophenol	EPA 625	5A05039	0.78	2.0	ND	0.962	01/05/05	01/14/05	
Phenanthrene	EPA 625	5A05039	0.071	0.50	ND	0.962	01/05/05	01/14/05	
Phenol	EPA 625	5A05039	0.14	1.0	ND	0.962	01/05/05	01/14/05	
Pyrene	EPA 625	5A05039	0.059	0.50	ND	0.962	01/05/05	01/14/05	
1,2,4-Trichlorobenzene	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	
2,4,5-Trichlorophenol	EPA 625	5A05039	0.075	2.0	ND	0.962	01/05/05	01/14/05	
2,4,6-Trichlorophenol	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	
Surrogate: 2-Fluorophenol (35-120%)									78 %
Surrogate: Phenol-d6 (45-120%)									86 %
Surrogate: 2,4,6-Tribromophenol (50-125%)									91 %
Surrogate: Nitrobenzene-d5 (45-120%)									78 %
Surrogate: 2-Fluorobiphenyl (45-120%)									80 %
Surrogate: Terphenyl-d14 (45-135%)									83 %

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Aldrin	EPA 608	5A05041	0.029	0.10	ND	0.962	01/05/05	01/05/05	
alpha-BHC	EPA 608	5A05041	0.010	0.10	ND	0.962	01/05/05	01/05/05	
beta-BHC	EPA 608	5A05041	0.011	0.10	ND	0.962	01/05/05	01/05/05	
delta-BHC	EPA 608	5A05041	0.010	0.20	ND	0.962	01/05/05	01/05/05	
gamma-BHC (Lindane)	EPA 608	5A05041	0.0097	0.10	ND	0.962	01/05/05	01/05/05	
Chlordane	EPA 608	5A05041	0.18	1.0	ND	0.962	01/05/05	01/05/05	
4,4'-DDD	EPA 608	5A05041	0.011	0.10	ND	0.962	01/05/05	01/05/05	
4,4'-DDE	EPA 608	5A05041	0.017	0.10	ND	0.962	01/05/05	01/05/05	
4,4'-DDT	EPA 608	5A05041	0.015	0.10	ND	0.962	01/05/05	01/05/05	
Dieldrin	EPA 608	5A05041	0.010	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan I	EPA 608	5A05041	0.015	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan II	EPA 608	5A05041	0.037	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan sulfate	EPA 608	5A05041	0.013	0.20	ND	0.962	01/05/05	01/05/05	
Endrin	EPA 608	5A05041	0.0082	0.10	ND	0.962	01/05/05	01/05/05	
Endrin aldehyde	EPA 608	5A05041	0.045	0.10	ND	0.962	01/05/05	01/05/05	
Endrin ketone	EPA 608	5A05041	0.020	0.10	ND	0.962	01/05/05	01/05/05	
Heptachlor	EPA 608	5A05041	0.030	0.10	ND	0.962	01/05/05	01/05/05	
Heptachlor epoxide	EPA 608	5A05041	0.012	0.10	ND	0.962	01/05/05	01/05/05	
Methoxychlor	EPA 608	5A05041	0.034	0.10	ND	0.962	01/05/05	01/05/05	
Toxaphene	EPA 608	5A05041	0.77	5.0	ND	0.962	01/05/05	01/05/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					43 %				
Surrogate: Decachlorobiphenyl (45-120%)					66 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5A05041	0.067	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1221	EPA 608	5A05041	0.057	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1232	EPA 608	5A05041	0.13	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1242	EPA 608	5A05041	0.12	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1248	EPA 608	5A05041	0.21	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1254	EPA 608	5A05041	0.16	1.0	ND	0.962	01/05/05	01/05/05	
Aroclor 1260	EPA 608	5A05041	0.17	1.0	ND	0.962	01/05/05	01/05/05	
Surrogate: Decachlorobiphenyl (45-120%)					86 %				

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Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: mg/l									
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.025	1	01/05/05	01/06/05	
Boron	EPA 200.7	5A05093	0.0074	0.050	0.060	1	01/05/05	01/05/05	
Iron	EPA 200.8	5A05092	0.0032	0.010	1.5	1	01/05/05	01/06/05	M2

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Sampled: 01/04/05  
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.87	1	01/05/05	01/06/05	J
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.80	1	01/05/05	01/06/05	J
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.14	1	01/05/05	01/06/05	J
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.25	1	01/05/05	01/06/05	J
Chromium	EPA 200.8	5A05092	0.26	1.0	3.5	1	01/05/05	01/06/05	
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.59	1	01/05/05	01/06/05	J
Copper	EPA 200.8	5A05092	0.49	2.0	6.3	1	01/05/05	01/06/05	
Lead	EPA 200.8	5A05092	0.13	1.0	1.4	1	01/05/05	01/06/05	
Manganese	EPA 200.8	5A05092	0.44	1.0	26	1	01/05/05	01/06/05	
Mercury	EPA 245.1	5A06051	0.063	0.20	0.25	1	01/06/05	01/06/05	
Nickel	EPA 200.8	5A05092	0.15	1.0	3.5	1	01/05/05	01/06/05	
Selenium	EPA 200.8	5A05092	0.36	2.0	0.63	1	01/05/05	01/06/05	J
Silver	EPA 200.8	5A05092	0.089	1.0	ND	1	01/05/05	01/06/05	
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	
Vanadium	EPA 200.8	5A05092	0.86	1.0	2.4	1	01/05/05	01/06/05	
Zinc	EPA 200.8	5A05092	3.1	20	22	1	01/05/05	01/06/05	

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Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5A05067	0.30	0.50	ND	1	01/05/05	01/05/05	
Biochemical Oxygen Demand	EPA 405.1	5A05054	0.59	2.0	1.1	1	01/05/05	01/10/05	J
Chloride	EPA 300.0	5A04042	0.26	0.50	4.2	1	01/04/05	01/04/05	
Fluoride	EPA 300.0	5A04042	0.074	0.50	0.25	1	01/04/05	01/04/05	J
Nitrate/Nitrite-N	EPA 300.0	5A04042	0.072	0.26	2.1	1	01/04/05	01/04/05	
Oil & Grease	EPA 413.1	5A05068	0.94	5.0	ND	1	01/05/05	01/05/05	
Residual Chlorine	EPA 330.5	5A05066	0.10	0.10	ND	1	01/05/05	01/05/05	
Sulfate	EPA 300.0	5A04042	0.18	0.50	5.9	1	01/04/05	01/04/05	
Surfactants (MBAS)	SM5540-C	5A04104	4.4	10	ND	100	01/04/05	01/04/05	RL-1
Total Dissolved Solids	SM2540C	5A06082	10	10	120	1	01/06/05	01/06/05	
Total Organic Carbon	EPA 415.1	5A05058	0.56	1.0	12	1	01/05/05	01/05/05	
Total Suspended Solids	EPA 160.2	5A07077	10	10	ND	1	01/07/05	01/07/05	

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5A05055	0.10	0.10	ND	1	01/05/05	01/05/05	

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Sampled: 01/04/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: NTU									
Turbidity	EPA 180.1	5A05079	0.040	1.0	30	1	01/05/05	01/05/05	

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Sampled: 01/04/05  
Received: 01/04/05

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.17	1	01/05/05	01/05/05	B, H-1, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05	
Perchlorate	EPA 314.0	5A06055	0.80	4.0	ND	1	01/06/05	01/06/05	

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Received: 01/04/05

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A06081	1.0	1.0	100	1	01/06/05	01/06/05	

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**1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5A1203	0.49	1.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-125%)					93 %				

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Sampled: 01/04/05  
Received: 01/04/05

**SHORT HOLD TIME DETAIL REPORT**

Sample ID: Outfall 011 - grab (IOA0121-01) - Water	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
EPA 160.5	2	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 09:28	01/05/2005 10:00
EPA 180.1	2	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 14:00	01/05/2005 15:00
EPA 218.6	1	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 11:15	01/05/2005 12:03
EPA 300.0	2	01/04/2005 10:15	01/04/2005 18:30	01/04/2005 22:30	01/04/2005 23:22
EPA 330.5	1	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 09:20	01/05/2005 10:00
EPA 405.1	2	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 14:00	01/10/2005 19:00
EPA 624	3	01/04/2005 10:15	01/04/2005 18:30	01/05/2005 00:00	01/05/2005 17:00
SM5540-C	2	01/04/2005 10:15	01/04/2005 18:30	01/04/2005 21:33	01/04/2005 22:04

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Sampled: 01/04/05  
Received: 01/04/05

METHOD BLANK/QC DATA

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06070 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06070-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 01/06/2005 (5A06070-BS1)</b>											
Total Recoverable Hydrocarbons	4.83	1.0	0.31	mg/l	5.00		97	65-120			M-NR1
<b>LCS Dup Analyzed: 01/06/2005 (5A06070-BSD1)</b>											
Total Recoverable Hydrocarbons	4.65	1.0	0.31	mg/l	5.00		93	65-120	4	20	

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 Received: 01/04/05

**METHOD BLANK/QC DATA**

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06045 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06045-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.131			mg/l	0.200		66	40-125			
<b>LCS Analyzed: 01/06/2005 (5A06045-BS1)</b>											
EFH (C13 - C40)	0.671	0.50	0.082	mg/l	0.775		87	40-120			M-NR1
Surrogate: n-Octacosane	0.136			mg/l	0.200		68	40-125			
<b>LCS Dup Analyzed: 01/06/2005 (5A06045-BSD1)</b>											
EFH (C13 - C40)	0.682	0.50	0.082	mg/l	0.775		88	40-120	2	25	
Surrogate: n-Octacosane	0.149			mg/l	0.200		74	40-125			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5A06001 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06001-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00910			mg/l	0.0100		91	65-140			
<b>LCS Analyzed: 01/06/2005 (5A06001-BS1)</b>											
GRO (C4 - C12)	0.222	0.10	0.050	mg/l	0.220		101	70-140			
Surrogate: 4-BFB (FID)	0.0108			mg/l	0.0100		108	65-140			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06001-MS1) Source: INL1858-04</b>											
GRO (C4 - C12)	0.233	0.10	0.050	mg/l	0.220	ND	106	60-140			
Surrogate: 4-BFB (FID)	0.0110			mg/l	0.0100		110	65-140			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06001-MSD1) Source: INL1858-04</b>											
GRO (C4 - C12)	0.224	0.10	0.050	mg/l	0.220	ND	102	60-140	4	20	
Surrogate: 4-BFB (FID)	0.0107			mg/l	0.0100		107	65-140			

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

**METHOD BLANK/QC DATA**

**FREON 113 (EPA 8260B)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05017 Extracted: 01/05/05</b>										
<b>Blank Analyzed: 01/05/2005 (5A05017-BLK1)</b>										
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101		80-120	
Surrogate: Toluene-d8	25.2			ug/l	25.0		101		80-120	
Surrogate: 4-Bromofluorobenzene	24.3			ug/l	25.0		97		80-120	

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5A05017 Extracted: 01/05/05</b>										
<b>Blank Analyzed: 01/05/2005 (5A05017-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	0.700	5.0	0.48	ug/l						J
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120		
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120		
Surrogate: 4-Bromofluorobenzene	24.3			ug/l	25.0		97	80-120		

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Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05017 Extracted: 01/05/05</b>										
<b>LCS Analyzed: 01/05/2005 (5A05017-BS1)</b>										
Benzene	21.5	1.0	0.28	ug/l	25.0		86 70-120			
Bromodichloromethane	27.4	2.0	0.30	ug/l	25.0		110 70-140			
Bromoform	26.8	5.0	0.32	ug/l	25.0		107 55-135			
Bromomethane	26.2	5.0	0.34	ug/l	25.0		105 60-140			
Carbon tetrachloride	29.0	0.50	0.28	ug/l	25.0		116 70-140			
Chlorobenzene	23.2	2.0	0.36	ug/l	25.0		93 80-125			
Chloroethane	22.8	5.0	0.33	ug/l	25.0		91 60-145			
Chloroform	25.3	2.0	0.33	ug/l	25.0		101 75-130			
Chloromethane	19.5	5.0	0.30	ug/l	25.0		78 40-145			
Dibromochloromethane	25.3	2.0	0.28	ug/l	25.0		101 65-145			
1,2-Dichlorobenzene	24.6	2.0	0.32	ug/l	25.0		98 80-120			
1,3-Dichlorobenzene	24.1	2.0	0.35	ug/l	25.0		96 80-120			
1,4-Dichlorobenzene	23.7	2.0	0.37	ug/l	25.0		95 80-120			
1,1-Dichloroethane	21.9	2.0	0.27	ug/l	25.0		88 70-135			
1,2-Dichloroethane	27.6	0.50	0.28	ug/l	25.0		110 60-150			
1,1-Dichloroethene	21.4	5.0	0.32	ug/l	25.0		86 75-135			
trans-1,2-Dichloroethene	23.2	2.0	0.27	ug/l	25.0		93 70-130			
1,2-Dichloropropane	20.8	2.0	0.35	ug/l	25.0		83 70-120			
cis-1,3-Dichloropropene	23.4	2.0	0.22	ug/l	25.0		94 75-130			
trans-1,3-Dichloropropene	25.6	2.0	0.24	ug/l	25.0		102 75-135			
Ethylbenzene	23.6	2.0	0.25	ug/l	25.0		94 80-120			
Methylene chloride	20.9	5.0	0.48	ug/l	25.0		84 60-135			
1,1,2,2-Tetrachloroethane	24.6	2.0	0.24	ug/l	25.0		98 60-135			
Tetrachloroethene	24.6	2.0	0.32	ug/l	25.0		98 75-125			
Toluene	23.4	2.0	0.36	ug/l	25.0		94 75-120			
1,1,1-Trichloroethane	27.2	2.0	0.30	ug/l	25.0		109 75-140			
1,1,2-Trichloroethane	23.4	2.0	0.30	ug/l	25.0		94 70-125			
Trichloroethene	24.1	2.0	0.26	ug/l	25.0		96 80-120			
Trichlorofluoromethane	27.7	5.0	0.34	ug/l	25.0		111 65-145			
Vinyl chloride	23.2	0.50	0.26	ug/l	25.0		93 50-130			
Surrogate: Dibromofluoromethane	25.5			ug/l	25.0		102 80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103 80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101 80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05017 Extracted: 01/05/05</b>											
<b>Matrix Spike Analyzed: 01/05/2005 (5A05017-MS1)</b>						<b>Source: IOA0112-01</b>					
Benzene	21.0	1.0	0.28	ug/l	25.0	ND	84	70-120			
Bromodichloromethane	26.7	2.0	0.30	ug/l	25.0	ND	107	70-140			
Bromoform	23.8	5.0	0.32	ug/l	25.0	ND	95	55-140			
Bromomethane	24.6	5.0	0.34	ug/l	25.0	ND	98	50-145			
Carbon tetrachloride	28.8	0.50	0.28	ug/l	25.0	ND	115	70-145			
Chlorobenzene	22.8	2.0	0.36	ug/l	25.0	ND	91	80-125			
Chloroethane	21.5	5.0	0.33	ug/l	25.0	ND	86	50-145			
Chloroform	24.7	2.0	0.33	ug/l	25.0	ND	99	70-135			
Chloromethane	18.0	5.0	0.30	ug/l	25.0	ND	72	35-145			
Dibromochloromethane	23.9	2.0	0.28	ug/l	25.0	ND	96	65-145			
1,2-Dichlorobenzene	24.0	2.0	0.32	ug/l	25.0	ND	96	75-130			
1,3-Dichlorobenzene	23.9	2.0	0.35	ug/l	25.0	ND	96	75-130			
1,4-Dichlorobenzene	23.7	2.0	0.37	ug/l	25.0	ND	95	80-120			
1,1-Dichloroethane	21.2	2.0	0.27	ug/l	25.0	ND	85	65-135			
1,2-Dichloroethane	27.2	0.50	0.28	ug/l	25.0	ND	109	60-150			
1,1-Dichloroethene	21.1	5.0	0.32	ug/l	25.0	ND	84	65-140			
trans-1,2-Dichloroethene	22.2	2.0	0.27	ug/l	25.0	ND	89	65-135			
1,2-Dichloropropane	20.1	2.0	0.35	ug/l	25.0	ND	80	65-130			
cis-1,3-Dichloropropene	22.4	2.0	0.22	ug/l	25.0	ND	90	70-140			
trans-1,3-Dichloropropene	24.7	2.0	0.24	ug/l	25.0	ND	99	70-140			
Ethylbenzene	23.3	2.0	0.25	ug/l	25.0	ND	93	70-130			
Methylene chloride	19.6	5.0	0.48	ug/l	25.0	ND	78	60-135			
1,1,2,2-Tetrachloroethane	22.4	2.0	0.24	ug/l	25.0	ND	90	60-145			
Tetrachloroethene	24.5	2.0	0.32	ug/l	25.0	ND	98	70-130			
Toluene	23.2	2.0	0.36	ug/l	25.0	ND	93	70-120			
1,1,1-Trichloroethane	26.8	2.0	0.30	ug/l	25.0	ND	107	75-140			
1,1,2-Trichloroethane	21.9	2.0	0.30	ug/l	25.0	ND	88	60-135			
Trichloroethene	23.3	2.0	0.26	ug/l	25.0	ND	93	70-125			
Trichlorofluoromethane	27.1	5.0	0.34	ug/l	25.0	ND	108	55-145			
Vinyl chloride	21.8	0.50	0.26	ug/l	25.0	ND	87	40-135			
Surrogate: Dibromofluoromethane	25.5			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102	80-120			

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: SA05017 Extracted: 01/05/05</b>											
<b>Matrix Spike Dup Analyzed: 01/05/2005 (SA05017-MSD1)</b>						<b>Source: IOA0112-01</b>					
Benzene	22.3	1.0	0.28	ug/l	25.0	ND	89	70-120	6	20	
Bromodichloromethane	28.0	2.0	0.30	ug/l	25.0	ND	112	70-140	5	20	
Bromoform	25.6	5.0	0.32	ug/l	25.0	ND	102	55-140	7	25	
Bromomethane	26.4	5.0	0.34	ug/l	25.0	ND	106	50-145	7	25	
Carbon tetrachloride	30.1	0.50	0.28	ug/l	25.0	ND	120	70-145	4	25	
Chlorobenzene	24.1	2.0	0.36	ug/l	25.0	ND	96	80-125	6	20	
Chloroethane	23.7	5.0	0.33	ug/l	25.0	ND	95	50-145	10	25	
Chloroform	25.6	2.0	0.33	ug/l	25.0	ND	102	70-135	4	20	
Chloromethane	19.5	5.0	0.30	ug/l	25.0	ND	78	35-145	8	25	
Dibromochloromethane	25.4	2.0	0.28	ug/l	25.0	ND	102	65-145	6	25	
1,2-Dichlorobenzene	25.5	2.0	0.32	ug/l	25.0	ND	102	75-130	6	20	
1,3-Dichlorobenzene	25.0	2.0	0.35	ug/l	25.0	ND	100	75-130	4	20	
1,4-Dichlorobenzene	24.7	2.0	0.37	ug/l	25.0	ND	99	80-120	4	20	
1,1-Dichloroethane	22.4	2.0	0.27	ug/l	25.0	ND	90	65-135	6	20	
1,2-Dichloroethane	28.1	0.50	0.28	ug/l	25.0	ND	112	60-150	3	20	
1,1-Dichloroethene	22.3	5.0	0.32	ug/l	25.0	ND	89	65-140	6	20	
trans-1,2-Dichloroethene	23.5	2.0	0.27	ug/l	25.0	ND	94	65-135	6	20	
1,2-Dichloropropane	21.5	2.0	0.35	ug/l	25.0	ND	86	65-130	7	20	
cis-1,3-Dichloropropene	24.2	2.0	0.22	ug/l	25.0	ND	97	70-140	8	20	
trans-1,3-Dichloropropene	26.0	2.0	0.24	ug/l	25.0	ND	104	70-140	5	25	
Ethylbenzene	24.3	2.0	0.25	ug/l	25.0	ND	97	70-130	4	20	
Methylene chloride	20.9	5.0	0.48	ug/l	25.0	ND	84	60-135	6	20	
1,1,2,2-Tetrachloroethane	24.7	2.0	0.24	ug/l	25.0	ND	99	60-145	10	30	
Tetrachloroethene	25.3	2.0	0.32	ug/l	25.0	ND	101	70-130	3	20	
Toluene	24.5	2.0	0.36	ug/l	25.0	ND	98	70-120	5	20	
1,1,1-Trichloroethane	27.5	2.0	0.30	ug/l	25.0	ND	110	75-140	3	20	
1,1,2-Trichloroethane	23.5	2.0	0.30	ug/l	25.0	ND	94	60-135	7	25	
Trichloroethene	24.3	2.0	0.26	ug/l	25.0	ND	97	70-125	4	20	
Trichlorofluoromethane	27.8	5.0	0.34	ug/l	25.0	ND	111	55-145	3	25	
Vinyl chloride	23.3	0.50	0.26	ug/l	25.0	ND	93	40-135	7	30	
Surrogate: Dibromofluoromethane	25.5			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102	80-120			

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05012 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05012-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96	80-120			
<b>LCS Analyzed: 01/05/2005 (5A05012-BS1)</b>											
2-Chloroethyl vinyl ether	24.3	5.0	1.3	ug/l	25.0		97	20-175			
Surrogate: Dibromofluoromethane	26.1			ug/l	25.0		104	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	Data Qualifiers
<b>Batch: 5A05017 Extracted: 01/05/05</b>									
<b>Blank Analyzed: 01/05/2005 (5A05017-BLK1)</b>									
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l					
Cyclohexane	ND	2.5	N/A	ug/l					

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 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A05039-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	ND	5.0	0.34	ug/l							
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	ND	2.0	0.26	ug/l							
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	ND	1.0	0.12	ug/l							
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>										
<b>Blank Analyzed: 01/13/2005 (5A05039-BLK1)</b>										
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l						
2,4-Dinitrophenol	ND	5.0	2.7	ug/l						
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l						
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l						
Di-n-octyl phthalate	ND	5.0	0.17	ug/l						
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l						
Fluoranthene	ND	0.50	0.089	ug/l						
Fluorene	ND	0.50	0.075	ug/l						
Hexachlorobenzene	ND	1.0	0.13	ug/l						
Hexachlorobutadiene	ND	2.0	0.38	ug/l						
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l						
Hexachloroethane	ND	3.0	0.51	ug/l						
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l						
Isophorone	ND	1.0	0.059	ug/l						
2-Methylnaphthalene	ND	1.0	0.13	ug/l						
2-Methylphenol	ND	2.0	0.28	ug/l						
4-Methylphenol	ND	5.0	0.20	ug/l						
Naphthalene	ND	1.0	0.13	ug/l						
2-Nitroaniline	ND	5.0	0.18	ug/l						
3-Nitroaniline	ND	5.0	0.35	ug/l						
4-Nitroaniline	ND	5.0	0.49	ug/l						
Nitrobenzene	ND	1.0	0.10	ug/l						
2-Nitrophenol	ND	2.0	0.23	ug/l						
4-Nitrophenol	ND	5.0	0.73	ug/l						
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l						
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l						
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l						
Pentachlorophenol	ND	2.0	0.78	ug/l						
Phenanthrene	ND	0.50	0.071	ug/l						
Phenol	ND	1.0	0.14	ug/l						
Pyrene	ND	0.50	0.059	ug/l						
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l						
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l						
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l						
Surrogate: 2-Fluorophenol	15.2			ug/l	20.0		76		35-120	

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A05039-BLK1)</b>											
Surrogate: Phenol-d6	15.8			ug/l	20.0		79	45-120			
Surrogate: 2,4,6-Tribromophenol	16.1			ug/l	20.0		80	50-125			
Surrogate: Nitrobenzene-d5	7.68			ug/l	10.0		77	45-120			
Surrogate: 2-Fluorobiphenyl	7.72			ug/l	10.0		77	45-120			
Surrogate: Terphenyl-d14	8.24			ug/l	10.0		82	45-135			
<b>LCS Analyzed: 01/13/2005 (5A05039-BS1)</b>											
Acenaphthene	8.04	0.50	0.10	ug/l	10.0		80	55-120			
Acenaphthylene	8.10	0.50	0.10	ug/l	10.0		81	55-120			
Aniline	8.58	10	2.9	ug/l	10.0		86	30-120			J
Anthracene	8.44	0.50	0.083	ug/l	10.0		84	60-120			
Benzidine	ND	5.0	2.4	ug/l	10.0			20-180			L2
Benzoic acid	7.32	20	3.7	ug/l	10.0		73	30-125			J
Benzo(a)anthracene	8.98	5.0	0.038	ug/l	10.0		90	65-120			
Benzo(a)pyrene	9.20	2.0	0.14	ug/l	10.0		92	55-125			
Benzo(b)fluoranthene	8.46	2.0	0.050	ug/l	10.0		85	50-125			
Benzo(g,h,i)perylene	9.04	5.0	0.059	ug/l	10.0		90	35-160			
Benzo(k)fluoranthene	7.08	0.50	0.053	ug/l	10.0		71	50-125			
Benzyl alcohol	9.78	5.0	0.21	ug/l	10.0		98	40-130			
Bis(2-chloroethoxy)methane	8.88	0.50	0.072	ug/l	10.0		89	55-120			
Bis(2-chloroethyl)ether	8.22	0.50	0.084	ug/l	10.0		82	50-120			
Bis(2-chloroisopropyl)ether	8.22	0.50	0.11	ug/l	10.0		82	50-120			
Bis(2-ethylhexyl)phthalate	9.64	5.0	1.1	ug/l	10.0		96	65-125			
4-Bromophenyl phenyl ether	8.70	1.0	0.12	ug/l	10.0		87	55-125			
Butyl benzyl phthalate	9.66	5.0	0.34	ug/l	10.0		97	60-125			
4-Chloroaniline	9.02	2.0	0.20	ug/l	10.0		90	55-120			
2-Chloronaphthalene	7.50	0.50	0.059	ug/l	10.0		75	60-120			
4-Chloro-3-methylphenol	10.0	2.0	0.34	ug/l	10.0		100	60-120			
4-Chlorophenyl phenyl ether	8.56	0.50	0.056	ug/l	10.0		86	55-120			
2-Chlorophenol	8.06	1.0	0.12	ug/l	10.0		81	45-120			
Chrysene	8.56	0.50	0.072	ug/l	10.0		86	65-120			
Dibenz(a,h)anthracene	9.22	0.50	0.083	ug/l	10.0		92	40-160			
Dibenzofuran	8.28	0.50	0.075	ug/l	10.0		83	60-120			
Di-n-butyl phthalate	9.90	2.0	0.26	ug/l	10.0		99	65-125			
1,2-Dichlorobenzene	5.94	0.50	0.11	ug/l	10.0		59	40-120			
1,3-Dichlorobenzene	5.26	0.50	0.13	ug/l	10.0		53	40-120			

M-NR1

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A05039-BS1)</b>											
1,4-Dichlorobenzene	5.56	0.50	0.050	ug/l	10.0		56	40-120			M-NRI
3,3-Dichlorobenzidine	8.32	5.0	0.93	ug/l	10.0		83	50-170			
2,4-Dichlorophenol	9.42	2.0	0.21	ug/l	10.0		94	55-120			
Diethyl phthalate	9.50	1.0	0.12	ug/l	10.0		95	60-120			
2,4-Dimethylphenol	6.64	2.0	0.31	ug/l	10.0		66	35-120			
Dimethyl phthalate	9.00	0.50	0.081	ug/l	10.0		90	60-120			
4,6-Dinitro-2-methylphenol	7.48	5.0	0.38	ug/l	10.0		75	55-120			
2,4-Dinitrophenol	13.3	5.0	2.7	ug/l	10.0		133	40-140			
2,4-Dinitrotoluene	9.12	5.0	0.23	ug/l	10.0		91	60-140			
2,6-Dinitrotoluene	8.94	5.0	0.24	ug/l	10.0		89	65-125			
Di-n-octyl phthalate	10.0	5.0	0.17	ug/l	10.0		100	60-130			
1,2-Diphenylhydrazine/Azobenzene	10.0	1.0	0.087	ug/l	10.0		100	60-120			
Fluoranthene	8.74	0.50	0.089	ug/l	10.0		87	55-125			
Fluorene	8.68	0.50	0.075	ug/l	10.0		87	60-120			
Hexachlorobenzene	8.50	1.0	0.13	ug/l	10.0		85	50-120			
Hexachlorobutadiene	5.00	2.0	0.38	ug/l	10.0		50	45-120			
Hexachlorocyclopentadiene	5.06	5.0	1.8	ug/l	10.0		51	10-130			
Hexachloroethane	4.82	3.0	0.51	ug/l	10.0		48	40-120			
Indeno(1,2,3-cd)pyrene	9.04	2.0	0.19	ug/l	10.0		90	35-150			
Isophorone	9.58	1.0	0.059	ug/l	10.0		96	55-120			
2-Methylnaphthalene	7.52	1.0	0.13	ug/l	10.0		75	50-120			
2-Methylphenol	8.78	2.0	0.28	ug/l	10.0		88	45-120			
4-Methylphenol	8.94	5.0	0.20	ug/l	10.0		89	45-120			
Naphthalene	7.36	1.0	0.13	ug/l	10.0		74	50-120			
2-Nitroaniline	9.10	5.0	0.18	ug/l	10.0		91	60-130			
3-Nitroaniline	9.40	5.0	0.35	ug/l	10.0		94	50-140			
4-Nitroaniline	9.96	5.0	0.49	ug/l	10.0		100	45-160			
Nitrobenzene	8.44	1.0	0.10	ug/l	10.0		84	50-120			
2-Nitrophenol	8.76	2.0	0.23	ug/l	10.0		88	55-120			
4-Nitrophenol	9.36	5.0	0.73	ug/l	10.0		94	50-135			
N-Nitrosodimethylamine	8.98	2.0	0.22	ug/l	10.0		90	40-120			
N-Nitroso-di-n-propylamine	9.28	2.0	0.18	ug/l	10.0		93	50-120			
N-Nitrosodiphenylamine	8.98	1.0	0.077	ug/l	10.0		90	60-120			
Pentachlorophenol	8.90	2.0	0.78	ug/l	10.0		89	50-125			
Phenanthrene	8.20	0.50	0.071	ug/l	10.0		82	55-120			

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 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting			Spike Level	Source Result	%REC %REC	%REC Limits	RPD		Data Qualifiers
		Limit	MDL	Units					RPD	Limit	
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A05039-BS1)</b>											
Phenol	8.30	1.0	0.14	ug/l	10.0		83	45-120			M-NR1
Pyrene	8.84	0.50	0.059	ug/l	10.0		88	50-120			
1,2,4-Trichlorobenzene	6.16	1.0	0.10	ug/l	10.0		62	50-120			
2,4,5-Trichlorophenol	9.28	2.0	0.075	ug/l	10.0		93	60-120			
2,4,6-Trichlorophenol	9.40	1.0	0.10	ug/l	10.0		94	60-120			
Surrogate: 2-Fluorophenol	14.2			ug/l	20.0		71	35-120			
Surrogate: Phenol-d6	15.6			ug/l	20.0		78	45-120			
Surrogate: 2,4,6-Tribromophenol	16.0			ug/l	20.0		80	50-125			
Surrogate: Nitrobenzene-d5	7.74			ug/l	10.0		77	45-120			
Surrogate: 2-Fluorobiphenyl	7.48			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	7.84			ug/l	10.0		78	45-135			
<b>LCS Dup Analyzed: 01/13/2005 (5A05039-BSD1)</b>											
Acenaphthene	9.26	0.50	0.10	ug/l	10.0		93	55-120	14	20	
Acenaphthylene	9.22	0.50	0.10	ug/l	10.0		92	55-120	13	20	
Aniline	8.80	10	2.9	ug/l	10.0		88	30-120	3	25	J
Anthracene	9.46	0.50	0.083	ug/l	10.0		95	60-120	11	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-180		35	L2
Benzoic acid	8.04	20	3.7	ug/l	10.0		80	30-125	9	30	J
Benzo(a)anthracene	9.68	5.0	0.038	ug/l	10.0		97	65-120	8	20	
Benzo(a)pyrene	10.4	2.0	0.14	ug/l	10.0		104	55-125	12	25	
Benzo(b)fluoranthene	10.8	2.0	0.050	ug/l	10.0		108	50-125	24	25	
Benzo(g,h,i)perylene	9.96	5.0	0.059	ug/l	10.0		100	35-160	10	25	
Benzo(k)fluoranthene	8.28	0.50	0.053	ug/l	10.0		83	50-125	16	20	
Benzyl alcohol	10.9	5.0	0.21	ug/l	10.0		109	40-130	11	20	
Bis(2-chloroethoxy)methane	10.0	0.50	0.072	ug/l	10.0		100	55-120	12	20	
Bis(2-chloroethyl)ether	9.20	0.50	0.084	ug/l	10.0		92	50-120	11	20	
Bis(2-chloroisopropyl)ether	9.20	0.50	0.11	ug/l	10.0		92	50-120	11	20	
Bis(2-ethylhexyl)phthalate	10.7	5.0	1.1	ug/l	10.0		107	65-125	10	20	
4-Bromophenyl phenyl ether	9.66	1.0	0.12	ug/l	10.0		97	55-125	10	25	
Butyl benzyl phthalate	10.7	5.0	0.34	ug/l	10.0		107	60-125	10	20	
4-Chloroaniline	9.86	2.0	0.20	ug/l	10.0		99	55-120	9	25	
2-Chloronaphthalene	8.88	0.50	0.059	ug/l	10.0		89	60-120	17	20	
4-Chloro-3-methylphenol	10.7	2.0	0.34	ug/l	10.0		107	60-120	7	25	
4-Chlorophenyl phenyl ether	9.56	0.50	0.056	ug/l	10.0		96	55-120	11	20	
2-Chlorophenol	9.18	1.0	0.12	ug/l	10.0		92	45-120	13	25	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>LCS Dup Analyzed: 01/13/2005 (5A05039-BSD1)</b>											
Chrysene	9.20	0.50	0.072	ug/l	10.0	92	65-120	7	20		
Dibenz(a,h)anthracene	10.5	0.50	0.083	ug/l	10.0	105	40-160	13	25		
Dibenzofuran	9.46	0.50	0.075	ug/l	10.0	95	60-120	13	20		
Di-n-butyl phthalate	10.9	2.0	0.26	ug/l	10.0	109	65-125	10	20		
1,2-Dichlorobenzene	6.42	0.50	0.11	ug/l	10.0	64	40-120	8	25		
1,3-Dichlorobenzene	6.00	0.50	0.13	ug/l	10.0	60	40-120	13	25		
1,4-Dichlorobenzene	6.08	0.50	0.050	ug/l	10.0	61	40-120	9	25		
3,3-Dichlorobenzidine	9.06	5.0	0.93	ug/l	10.0	91	50-170	9	25		
2,4-Dichlorophenol	10.3	2.0	0.21	ug/l	10.0	103	55-120	9	20		
Diethyl phthalate	10.3	1.0	0.12	ug/l	10.0	103	60-120	8	20		
2,4-Dimethylphenol	8.38	2.0	0.31	ug/l	10.0	84	35-120	23	25		
Dimethyl phthalate	10.1	0.50	0.081	ug/l	10.0	101	60-120	12	20		
4,6-Dinitro-2-methylphenol	8.26	5.0	0.38	ug/l	10.0	83	55-120	10	25		
2,4-Dinitrophenol	14.5	5.0	2.7	ug/l	10.0	145	40-140	9	25		L
2,4-Dinitrotoluene	10.3	5.0	0.23	ug/l	10.0	103	60-140	12	20		
2,6-Dinitrotoluene	10.0	5.0	0.24	ug/l	10.0	100	65-125	11	20		
Di-n-octyl phthalate	11.4	5.0	0.17	ug/l	10.0	114	60-130	13	20		
1,2-Diphenylhydrazine/Azobenzene	11.3	1.0	0.087	ug/l	10.0	113	60-120	12	25		
Fluoranthene	10.1	0.50	0.089	ug/l	10.0	101	55-125	14	20		
Fluorene	9.80	0.50	0.075	ug/l	10.0	98	60-120	12	20		
Hexachlorobenzene	9.06	1.0	0.13	ug/l	10.0	91	50-120	6	20		
Hexachlorobutadiene	6.10	2.0	0.38	ug/l	10.0	61	45-120	20	25		
Hexachlorocyclopentadiene	6.92	5.0	1.8	ug/l	10.0	69	10-130	31	30		R-7
Hexachloroethane	5.42	3.0	0.51	ug/l	10.0	54	40-120	12	25		
Indeno(1,2,3-cd)pyrene	10.8	2.0	0.19	ug/l	10.0	108	35-150	18	25		
Isophorone	10.1	1.0	0.059	ug/l	10.0	101	55-120	5	20		
2-Methylnaphthalene	8.18	1.0	0.13	ug/l	10.0	82	50-120	8	20		
2-Methylphenol	10.0	2.0	0.28	ug/l	10.0	100	45-120	13	20		
4-Methylphenol	9.94	5.0	0.20	ug/l	10.0	99	45-120	11	20		
Naphthalene	7.96	1.0	0.13	ug/l	10.0	80	50-120	8	20		
2-Nitroaniline	10.2	5.0	0.18	ug/l	10.0	102	60-130	11	20		
3-Nitroaniline	10.4	5.0	0.35	ug/l	10.0	104	50-140	10	25		
4-Nitroaniline	11.5	5.0	0.49	ug/l	10.0	115	45-160	14	20		
Nitrobenzene	9.34	1.0	0.10	ug/l	10.0	93	50-120	10	25		
2-Nitrophenol	9.82	2.0	0.23	ug/l	10.0	98	55-120	11	25		

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05039 Extracted: 01/05/05</b>											
<b>LCS Dup Analyzed: 01/13/2005 (5A05039-BSD1)</b>											
4-Nitrophenol	10.9	5.0	0.73	ug/l	10.0	109	50-135	15	25		
N-Nitrosodimethylamine	10.6	2.0	0.22	ug/l	10.0	106	40-120	17	20		
N-Nitroso-di-n-propylamine	10.2	2.0	0.18	ug/l	10.0	102	50-120	9	20		
N-Nitrosodiphenylamine	9.94	1.0	0.077	ug/l	10.0	99	60-120	10	20		
Pentachlorophenol	10.0	2.0	0.78	ug/l	10.0	100	50-125	12	25		
Phenanthrene	9.12	0.50	0.071	ug/l	10.0	91	55-120	11	20		
Phenol	9.54	1.0	0.14	ug/l	10.0	95	45-120	14	25		
Pyrene	9.74	0.50	0.059	ug/l	10.0	97	50-120	10	25		
1,2,4-Trichlorobenzene	6.84	1.0	0.10	ug/l	10.0	68	50-120	10	20		
2,4,5-Trichlorophenol	10.2	2.0	0.075	ug/l	10.0	102	60-120	9	20		
2,4,6-Trichlorophenol	10.9	1.0	0.10	ug/l	10.0	109	60-120	15	20		
Surrogate: 2-Fluorophenol	16.5			ug/l	20.0	82	35-120				
Surrogate: Phenol-d6	17.4			ug/l	20.0	87	45-120				
Surrogate: 2,4,6-Tribromophenol	17.8			ug/l	20.0	89	50-125				
Surrogate: Nitrobenzene-d5	8.50			ug/l	10.0	85	45-120				
Surrogate: 2-Fluorobiphenyl	8.54			ug/l	10.0	85	45-120				
Surrogate: Terphenyl-d14	8.36			ug/l	10.0	84	45-135				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
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**Batch: 5A05041 Extracted: 01/05/05**

**Blank Analyzed: 01/05/2005 (5A05041-BLK1)**

Aldrin	ND	0.10	0.029	ug/l							
alpha-BHC	ND	0.10	0.010	ug/l							
beta-BHC	ND	0.10	0.011	ug/l							
delta-BHC	ND	0.20	0.010	ug/l							
gamma-BHC (Lindane)	ND	0.10	0.0097	ug/l							
Chlordane	ND	1.0	0.18	ug/l							
4,4'-DDD	ND	0.10	0.011	ug/l							
4,4'-DDE	ND	0.10	0.017	ug/l							
4,4'-DDT	ND	0.10	0.015	ug/l							
Dieldrin	ND	0.10	0.010	ug/l							
Endosulfan I	ND	0.10	0.015	ug/l							
Endosulfan II	ND	0.10	0.037	ug/l							
Endosulfan sulfate	ND	0.20	0.013	ug/l							
Endrin	ND	0.10	0.0082	ug/l							
Endrin aldehyde	ND	0.10	0.045	ug/l							
Endrin ketone	ND	0.10	0.020	ug/l							
Heptachlor	ND	0.10	0.030	ug/l							
Heptachlor epoxide	ND	0.10	0.012	ug/l							
Methoxychlor	ND	0.10	0.034	ug/l							
Toxaphene	ND	5.0	0.77	ug/l							
Surrogate: Tetrachloro-m-xylene	0.374			ug/l	0.500		75	35-120			
Surrogate: Decachlorobiphenyl	0.437			ug/l	0.500		87	45-120			

**LCS Analyzed: 01/05/2005 (5A05041-BS1)**

**M-NR1**

Aldrin	0.428	0.10	0.029	ug/l	0.500		86	45-115			
alpha-BHC	0.463	0.10	0.010	ug/l	0.500		93	45-115			
beta-BHC	0.456	0.10	0.011	ug/l	0.500		91	50-115			
delta-BHC	0.463	0.20	0.010	ug/l	0.500		93	55-120			
gamma-BHC (Lindane)	0.459	0.10	0.0097	ug/l	0.500		92	45-115			
4,4'-DDD	0.469	0.10	0.011	ug/l	0.500		94	60-120			
4,4'-DDE	0.477	0.10	0.017	ug/l	0.500		95	55-120			
4,4'-DDT	0.495	0.10	0.015	ug/l	0.500		99	60-130			
Dieldrin	0.469	0.10	0.010	ug/l	0.500		94	55-120			
Endosulfan I	0.441	0.10	0.015	ug/l	0.500		88	50-115			
Endosulfan II	0.456	0.10	0.037	ug/l	0.500		91	60-125			
Endosulfan sulfate	0.455	0.20	0.013	ug/l	0.500		91	60-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD Limit	Data Qualifiers
<b>Batch: 5A05041 Extracted: 01/05/05</b>										
<b>LCS Analyzed: 01/05/2005 (5A05041-BS1)</b>										
Endrin	0.511	0.10	0.0082	ug/l	0.500		102	55-125		M-NR1
Endrin aldehyde	0.474	0.10	0.045	ug/l	0.500		95	55-115		
Endrin ketone	0.462	0.10	0.020	ug/l	0.500		92	60-120		
Heptachlor	0.450	0.10	0.030	ug/l	0.500		90	45-115		
Heptachlor epoxide	0.443	0.10	0.012	ug/l	0.500		89	50-120		
Methoxychlor	0.466	0.10	0.034	ug/l	0.500		93	60-135		
Surrogate: Tetrachloro-m-xylene	0.368			ug/l	0.500		74	35-120		
Surrogate: Decachlorobiphenyl	0.459			ug/l	0.500		92	45-120		
<b>LCS Dup Analyzed: 01/05/2005 (5A05041-BSD1)</b>										
Aldrin	0.388	0.10	0.029	ug/l	0.500		78	45-115	10	30
alpha-BHC	0.425	0.10	0.010	ug/l	0.500		85	45-115	9	30
beta-BHC	0.447	0.10	0.011	ug/l	0.500		89	50-115	2	30
delta-BHC	0.467	0.20	0.010	ug/l	0.500		93	55-120	1	30
gamma-BHC (Lindane)	0.429	0.10	0.0097	ug/l	0.500		86	45-115	7	30
4,4'-DDD	0.484	0.10	0.011	ug/l	0.500		97	60-120	3	30
4,4'-DDE	0.471	0.10	0.017	ug/l	0.500		94	55-120	1	30
4,4'-DDT	0.501	0.10	0.015	ug/l	0.500		100	60-130	1	30
Dieldrin	0.462	0.10	0.010	ug/l	0.500		92	55-120	2	30
Endosulfan I	0.431	0.10	0.015	ug/l	0.500		86	50-115	2	30
Endosulfan II	0.458	0.10	0.037	ug/l	0.500		92	60-125	0	30
Endosulfan sulfate	0.463	0.20	0.013	ug/l	0.500		93	60-120	2	30
Endrin	0.506	0.10	0.0082	ug/l	0.500		101	55-125	1	30
Endrin aldehyde	0.484	0.10	0.045	ug/l	0.500		97	55-115	2	30
Endrin ketone	0.470	0.10	0.020	ug/l	0.500		94	60-120	2	30
Heptachlor	0.416	0.10	0.030	ug/l	0.500		83	45-115	8	30
Heptachlor epoxide	0.430	0.10	0.012	ug/l	0.500		86	50-120	3	30
Methoxychlor	0.477	0.10	0.034	ug/l	0.500		95	60-135	2	30
Surrogate: Tetrachloro-m-xylene	0.331			ug/l	0.500		66	35-120		
Surrogate: Decachlorobiphenyl	0.456			ug/l	0.500		91	45-120		

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5A05041 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05041-BLK1)</b>											
Aroclor 1016	ND	1.0	0.067	ug/l							
Aroclor 1221	ND	1.0	0.057	ug/l							
Aroclor 1232	ND	1.0	0.13	ug/l							
Aroclor 1242	ND	1.0	0.12	ug/l							
Aroclor 1248	ND	1.0	0.21	ug/l							
Aroclor 1254	ND	1.0	0.16	ug/l							
Aroclor 1260	ND	1.0	0.17	ug/l							
Surrogate: Decachlorobiphenyl	0.459			ug/l	0.500		92	45-120			
<b>LCS Analyzed: 01/05/2005 (5A05041-BS2)</b>											
Aroclor 1016	3.16	1.0	0.067	ug/l	4.00		79	50-115			M-NRI
Aroclor 1260	3.52	1.0	0.17	ug/l	4.00		88	60-115			
Surrogate: Decachlorobiphenyl	0.468			ug/l	0.500		94	45-120			
<b>LCS Dup Analyzed: 01/05/2005 (5A05041-BSD2)</b>											
Aroclor 1016	2.42	1.0	0.067	ug/l	4.00		60	50-115	27	30	
Aroclor 1260	3.53	1.0	0.17	ug/l	4.00		88	60-115	0	25	
Surrogate: Decachlorobiphenyl	0.475			ug/l	0.500		95	45-120			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
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**Batch: 5A05092 Extracted: 01/05/05**

**Blank Analyzed: 01/06/2005 (5A05092-BLK1)**

Antimony	ND	2.0	0.18	ug/l						
Arsenic	ND	1.0	0.49	ug/l						
Barium	ND	0.0010	0.00014	mg/l						
Beryllium	ND	0.50	0.037	ug/l						
Cadmium	ND	1.0	0.015	ug/l						
Chromium	ND	1.0	0.26	ug/l						
Cobalt	ND	1.0	0.10	ug/l						
Copper	ND	2.0	0.49	ug/l						
Iron	0.00392	0.010	0.0032	mg/l						J
Lead	ND	1.0	0.13	ug/l						
Manganese	0.632	1.0	0.44	ug/l						J
Nickel	ND	1.0	0.15	ug/l						
Selenium	ND	2.0	0.36	ug/l						
Silver	ND	1.0	0.089	ug/l						
Thallium	ND	1.0	0.075	ug/l						
Vanadium	ND	1.0	0.86	ug/l						
Zinc	ND	20	3.1	ug/l						

**LCS Analyzed: 01/06/2005 (5A05092-BS1)**

Antimony	86.6	2.0	0.18	ug/l	80.0		108	85-115		
Arsenic	87.1	1.0	0.49	ug/l	80.0		109	85-115		
Barium	0.0825	0.0010	0.00014	mg/l	0.0800		103	85-115		
Beryllium	81.7	0.50	0.037	ug/l	80.0		102	85-115		
Cadmium	79.6	1.0	0.015	ug/l	80.0		100	85-115		
Chromium	82.9	1.0	0.26	ug/l	80.0		104	85-115		
Cobalt	81.9	1.0	0.10	ug/l	80.0		102	85-115		
Copper	80.9	2.0	0.49	ug/l	80.0		101	85-115		
Iron	0.850	0.010	0.0032	mg/l	0.800		106	85-115		
Lead	83.1	1.0	0.13	ug/l	80.0		104	85-115		
Manganese	83.8	1.0	0.44	ug/l	80.0		105	85-115		
Nickel	82.9	1.0	0.15	ug/l	80.0		104	85-115		
Selenium	82.7	2.0	0.36	ug/l	80.0		103	85-115		
Silver	82.3	1.0	0.089	ug/l	80.0		103	85-115		
Thallium	82.5	1.0	0.075	ug/l	80.0		103	85-115		
Vanadium	80.9	1.0	0.86	ug/l	80.0		101	85-115		
Zinc	77.9	20	3.1	ug/l	80.0		97	85-115		

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
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**Batch: 5A05092 Extracted: 01/05/05**

**Matrix Spike Analyzed: 01/06/2005 (5A05092-MS1)**

**Source: IOA0121-01**

Antimony	98.6	2.0	0.18	ug/l	80.0	0.87	122	70-130			
Arsenic	99.7	1.0	0.49	ug/l	80.0	0.80	124	70-130			
Barium	0.118	0.0010	0.00014	mg/l	0.0800	0.025	116	70-130			
Beryllium	97.1	0.50	0.037	ug/l	80.0	0.14	121	70-130			
Cadmium	92.2	1.0	0.015	ug/l	80.0	0.25	115	70-130			
Chromium	93.9	1.0	0.26	ug/l	80.0	3.5	113	70-130			
Cobalt	90.1	1.0	0.10	ug/l	80.0	0.59	112	70-130			
Copper	92.5	2.0	0.49	ug/l	80.0	6.3	108	70-130			
Iron	1.96	0.010	0.0032	mg/l	0.800	1.5	58	70-130			M2
Lead	97.3	1.0	0.13	ug/l	80.0	1.4	120	70-130			
Manganese	113	1.0	0.44	ug/l	80.0	26	109	70-130			
Nickel	92.4	1.0	0.15	ug/l	80.0	3.5	111	70-130			
Selenium	91.6	2.0	0.36	ug/l	80.0	0.63	114	70-130			
Silver	93.3	1.0	0.089	ug/l	80.0	ND	117	70-130			
Thallium	97.9	1.0	0.075	ug/l	80.0	ND	122	70-130			
Vanadium	92.5	1.0	0.86	ug/l	80.0	2.4	113	70-130			
Zinc	101	20	3.1	ug/l	80.0	22	99	70-130			

**Matrix Spike Dup Analyzed: 01/06/2005 (5A05092-MSD1)**

**Source: IOA0121-01**

Antimony	97.7	2.0	0.18	ug/l	80.0	0.87	121	70-130	1	20	
Arsenic	97.2	1.0	0.49	ug/l	80.0	0.80	120	70-130	3	20	
Barium	0.118	0.0010	0.00014	mg/l	0.0800	0.025	116	70-130	0	20	
Beryllium	94.3	0.50	0.037	ug/l	80.0	0.14	118	70-130	3	20	
Cadmium	91.3	1.0	0.015	ug/l	80.0	0.25	114	70-130	1	20	
Chromium	93.3	1.0	0.26	ug/l	80.0	3.5	112	70-130	1	20	
Cobalt	89.8	1.0	0.10	ug/l	80.0	0.59	112	70-130	0	20	
Copper	92.4	2.0	0.49	ug/l	80.0	6.3	108	70-130	0	20	
Iron	1.99	0.010	0.0032	mg/l	0.800	1.5	61	70-130	2	20	M2
Lead	97.1	1.0	0.13	ug/l	80.0	1.4	120	70-130	0	20	
Manganese	113	1.0	0.44	ug/l	80.0	26	109	70-130	0	20	
Nickel	92.2	1.0	0.15	ug/l	80.0	3.5	111	70-130	0	20	
Selenium	89.6	2.0	0.36	ug/l	80.0	0.63	111	70-130	2	20	
Silver	92.4	1.0	0.089	ug/l	80.0	ND	116	70-130	1	20	
Thallium	98.3	1.0	0.075	ug/l	80.0	ND	123	70-130	0	20	
Vanadium	92.3	1.0	0.86	ug/l	80.0	2.4	112	70-130	0	20	
Zinc	100	20	3.1	ug/l	80.0	22	98	70-130	1	20	

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 Michele Harper  
 Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05093 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05093-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05093-BS1)</b>											
Boron	0.485	0.050	0.0074	mg/l	0.500		97	85-115			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05093-MS1)</b>											
						<b>Source: IOA0153-01</b>					
Boron	0.862	0.050	0.0074	mg/l	0.500	0.35	102	70-130			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05093-MSD1)</b>											
						<b>Source: IOA0153-01</b>					
Boron	0.874	0.050	0.0074	mg/l	0.500	0.35	105	70-130	1	20	
<b>Batch: 5A06051 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06051-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 01/06/2005 (5A06051-BS1)</b>											
Mercury	8.28	0.20	0.063	ug/l	8.00		104	85-115			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06051-MS1)</b>											
						<b>Source: IOA0128-01</b>					
Mercury	8.23	0.20	0.063	ug/l	8.00	0.26	100	70-130			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06051-MSD1)</b>											
						<b>Source: IOA0128-01</b>					
Mercury	8.19	0.20	0.063	ug/l	8.00	0.26	99	70-130	1	20	

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5A04042 Extracted: 01/04/05</b>											
<b>Blank Analyzed: 01/04/2005 (5A04042-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.074	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 01/04/2005 (5A04042-BS1)</b>											
Chloride	4.97	0.50	0.26	mg/l	5.00		99	90-110			
Fluoride	4.73	0.50	0.074	mg/l	5.00		95	90-110			
Sulfate	9.93	0.50	0.18	mg/l	10.0		99	90-110			
<b>Matrix Spike Analyzed: 01/04/2005 (5A04042-MS1) Source: IOA0049-01</b>											
Chloride	5.60	0.50	0.26	mg/l	5.00	0.51	102	80-120			
Fluoride	4.78	0.50	0.074	mg/l	5.00	0.16	92	80-120			
Sulfate	10.4	0.50	0.18	mg/l	10.0	0.63	98	80-120			
<b>Matrix Spike Dup Analyzed: 01/04/2005 (5A04042-MSD1) Source: IOA0049-01</b>											
Chloride	5.72	0.50	0.26	mg/l	5.00	0.51	104	80-120	2	20	
Fluoride	4.79	0.50	0.074	mg/l	5.00	0.16	93	80-120	0	20	
Sulfate	10.6	0.50	0.18	mg/l	10.0	0.63	100	80-120	2	20	
<b>Batch: 5A04104 Extracted: 01/04/05</b>											
<b>Blank Analyzed: 01/04/2005 (5A04104-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 01/04/2005 (5A04104-BS1)</b>											
Surfactants (MBAS)	0.236	0.10	0.044	mg/l	0.250		94	90-110			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A04104 Extracted: 01/04/05</b>											
<b>Matrix Spike Analyzed: 01/04/2005 (5A04104-MS1)</b>						<b>Source: IOA0069-02</b>					
Surfactants (MBAS)	0.199	0.10	0.044	mg/l	0.250	ND	80	50-125			
<b>Matrix Spike Dup Analyzed: 01/04/2005 (5A04104-MSD1)</b>						<b>Source: IOA0069-02</b>					
Surfactants (MBAS)	0.172	0.10	0.044	mg/l	0.250	ND	69	50-125	15	20	
<b>Batch: 5A05054 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/10/2005 (5A05054-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 01/10/2005 (5A05054-BS1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115			
<b>LCS Dup Analyzed: 01/10/2005 (5A05054-BSD1)</b>											
Biochemical Oxygen Demand	200	100	30	mg/l	198		101	85-115	4	20	
<b>Batch: 5A05058 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05058-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.56	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05058-BS1)</b>											
Total Organic Carbon	11.0	1.0	0.56	mg/l	10.0		110	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05058-MS1)</b>						<b>Source: IOA0113-06</b>					
Total Organic Carbon	5.62	1.0	0.56	mg/l	5.00	ND	112	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05058 Extracted: 01/05/05</b>											
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05058-MSD1)</b>						<b>Source: IOA0113-06</b>					
Total Organic Carbon	5.39	1.0	0.56	mg/l	5.00	ND	108	80-120	4	20	
<b>Batch: 5A05064 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05064-BLK1)</b>											
Chromium VI	0.150	1.0	0.041	ug/l							J
<b>LCS Analyzed: 01/05/2005 (5A05064-BS1)</b>											
Chromium VI	51.9	1.0	0.041	ug/l	50.0		104	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05064-MS1)</b>						<b>Source: IOA0121-01</b>					
Chromium VI	49.3	1.0	0.041	ug/l	50.0	0.17	98	90-110			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05064-MSD1)</b>						<b>Source: IOA0121-01</b>					
Chromium VI	52.2	1.0	0.041	ug/l	50.0	0.17	104	90-110	6	10	
<b>Batch: 5A05066 Extracted: 01/05/05</b>											
<b>Duplicate Analyzed: 01/05/2005 (5A05066-DUP1)</b>						<b>Source: IOA0121-01</b>					
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5A05067 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05067-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05067 Extracted: 01/05/05</b>											
<b>LCS Analyzed: 01/05/2005 (5A05067-BS1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0		101	80-115			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05067-MS1)</b>											
Ammonia-N (Distilled)	10.4	0.50	0.30	mg/l	10.0	0.56	98	70-120			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05067-MSD1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	0.56	95	70-120	3	15	
<b>Batch: 5A05068 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05068-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05068-BS1)</b>											
Oil & Grease	20.1	5.0	0.94	mg/l	20.0		100	65-120			M-NR1
<b>LCS Dup Analyzed: 01/05/2005 (5A05068-BSD1)</b>											
Oil & Grease	21.1	5.0	0.94	mg/l	20.0		106	65-120	5	20	
<b>Batch: 5A05078 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05078-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 01/05/2005 (5A05078-BS1)</b>											
Total Cyanide	191	5.0	2.2	ug/l	200		96	90-110			

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Report Number: IOA0121

Sampled: 01/04/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05078 Extracted: 01/05/05</b>											
<b>Matrix Spike Analyzed: 01/05/2005 (5A05078-MS1)</b>						<b>Source: IOA0112-01</b>					
Total Cyanide	153	5.0	2.2	ug/l	200	ND	76	70-115			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05078-MSD1)</b>						<b>Source: IOA0112-01</b>					
Total Cyanide	157	5.0	2.2	ug/l	200	ND	78	70-115	3	15	
<b>Batch: 5A05079 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05079-BLK1)</b>											
Turbidity	ND	1.0	0.040	NTU							
<b>Duplicate Analyzed: 01/05/2005 (5A05079-DUP1)</b>						<b>Source: IOA0069-02</b>					
Turbidity	0.0900	1.0	0.040	NTU		0.10			11	20	J
<b>Batch: 5A06055 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06055-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 01/06/2005 (5A06055-BS1)</b>											
Perchlorate	51.3	4.0	0.80	ug/l	50.0		103	85-115			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06055-MS1)</b>						<b>Source: IOA0122-01</b>					
Perchlorate	54.1	4.0	0.80	ug/l	50.0	5.8	97	80-120			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06055-MSD1)</b>						<b>Source: IOA0122-01</b>					
Perchlorate	53.2	4.0	0.80	ug/l	50.0	5.8	95	80-120	2	20	

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06081 Extracted: 01/06/05</b>											
<b>Duplicate Analyzed: 01/06/2005 (5A06081-DUP1)</b>											
<b>Source: IOA0117-11</b>											
Specific Conductance	865	1.0	1.0	umhos/cm		880			2	5	
<b>Batch: 5A06082 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06082-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/06/2005 (5A06082-BS1)</b>											
Total Dissolved Solids	904	10	10	mg/l	1000		90	90-110			
<b>Duplicate Analyzed: 01/06/2005 (5A06082-DUP1)</b>											
<b>Source: IOA0119-01</b>											
Total Dissolved Solids	198	10	10	mg/l		200			1	10	
<b>Batch: 5A07077 Extracted: 01/07/05</b>											
<b>Blank Analyzed: 01/07/2005 (5A07077-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/07/2005 (5A07077-BS1)</b>											
Total Suspended Solids	989	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 01/07/2005 (5A07077-DUP1)</b>											
<b>Source: IOA0210-01</b>											
Total Suspended Solids	ND	10	10	mg/l		ND				10	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5A1203 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (P5A1203-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.02			ug/l	1.00		102	80-125			
<b>LCS Analyzed: 01/12/2005 (P5A1203-BS1)</b>											
1,4-Dioxane	11.6	1.0	0.49	ug/l	10.0		116	70-130			
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>LCS Dup Analyzed: 01/12/2005 (P5A1203-BSD1)</b>											
1,4-Dioxane	10.3	1.0	0.49	ug/l	10.0		103	70-130	12	20	
Surrogate: Dibromofluoromethane	0.960			ug/l	1.00		96	80-125			
<b>Matrix Spike Analyzed: 01/12/2005 (P5A1203-MS1)</b>											
						<b>Source: IOA0121-01</b>					
1,4-Dioxane	9.50	1.0	0.49	ug/l	10.0	ND	95	70-150			
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105	80-125			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (P5A1203-MSD1)</b>											
						<b>Source: IOA0121-01</b>					
1,4-Dioxane	7.48	1.0	0.49	ug/l	10.0	ND	75	70-150	24	25	
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105	80-125			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- H-1** Sample analysis performed past the method-specified holding time per client's approval.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L** Laboratory Control Sample recovery was above the method control limits. Analyte not detected, data not impacted.
- L2** Laboratory Control Sample recovery was below method control limits.
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO):**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 425.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chronic

Samples: IOA0121-01

Analysis Performed: Bioassay-Acute 96hr

Samples: IOA0121-01

#### Del Mar Analytical - Phoenix NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOA0121-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Gross Alpha  
Samples: IOA0121-01

Analysis Performed: Gross Beta  
Samples: IOA0121-01

Analysis Performed: Level 3 Data Package  
Samples: IOA0121-01

Analysis Performed: Strontium 90  
Samples: IOA0121-01

Analysis Performed: Tritium  
Samples: IOA0121-01

**Pace Analytical, MN- SUB**

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
Samples: IOA0121-01

Analysis Performed: EDD + Level 4  
Samples: IOA0121-01

**Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOA0121-01

Analysis Performed: Level 4 Data Package  
Samples: IOA0121-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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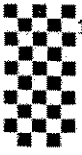
**IOA0121 <Page 56 of 56>**

10A0121

**Del Mar Analytical** Version 5/8/12/04 **CHAIN OF CUSTODY FORM** Page 1 of 1

Client Name/Address: MWHPasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES Quarterly Outfall 011 Perimeter Pond		ANALYSIS REQUIRED										Field readings: Temp = 52.0 pH = 6.7										
Project Manager: Bronwyn Kelly		Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Sample Description		Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Cu, Pb, Hg.	Settleable Solids	VOCS 624 + xylenes + Freon 113	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl-, SO4, NO3+NO2-N, Perchlorate	Turbidity, TDS, TSS, Conductivity	Ammonia-N	2,4,6 Trichlorophenol, 2,4 Dinitrochlorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625)	Comments	
1	Outfall 011	W	Poly-1L	1	1/4/05 1015	HNO3	1A	X																
2	Outfall 011 - Dup	W	Poly-1L	1		HNO3	1B	X																
3	Outfall 011	W	Poly-1L	1		None	2				X													
4	Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C				X													
5	Outfall 011	W	1L Amber	2		None	4A, 4B					X												
6	Outfall 011	W	1L Amber	2		HCl	5A, 5B					X												
7	Outfall 011	W	Poly-500 ml	1		NaOH	6						X											
8	Outfall 011	W	Poly-1L	1		None	7							X										
9	Outfall 011	W	Poly-500 ml	2		None	8A, 8B								X									
10	Outfall 011	W	Poly-500 ml	2		None	9A, 9B									X								
11	Outfall 011	W	Poly-500 ml	2		None	10A, 10B										X							
12	Outfall 011	W	Poly-500 ml	1		H2SO4	11													X				
13	Outfall 011	W	1L Amber	2		None	12A, 12B																	
14	Outfall 011	W	1L Amber	2		None	13A, 13B																	
15	Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C					X												
Relinquished By <i>Bronwyn Kelly</i>		Date/Time: 1/4/05 1520		Received By <i>BDR</i>		Date/Time: 1/4/05 1520		Received By <i>BDR</i>		Date/Time: 1/4/05 1520		Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____		Perchlorate Only 72 Hours _____		Metals Only 72 Hours _____		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice <input type="checkbox"/>		Temp <input checked="" type="checkbox"/> 4°C				





**F A X**



300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 02/17/05

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
 Patti Meeks / AMEC 303-935-6575  
 Krissi McIlvanna / MWH 925-975-3412

From: Bronwyn K. Kelly  
 sign:

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 2  
(including cover)

**Per Request:**  
 Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOB0988	Outfall 003	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVF; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1002	Outfall 004	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVF; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB0990	Outfall 005	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVF; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.



IOB0992	Outfall 006	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1008	Outfall 018	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1014	Outfall 011	02/11/04	Chromium IV	
IOA0131	Outfall 011 -- Composite	01/04/05		Ammonia, BOD, Chloride, Nitrate/Nitrite as N, Oil and Grease, Sulfate, MBAS, TDS, TSS, TOC, Settleable Solids, Turbidity, Cr, Cyanide, perchlorate, Conductivity, Cu, Hg, TCDD
IOA0121	Outfall 011 - Grab	01/04/05		Total Recoverable Hydrocarbons, Extractable Fuel Hydrocarbons, GRO, Fluoride, Residual Chlorine, TOC, Cr VI, 1,4-Dioxane, Monomethyl Hydrazine, Bioassays, SVOC (625)-PP list, Pes/PCB-PP list (608), Total Recoverable Metals, Cyclohexane & Freon 123a & A+A+2CVE (624), Radchem

The reason for these changes:

*Incorrectly marked on COC form*

*Lack of sample volume*

*MWH office personnel require this change*

*Other: Containers mislabeled*

\_\_\_\_\_ x \_\_\_\_\_  
 \_\_\_\_\_ y \_\_\_\_\_  
 \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

February 25, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Project: 13267 (Study 1)  
Outfall 011 Grab  
Sampled: 1/4/05  
Del Mar Analytical Number: IOA0121

Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96hr Percent Survival Bioassay by EPA Method 2000.0 and Ceriodaphnia Survival and Reproduction Test by EPA Method 1002, Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), and Strontium-90 (Sr-90, EPA 905.0), Pace Analytical performed the TCDD analysis by USEPA Method 1613B, and Truesdail Laboratories performed the Hydrazines by EPA 8315B for the project referenced above. Please use the following cross-reference table when reviewing your results.

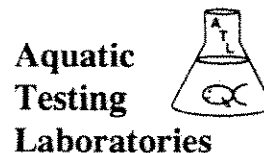
MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	PACE ID	TRUESDAIL ID
Outfall 011-Grab	IOA0121-01	A-05010506-001/002	R501014/8148-001	105776001	938344-1

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

  
Michele Harper  
Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** January 12, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05010506-001/002  
**Sample I.D.:** IOA0121-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 01/04/05  
Date Received: 01/05/05  
Date Tested: 01/05/05 to 01/11/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

## FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05010506-001  
 Client/ID: Del Mar - IOA0121-01

Start Date: 01/05/2005

### TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 11 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050104.

### TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.5	9.1	8.0	0	0	RM 1430
	100%	19.8	10.7	7.1	0	0	
24 Hr	Control	19.3	8.6	7.6	0	0	RM 1230
	100%	19.4	8.8	7.2	0	0	
48 Hr	Control	19.7	8.1	7.7	0	0	RM 1300
	100%	20.0	7.8	7.4	0	0	
Renewal	Control	19.5	8.8	8.0	0	0	RM 1300
	100%	19.9	9.9	7.3	0	0	
72 Hr	Control	20.5	7.8	7.7	0	0	RM 1200
	100%	20.5	7.8	7.3	0	0	
96 Hr	Control	20.7	7.4	7.7	0	0	RM 1400
	100%	20.7	7.5	7.6	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 7.1; Conductivity: 100 umho; Temp: 6°C;  
 DO: 10.7 mg/l; Alkalinity: 22 mg/l; Hardness: 39 mg/l; NH<sub>3</sub>-N: 0.5 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / (No)  
 Control: Alkalinity: 58 mg/l; Hardness: 96 mg/l; Conductivity: 300 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes / (No)  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

### RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05010506-002  
Client/ID: Del Mar IOA0121-01

Date Tested: 01/05/05 to 01/11/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050104.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	23.4
6.25%	100%	21.3
12.5%	100%	22.0
25%	100%	23.9
50%	100%	20.1
100%	100%	20.7

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (23.4 young)
≥60% surviving controls had 3 broods	Pass (80% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 32.4%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight response at conc. tested)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOA0121

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Aquatic Testing Laboratories-SUB  
 4350 Transport Street, Unit 107  
 Ventura, CA 93003  
 Phone : (805) 650-0546  
 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0121-01 Water	Sampled: 01/04/05 10:15	Instant Notification
Bioassay-7 dy Chronic	01/05/05 22:15	ceriodaphnia
Bioassay-Acute 96hr	01/05/05 22:15	fathead minnow

**Containers Supplied:**  
 1 gal Poly (IOA0121-01Y)  
 1 gal Poly (IOA0121-01Z)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): 6°C

Released By: [Signature] Date: 1/5/05 Time: 1150 Received By: [Signature] Date: 1/5/05 Time: 1150  
 Released By: [Signature] Date: 1/5/05 Time: 1405 Received By: [Signature] Date: 1-5-05 Time: 1405





February 14, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOA0121  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R501014-8148

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on January 6, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MC/Mnjv*

*Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice*

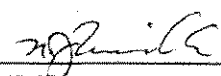
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8148</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501014-01</u>	Contract <u>PROJECT# IOA0121</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOA0121-01	8148-001	01/04/05	01/26/05	GrossAlpha	1.64 ± 0.96	pCi/L	0.839
			01/26/05	Gross Beta	2.65 ± 1.2	pCi/L	1.74
			01/27/05	H3	-93.0 ± 170	pCi/L	303
			01/14/05	Sr90	0.188 ± 0.25	pCi/L	0.456

Certified by 
Report Date <u>02/13/05</u>
Page 1

Eberline Services

QC RESULTS

SDG <u>B148</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS01014-01</u>	Contract <u>PROJECT# 10A0121</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8147-002	GrossAlpha	11.7 ± 1.3	pCi/Smpl	11.2	0.522	104% recovery
		Gross Beta	11.8 ± 0.84	pCi/Smpl	12.1	0.607	98% recovery
		H3	264 ± 18	pCi/Smpl	260	15.8	102% recovery
		Sr90	11.7 ± 0.57	pCi/Smpl	11.1	0.229	105% recovery
<u>BLANK</u>							
	8147-003	GrossAlpha	0.122 ± 0.23	pCi/Smpl	NA	0.411	<MDA
		Gross Beta	0.050 ± 0.34	pCi/Smpl	NA	0.577	<MDA
		H3	-3.80 ± 17	pCi/Smpl	NA	30.2	<MDA
		Sr90	-0.041 ± 0.12	pCi/Smpl	NA	0.243	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-004	GrossAlpha	1.13 ± 0.74	0.963
	Gross Beta	2.74 ± 1.1	1.71
	H3	-62.6 ± 170	299
	Sr90	0.058 ± 0.35	0.608

<u>ORIGINALS</u>			
Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8147-001	-0.671 ± 1.0	1.99	200 212 satis.
	2.37 ± 1.2	1.80	14 101 satis.
	-125 ± 170	300	- 0 satis.
	0.002 ± 0.22	0.446	- 0 satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-005	GrossAlpha	76.1 ± 4.9	1.11
	Gross Beta	79.6 ± 3.6	1.75
	H3	18900 ± 610	311

<u>ORIGINAL SAMPLE</u>				
Sample ID	Results ± 2σ	MDA	Added	%Recv
8147-001	-0.671 ± 1.0	1.99	76.6	100
	2.37 ± 1.2	1.80	74.1	104
	-125 ± 170	300	19000	100

Certified by \_\_\_\_\_  
 Report Date 02/13/05  
 Page 2



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 2520 E. Sunval Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOA0121

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services - SUB 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

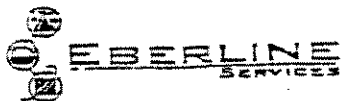
Analysis	Expiration	Comments
<b>Sample ID: IOA0121-01 Water      Sampled: 01/04/05 10:15</b>		
Gross Alpha-O	01/04/06 10:15	Instant Notification 900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/04/06 10:15	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Level 4 Data Package - Out	02/01/05 10:15	**LEVEL IV QC, ACCESS 7 EDD**
Radium, Combined-O	01/04/06 10:15	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/04/06 10:15	905.0
Tritium-O	01/04/06 10:15	906

**Containers Supplied:**  
 1 gal Poly (IOA0121-01X)

SAMPLE INTEGRITY:					
All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____			

Released By:      Date: 1/5/05      Time:      Received By:      Date: 1-06-05      Time: 10:00

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar City: Irvine State: CA

Date/Time received: 1-06-05 10:00 CoC No.: IOA0121

Container I.D. No.: Styrofoam in Card board Requested TAT (Days): 14 P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [X]

2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [X]

3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]

4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]

5. Packing material is: Wet [X] Dry [ ]

6. Number of samples in shipping container: 1 Sample Matrix: water

7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)

8. Samples are in correct container Yes [X] No [ ]

9. Paperwork agrees with samples? Yes [ ] No [X]

10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]

11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]

12. Samples are: Preserved [ ] Not preserved [X] pH 7 Preservative \_\_\_\_\_

13. Describe any anomalies: Shipping container received wet due to lost ice not lost sample. Styrofoam container broken, not reusable. Also CoC indicates samples collected in year 2006

14. Was P.M. notified of any anomalies? Yes [X] No [ ] Date: 1-06-05

15. Inspected by: J.H. King Date: 1-06-05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID	IOA0121-01		
Lab Sample ID	105776001		
Filename	U50201A_11		
Injected By	SMT		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/04/2005
ICAL Date	01/26/2005	Received	01/06/2005
CCal Filename(s)	U50201A_06	Extracted	01/31/2005
Method Blank ID	BLANK-6241	Analyzed	02/01/2005 17:06

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	1.20	2,3,7,8-TCDF-13C	2.00	54
Total TCDF	ND	----	1.20	2,3,7,8-TCDD-13C	2.00	49
				1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	----	2.50	2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	ND	----	2.50	1,2,3,7,8-PeCDD-13C	2.00	71
				1,2,3,4,7,8-HxCDF-13C	2.00	55
1,2,3,7,8-PeCDF	1.5	----	0.83 J	1,2,3,6,7,8-HxCDF-13C	2.00	54
2,3,4,7,8-PeCDF	1.9	----	0.78 J	2,3,4,6,7,8-HxCDF-13C	2.00	55
Total PeCDF	4.9	----	0.80 J	1,2,3,7,8,9-HxCDF-13C	2.00	56
				1,2,3,4,7,8-HxCDD-13C	2.00	52
1,2,3,7,8-PeCDD	1.7	----	1.40 J	1,2,3,6,7,8-HxCDD-13C	2.00	48
Total PeCDD	1.7	----	1.40 J	1,2,3,4,6,7,8-HpCDF-13C	2.00	54
				1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	1.8	----	0.67 J	1,2,3,4,6,7,8-HpCDD-13C	2.00	53
1,2,3,6,7,8-HxCDF	1.8	----	0.79 BJ	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	1.4	----	0.69 J			
1,2,3,7,8,9-HxCDF	1.2	----	0.65 J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	7.2	----	0.70 BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	----	1.4	0.87 I	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,6,7,8-HxCDD	----	1.5	0.89 I			
1,2,3,7,8,9-HxCDD	1.9	----	0.81 J			
Total HxCDD	1.9	----	0.86 J			
1,2,3,4,6,7,8-HpCDF	----	2.9	1.40 I			
1,2,3,4,7,8,9-HpCDF	ND	----	1.30			
Total HpCDF	5.7	----	1.40 BJ			
1,2,3,4,6,7,8-HpCDD	5.6	----	1.10 BJ			
Total HpCDD	12.0	----	1.10 BJ			
OCDF	8.2	----	2.10 BJ			
OCDD	----	44.0	2.30 I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105776

**REPORT OF LABORATORY ANALYSIS**

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## Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-6241	Matrix	Water
Filename	U50201A_10	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	01/31/2005
ICAL Date	01/26/2005	Analyzed	02/01/2005 16:16
CCal Filename(s)	U50201A_06	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.95	2,3,7,8-TCDF-13C	2.00	89
Total TCDF	ND	-----	-----	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	100
2,3,7,8-TCDD	ND	-----	2.00	2,3,4,7,8-PeCDF-13C	2.00	108
Total TCDD	ND	-----	-----	1,2,3,7,8-PeCDD-13C	2.00	115
				1,2,3,4,7,8-HxCDF-13C	2.00	85
1,2,3,7,8-PeCDF	ND	-----	0.80	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	ND	-----	0.56	2,3,4,6,7,8-HxCDF-13C	2.00	83
Total PeCDF	ND	-----	-----	1,2,3,7,8,9-HxCDF-13C	2.00	84
				1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	ND	-----	1.20	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	ND	-----	-----	1,2,3,4,6,7,8-HpCDF-13C	2.00	79
				1,2,3,4,7,8,9-HpCDF-13C	2.00	74
1,2,3,4,7,8-HxCDF	-----	0.94	0.24 I	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	0.52	-----	0.21 J	OCDD-13C	4.00	91
2,3,4,6,7,8-HxCDF	-----	0.69	0.25 I			
1,2,3,7,8,9-HxCDF	ND	-----	0.56	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	1.10	-----	----- J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.73	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,6,7,8-HxCDD	ND	-----	0.92			
1,2,3,7,8,9-HxCDD	ND	-----	0.80			
Total HxCDD	ND	-----	-----			
1,2,3,4,6,7,8-HpCDF	1.20	-----	0.88 J			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.60			
Total HpCDF	2.80	-----	----- J			
1,2,3,4,6,7,8-HpCDD	2.00	-----	0.57 J			
Total HpCDD	2.00	-----	----- J			
OCDF	5.50	-----	2.10 J			
OCDD	-----	6.60	1.60 I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105776

## REPORT OF LABORATORY ANALYSIS

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-6242	Matrix	Water
Filename	U50201A_18	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	01/31/2005
ICAL Date	01/26/2005	Analyzed	02/01/2005 23:00
CCal Filename	U50201A_06	Injected By	SMT
Method Blank ID	BLANK-6241		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.8	7.5	15.8	98
2,3,7,8-TCDD	10	8.7	6.7	15.8	87
1,2,3,7,8-PeCDF	50	46.7	40.0	67.0	93
2,3,4,7,8-PeCDF	50	43.2	34.0	80.0	86
1,2,3,7,8-PeCDD	50	39.7	35.0	71.0	79
1,2,3,4,7,8-HxCDF	50	42.3	36.0	67.0	85
1,2,3,6,7,8-HxCDF	50	42.3	42.0	65.0	85
2,3,4,6,7,8-HxCDF	50	41.0	35.0	78.0	82
1,2,3,7,8,9-HxCDF	50	40.6	39.0	65.0	81
1,2,3,4,7,8-HxCDD	50	46.9	35.0	82.0	94
1,2,3,6,7,8-HxCDD	50	46.5	38.0	67.0	93
1,2,3,7,8,9-HxCDD	50	49.6	32.0	81.0	99
1,2,3,4,6,7,8-HpCDF	50	46.8	41.0	61.0	94
1,2,3,4,7,8,9-HpCDF	50	49.6	39.0	69.0	99
1,2,3,4,6,7,8-HpCDD	50	41.9	35.0	70.0	84
OCDF	100	89.2	63.0	170.0	89
OCDD	100	87.5	78.0	144.0	88
2,3,7,8-TCDD-37Cl4	10	8.5	3.1	19.1	85
2,3,7,8-TCDF-13C	100	94.9	22.0	152.0	95
2,3,7,8-TCDD-13C	100	83.7	20.0	175.0	84
1,2,3,7,8-PeCDF-13C	100	113.6	21.0	192.0	114
2,3,4,7,8-PeCDF-13C	100	121.1	13.0	328.0	121
1,2,3,7,8-PeCDD-13C	100	124.1	21.0	227.0	124
1,2,3,4,7,8-HxCDF-13C	100	88.6	19.0	202.0	89
1,2,3,6,7,8-HxCDF-13C	100	85.5	21.0	159.0	86
2,3,4,6,7,8-HxCDF-13C	100	88.9	22.0	176.0	89
1,2,3,7,8,9-HxCDF-13C	100	90.0	17.0	205.0	90
1,2,3,4,7,8-HxCDD-13C	100	77.4	21.0	193.0	77
1,2,3,6,7,8-HxCDD-13C	100	71.8	25.0	163.0	72
1,2,3,4,6,7,8-HpCDF-13C	100	71.3	21.0	158.0	71
1,2,3,4,7,8,9-HpCDF-13C	100	66.8	20.0	186.0	67
1,2,3,4,6,7,8-HpCDD-13C	100	68.1	26.0	166.0	68
OCDD-13C	200	152.2	26.0	397.0	76

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....105776

## REPORT OF LABORATORY ANALYSIS

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## Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-6243	Matrix	Water
Filename	U50201A_19	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	01/31/2005
ICAL Date	01/26/2005	Analyzed	02/01/2005 23:51
CCal Filename	U50201A_06	Injected By	SMT
Method Blank ID	BLANK-6241		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.8	7.5	15.8	98
2,3,7,8-TCDD	10	10.0	6.7	15.8	100
1,2,3,7,8-PeCDF	50	50.0	40.0	67.0	100
2,3,4,7,8-PeCDF	50	48.2	34.0	80.0	96
1,2,3,7,8-PeCDD	50	43.0	35.0	71.0	86
1,2,3,4,7,8-HxCDF	50	43.6	36.0	67.0	87
1,2,3,6,7,8-HxCDF	50	47.3	42.0	65.0	95
2,3,4,6,7,8-HxCDF	50	45.9	35.0	78.0	92
1,2,3,7,8,9-HxCDF	50	42.7	39.0	65.0	85
1,2,3,4,7,8-HxCDD	50	48.8	35.0	82.0	98
1,2,3,6,7,8-HxCDD	50	48.7	38.0	67.0	97
1,2,3,7,8,9-HxCDD	50	52.9	32.0	81.0	106
1,2,3,4,6,7,8-HpCDF	50	50.6	41.0	61.0	101
1,2,3,4,7,8,9-HpCDF	50	51.8	39.0	69.0	104
1,2,3,4,6,7,8-HpCDD	50	44.3	35.0	70.0	89
OCDF	100	100.4	63.0	170.0	100
OCDD	100	98.2	78.0	144.0	98
2,3,7,8-TCDD-37Cl4	10	9.6	3.1	19.1	96
2,3,7,8-TCDF-13C	100	111.9	22.0	152.0	112
2,3,7,8-TCDD-13C	100	92.7	20.0	175.0	93
1,2,3,7,8-PeCDF-13C	100	131.3	21.0	192.0	131
2,3,4,7,8-PeCDF-13C	100	139.6	13.0	328.0	140
1,2,3,7,8-PeCDD-13C	100	141.0	21.0	227.0	141
1,2,3,4,7,8-HxCDF-13C	100	101.7	19.0	202.0	102
1,2,3,6,7,8-HxCDF-13C	100	94.3	21.0	159.0	94
2,3,4,6,7,8-HxCDF-13C	100	98.2	22.0	176.0	98
1,2,3,7,8,9-HxCDF-13C	100	103.9	17.0	205.0	104
1,2,3,4,7,8-HxCDD-13C	100	83.1	21.0	193.0	83
1,2,3,6,7,8-HxCDD-13C	100	85.5	25.0	163.0	86
1,2,3,4,6,7,8-HpCDF-13C	100	80.6	21.0	158.0	81
1,2,3,4,7,8,9-HpCDF-13C	100	79.0	20.0	186.0	79
1,2,3,4,6,7,8-HpCDD-13C	100	76.7	26.0	166.0	77
OCDD-13C	200	179.8	26.0	397.0	90

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....105776

## REPORT OF LABORATORY ANALYSIS

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**SPIKE RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) RESULTS**

**Pace Analytical Services, Inc.**  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-6242  
 SPIKE 1 Filename..... U50201A\_18  
 SPIKE 2 ID..... LCSD-6242  
 SPIKE 2 Filename..... U50201A\_19

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	98	98	0.0
2378-TCDD	87	100	13.9
12378-PeCDF	93	100	7.3
23478-PeCDF	86	96	11.0
12378-PeCDD	79	86	8.5
123478-HxCDF	85	87	2.3
123678-HxCDF	85	95	11.1
234678-HxCDF	82	92	11.5
123789-HxCDF	81	85	4.8
123478-HxCDD	94	98	4.2
123678-HxCDD	93	97	4.2
123789-HxCDD	99	106	6.8
1234678-HpCDF	94	101	7.2
1234789-HpCDF	99	104	4.9
1234678-HpCDD	84	89	5.8
OCDF	89	100	11.6
OCDD	88	98	10.8

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

Report No..... 105776

**REPORT OF LABORATORY ANALYSIS**

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**TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans**

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

\*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

## REPORT OF LABORATORY ANALYSIS

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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOA0121 105776**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Pace Analytical, MN- SUB 1700 Elm Street, Ste 200 Minneapolis, MN 55414 Phone: (612) 607-1700 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOA0121-01</b> Water <b>Sampled: 01/04/05 10:15</b> 1613-Dioxin-HR                      01/11/05 10:15 EDD + Level 4                        02/01/05 10:15		<b>Instant Notification</b> J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, include Std logs for Lvl IV

105776001

**Containers Supplied:**  
 1 L Amber (IOA0121-01G)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No     
 Sample labels/COC agree:  Yes  No     
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No     
 Samples Preserved Properly:  Yes  No     
 Samples Received at (temp): 0

Released By:      Date: 1/5/05      Time: 1700      Received By: *Bright Fleiss*      Date: 1/6/05      Time: 9:25

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

January 12, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

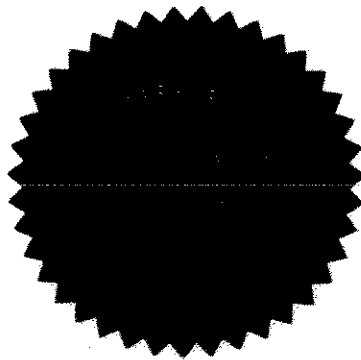
**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOA0121  
**Date Received:** 01/05/05

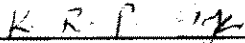
**Truesdail Project:** 938344  
**Sample Matrix:** Water / 1

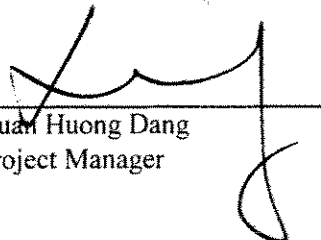
## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
938344-1	IOA0121-01	01/04/05	1015	Hydrazines by EPA 8315M



Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

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TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOA0121  
**Date Received:** 01/05/05

**Truesdail Project:** 938344  
**Sample Matrix:** Water / 1

## Case Narrative


**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.

**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

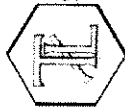
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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## REPORT

**Client:** Del Mar Analytical- Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOA0121

**P.O. Number:** IOA0121

**Method Number:** 8315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938344

**Report Date:** January 10, 2005

**Sampling Date:** January 4, 2005

**Receiving Date:** January 5, 2005

**Extraction Date:** January 6, 2005

**Analysis Date:** January 7, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** RC

Page 1 of 1

### Analytical Results

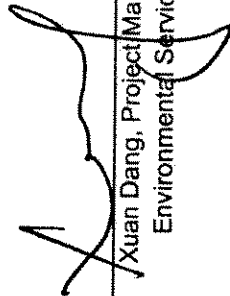
Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine
704641-MB	Method Blank	ND	ND	ND	ND
938344	IOA0121-01	ND	ND	ND	ND
PQL		5.0	5.0	5.0	1.0
Sample Report Limits		5.0	5.0	5.0	1.0

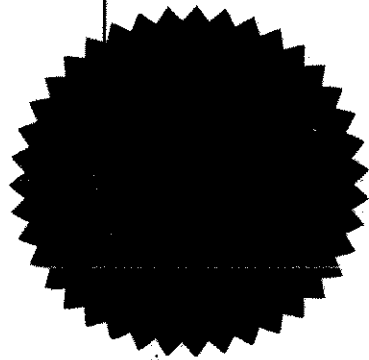
PQL: Practical Quantitation Limit, µg/L

ND: Not Detected

N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services



This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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**Client:** Del Mar Analytical-Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOA0121  
**P.O. Number:** IOA0121  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2908; Analysis: 352  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704641  
**Project Lab. No.:** 938344  
**Spiked Sample ID:** 938345  
**Report Date:** January 10, 2005  
**Sampling Date:** January 4, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Reported By:** RC

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	24.9	99.8	85-115	PASS
u-Dimethyl Hydrazine	25.0	26.3	105	85-115	PASS
Hydrazine	5.0	5.08	102	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	50.0	50.9	102	85-115	PASS
u-Dimethyl Hydrazine	50.0	52.1	104	85-115	PASS
Hydrazine	10.0	11.0	110	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

Parameter	LCS/LCSD			MS/MSD			Control Limits	%D	% Rec.
	Spiked Conc. ug/L	Recovered LCS	Percent Recovery (%)	Spiked Conc. ug/L	Recovered MSD	Percent Recovery (%)			
Monomethyl Hydrazine	50.0	55.3	111	50.0	39.8	79.6	70-130	20	0-150
u-Dimethyl Hydrazine	50.0	54.1	108	50.0	49.1	98.3	70-130	20	0-150
Hydrazine	10.0	12.4	124	10.0	10.4	106	70-130	20	0-150

ICV: Initial Calibration Verification

CCV: Continued Calibration Verification

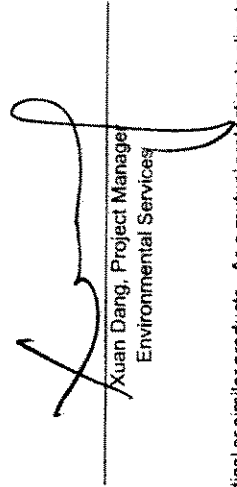
LCS: Laboratory Control Spike

MS: Matrix Spike

%D: Percent Difference

Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.



Xuan Dang, Project Manager  
Environmental Services

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Del Mar Analytical

938344

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

SUBCONTRACT ORDER - PROJECT # IOA0121

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone: (714) 730-6239  
 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0121-01 Water	Sampled: 01/04/05 10:15	Instant Notification
Hydrazine-OUT	01/07/05 10:15	please sub to Truesdail for Monomethylhydrazine
Level 4 Data Package	02/01/05 10:15	
<b>Containers Supplied:</b>		
1 L Amber (IOA0121-01H)		

Rec'd 01/05/05  
s14b938344

**ALERT !!**  
**Level IV QC**

**For Sample Conditions  
See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: *[Signature]* Date: 1/5/05 Time: 1300      Received By: *[Signature]* Date: 1/5/05 Time: 1300  
 Released By: *[Signature]* Date: 1/5/05 Time: 1315      Received By: *[Signature]* Date: 1/5/05 Time: 1315



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 938849

Date Delivered: 01/05/05 Time: 13:15 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4 °C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client  N/A
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: J. Brown

**ALERT !!**  
**Level IV QC**

# **APPENDIX A**

## **Section 24**

Outfall 011, January 4, 2005

MEC<sup>X</sup> Data Validation Reports

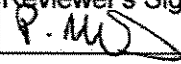
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

MEC<sup>x</sup>  
 12269 East Vassar Drive  
 Aurora, CO 80014

Package ID: B4HZ1  
 Task Order: 1261.001D.01  
 SDG No.: Multiple

No. of Analyses: 4

Laboratory: Truesdail Laboratory  
 Reviewer: P. Meeks  
 Analysis/Method: Hydrazines

Date: April 10, 2006  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	  
2. Out of Scope Analyses	  
3. Analyses Not Conducted	  
4. Missing Hardcopy Deliverables	  
5. Incorrect Hardcopy Deliverables	  
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	                    
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



## DATA VALIDATION REPORT

NPDES Monitoring Program  
Outfalls 001, 002, 011, 018

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IPB2637, IPB2639,  
IPB2641, IPB2643

Prepared by

MECX, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES  
MEC<sup>X</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPB2637, IPB2639, IPB2641, IPB2643  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 8, 2006

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Truesdail Laboratory ID	Del Mar Laboratory ID	Matrix	COC Method
Outfall 001	952266	IPB2637-01	Water	8315
Outfall 002	952267	IPB2639-01	Water	8315
Outfall 011	952268	IPB2641-01	Water	8315
Outfall 018	952265	IPB2643-01	Water	8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. The original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported and therefore, validated. Custody seals were not required as the samples were transported to Del Mar and then to Truesdail by courier. Truesdail Laboratories did not list the client IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 03/03/06, with correlation coefficients of  $\geq 0.995$  for all three hydrazines. The ICV and CCV bracketing the sample analyses had hydrazine recoveries within the QC limits of 85-115%. No qualifications were required.



### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate pair was analyzed with these SDGs. The hydrazine recoveries and RPDs were within the laboratory-established control limits. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 002. The hydrazines recoveries and RPDs were within the laboratory-established control limits. No qualifications were required.

### 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

#### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC. No qualifications were required.

#### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. As there were no sample detects, compound quantification was verified from the raw data by recalculating LCS/LCSD and MS/MSD detects. No calculation or transcription error were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.



# REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2637  
**P.O. Number:** IPB2637  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 952266  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

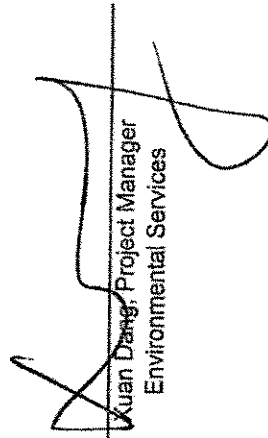
## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine
705657-MB	Method Blank	ND	ND	ND	ND	ND	ND
952266	IPB2637-01 Outfall 001	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

\* Analysis not validated

  
Juan Diego, Project Manager  
Environmental Services

LEVEL IV



**REPORT**

**Client:** Del Mar Analytical  
17461 Derfan Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Chamberlin

**Sample:** Liquid / 1 Sample

**Project Name:** IPB2639

**P.O. Number:** IPB2639

**Method Number:** 2315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 952267

**Report Date:** March 20, 2006

**Sampling Date:** February 28, 2006

**Receiving Date:** March 1, 2006

**Extraction Date:** March 1, 2006

**Analysis Date:** March 3, 2006

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
705657-MB	Method Blank	ND	*	ND	*	ND	*
952267	IPB2639-01	ND	0	ND	0	ND	0
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xuan Bang*  
Xuan Bang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



**REPORT**

**Client:** Del Mar Analytical  
17481 Derian Ave., Suite 100  
Irvine, CA 92614

**Laboratory No:** 952268  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2641  
**P.O. Number:** IPB2641  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Analytical Results**

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Qual Code	Hydrazine	Qual Code	Hydrazine	Qual Code
705657-MB	Method Blank	ND	*	ND	*	ND	*
952268	IPB2641-01 Outfall oil	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

\*Analysis not validated

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2643  
**P.O. Number:** IPB2643  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 952265  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine
705657-MB	Method Blank	ND	ND	ND	ND	ND	ND
952265	outfall air IPB2643-01	ND	0	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

\*Analysis Not Validated

MDL: Method Detection Limit, ug/L

PQL: Practical Quantitation Limit, ug/L

ND: Not Detected at or above the MDL value.

N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xian Dang*  
Xian Dang, Project Manager  
Environmental Services

Level IV

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT29  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1

Laboratory Del Mar Analytical

Date: 2/15/05

Reviewer K. Okonczak

Reviewer's Signature  
*P. Marks for K. Okonczak*

Analysis/Method metals

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were applied for detects in the bracketing ICP/MS CCB analyses. Qualifications were applied to analytes detected below the laboratory reporting limit.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

---

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

---



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Okonzak-Lowry  
Date of Review: February 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0131-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses but did not report %RSDs. The laboratory SOP states that to be acceptable, the %RSD must be less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The applicable reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

## 2.4 BLANKS

There were detects and negative results reported for the method blanks and bracketing ICBs/CCBs associated with the sample in this SDG. Arsenic and silver were detected in a bracketing CCB at 0.63305 and 0.36341  $\mu\text{g/L}$ , respectively; therefore, the arsenic and silver detected in sample Outfall 011 were qualified "UJ." Selenium was detected in both bracketing CCBs at 0.90784 and 0.80914  $\mu\text{g/L}$ , respectively; therefore, the selenium detected in sample Outfall 011 was qualified "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

No ICPMS interference check samples were analyzed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

An ICSA analysis was included in the raw data for the ICP boron analysis. This ICSA analysis was performed two days before the site sample analysis and was not associated with the initial calibration performed for sample Outfall.011. The laboratory's ICP SOP No. MET-200.7/6010B, Revision 8, states that the ICSA and ICSAB samples need to be run consecutively at the beginning and end of each analytical run. Due to the low level of matrix interferences in the site sample matrix, no sample qualifications were required due to the ICP ICS analysis.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5A05092-BS1, the ICP LCS sample was identified as 5A06063-BS1, and the Hg LCS sample was identified as 5A06051-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

The ICP and ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.13.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site sample.





# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1021 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 5484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 503-8596 FAX (858) 503-9689  
 9830 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.42	1	01/05/05	01/06/05	J J DNQ
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.97	1	01/05/05	01/06/05	u J J B
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.072	1	01/05/05	01/06/05	J J J R DNQ
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.12	1	01/05/05	01/06/05	J J DNQ
Chromium	EPA 200.8	5A05092	0.26	1.0	1.9	1	01/05/05	01/06/05	J J DNQ
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.34	1	01/05/05	01/06/05	J J DNQ
Copper	EPA 200.8	5A05092	0.49	2.0	4.4	1	01/05/05	01/06/05	J J DNQ
Lead	EPA 200.8	5A05092	0.13	1.0	0.82	1	01/05/05	01/06/05	J J DNQ
Manganese	EPA 200.8	5A05092	0.44	1.0	14	1	01/05/05	01/06/05	J J DNQ
Mercury	EPA 245.1	5A06051	0.063	0.20	0.17	1	01/06/05	01/06/05	J J DNQ
Nickel	EPA 200.8	5A05092	0.15	1.0	2.1	1	01/05/05	01/06/05	J J B
Selenium	EPA 200.8	5A05092	0.36	2.0	0.66	1	01/05/05	01/06/05	u J J B
Silver	EPA 200.8	5A05092	0.089	1.0	0.13	1	01/05/05	01/06/05	u J J B
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	u
Vanadium	EPA 200.8	5A05092	0.86	1.0	1.1	1	01/05/05	01/06/05	J J DNQ
Zinc	EPA 200.8	5A05092	3.1	20	15	1	01/05/05	01/06/05	J J DNQ

*KML*  
*2/15/05*

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: mg/l									
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.015	1	01/05/05	01/06/05	Rev Qual   Sigat Code
Boron	EPA 200.7	5A06063	0.0074	0.050	0.051	1	01/06/05	01/06/05	
Iron	EPA 200.8	5A05092	0.0032	0.010	0.81	1	01/05/05	01/06/05	

# AMEC VALIDATED

## LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF23  
 Task Order 313150010  
 SDG No. IOA0121  
 No. of Analyses 1

Laboratory Pace  
 Reviewer K. Shadowlight  
 Analysis/Method Dioxins

Date: March 14, 2005  
 Reviewer's Signature  
*K. Shadowlight*

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were assigned for the following: * Method blank contamination * Detects below the lower method calibration level * <i>Re-extraction analysis rejected due to laboratory cross-contamination</i>
COMMENTS <sup>b</sup>	Revision of original report dated 02/18/05
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOA0121

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 1  
Reviewer: K. Shadowlight  
Date of Review: February 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 011	IOA0121-01	105776001	water	1613
Outfall 011	IOA0121-01RE	105776001R1	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The sample was subcontracted to Pace Analytical for dioxin/furan analysis. The sample was received at Pace Analytical Services below the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ; however, as the sample was not noted to have been frozen or damaged, no qualifications were required. The sample was received in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory (Del Mar Analytical), custody seals were not required. There was no information regarding custody seals upon receipt at Pace. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A column performance standard was combined with the daily calibration verification and analyzed at the beginning of each analytical sequence. The GC column performance was acceptable with the chromatographic separation of 2,3,7,8-TCDD and other TCDD isomers resolved with a valley of  $\leq 25\%$ . No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance could not be evaluated as the laboratory did not provide selected ion current profiles for the lock-mass ions. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration associated with the retained analysis of this SDG. The initial calibration was analyzed 11/29/04 on Instrument 10MSHR06. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the 2 native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in the Table 6 of the EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

There was one method blank (Blank-6159) extracted and analyzed with the retained analysis of this SDG. Target compounds 1,2,3,4,6,7,8-HpCDF, total HpCDF, 1,2,3,4,6,7,8-HpCDD, and total HpCDD were reported at trace levels; however, OCDF and OCDD were reported above the detection limits at 180pg/L and 220pg/L, respectively. Sample Outfall 011 was re-extracted and reanalyzed with a new method blank (Blank-6241). Dioxin/furan compounds were reported at trace levels in Blank-6241; however, trace amounts of PeCDF, PeCDD, HxCDF, and HxCDD were reported in the re-extraction analysis of Outfall 011, which was not characteristic of the sample. According to a memo from the laboratory, dated March 11, 2005, the trace concentrations of PeCDF, PeCDD, HxCDF, and HxCDD were considered to be cross-contamination from a laboratory spike. The reextraction analysis of Outfall 011 was therefore, rejected, "R," in favor of the original analysis. Any detects for the aforementioned target compounds reported at concentrations  $< 5\times$  the concentrations reported in the method blank were qualified as estimated nondetects "UJ," at the levels of interference in sample Outfall 011. The detect for total HpCDF was qualified as estimated, "J," in Outfall 011, as a portion of the total concentration was attributed to method blank contamination. Target compound 1,2,3,6,7,8-HxCDD was reported as an EMPC in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One LCS/LCSD pair (LCS-6160/LCSD-6161) was extracted and analyzed with the retained analysis of the sample in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. There are no method QC limits established for RPDs. The reported RPDs were within  $\pm 20\%$ . No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy and precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration limit (MCL) were qualified as estimated, "J." No further qualifications were required.

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0121-01		
Lab Sample ID	105776001		
Filename	F50121B_09		
Injected By	MRO		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/04/2005
ICAL Date	11/29/2004	Received	01/06/2005
CCal Filename(s)	F50121A_18	Extracted	01/18/2005
Method Blank ID	BLANK-6159	Analyzed	01/22/2005 06:03

Rev	What	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	2.00	2,3,7,8-TCDF-13C	2.00	46
u		Total TCDF	ND	----	2.00	2,3,7,8-TCDD-13C	2.00	55
						1,2,3,7,8-PeCDF-13C	2.00	78
u		2,3,7,8-TCDD	ND	----	1.80	2,3,4,7,8-PeCDF-13C	2.00	81
u		Total TCDD	ND	----	1.80	1,2,3,7,8-PeCDD-13C	2.00	91
						1,2,3,4,7,8-HxCDF-13C	2.00	80
u		1,2,3,7,8-PeCDF	ND	----	1.00	1,2,3,6,7,8-HxCDF-13C	2.00	96
		2,3,4,7,8-PeCDF	ND	----	0.82	2,3,4,6,7,8-HxCDF-13C	2.00	94
		Total PeCDF	ND	----	0.91	1,2,3,7,8,9-HxCDF-13C	2.00	87
						1,2,3,4,7,8-HxCDD-13C	2.00	75
u		1,2,3,7,8-PeCDD	ND	----	1.20	1,2,3,6,7,8-HxCDD-13C	2.00	88
u		Total PeCDD	ND	----	1.20	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
						1,2,3,4,7,8,9-HpCDF-13C	2.00	67
J	DNQ	1,2,3,4,7,8-HxCDF	1.2	----	0.63 J	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
u		1,2,3,6,7,8-HxCDF	ND	----	0.85	OCDD-13C	4.00	86
		2,3,4,6,7,8-HxCDF	ND	----	0.83			
		1,2,3,7,8,9-HxCDF	ND	----	0.90	1,2,3,4-TCDD-13C	2.00	NA
J	DNQ	Total HxCDF	1.2	----	0.80 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	----	1.10	2,3,7,8-TCDD-37Cl4	0.20	54
		1,2,3,6,7,8-HxCDD	ND	----	1.10			
		1,2,3,7,8,9-HxCDD	ND	----	0.96			
		Total HxCDD	ND	----	1.00			
US	B	1,2,3,4,6,7,8-HpCDF	3.6	----	2.00 BJ			
u		1,2,3,4,7,8,9-HpCDF	ND	----	1.60			
J	DNQ	Total HpCDF	18.0	----	1.80 BJ			
US	B	1,2,3,4,6,7,8-HpCDD	9.9	----	1.10 BJ			
US	e	Total HpCDD	22.0	----	1.10 BJ			
US	B	OCDF	17.0	----	1.90 BJ			
US	B	OCDD	78.0	----	2.10 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....105776

## REPORT OF LABORATORY ANALYSIS

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**AMEC VALIDATED**

**LEVEL IV**

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0121-01 RE		
Lab Sample ID	105776001 P1		
Filename	U50201A_11		
Injected By	SMT		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/04/2005
ICAL Date	01/26/2005	Received	01/06/2005
CCal Filename(s)	U50201A_06	Extracted	01/31/2005
Method Blank ID	BLANK-6241	Analyzed	02/01/2005 17:06

Rev  
Quest

Prel  
code

R

D

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	1.20	2,3,7,8-TCDF-13C	2.00	54
Total TCDF	ND	----	1.20	2,3,7,8-TCDD-13C	2.00	49
2,3,7,8-TCDD	ND	----	2.50	1,2,3,7,8-PeCDF-13C	2.00	66
Total TCDD	ND	----	2.50	2,3,4,7,8-PeCDF-13C	2.00	68
				1,2,3,7,8-PeCDD-13C	2.00	71
1,2,3,7,8-PeCDF	1.5	----	0.83 J	1,2,3,4,7,8-HxCDF-13C	2.00	55
2,3,4,7,8-PeCDF	1.9	----	0.78 J	1,2,3,6,7,8-HxCDF-13C	2.00	54
Total PeCDF	4.9	----	0.80 J	2,3,4,6,7,8-HxCDF-13C	2.00	55
				1,2,3,7,8,9-HxCDF-13C	2.00	56
1,2,3,7,8-PeCDD	1.7	----	1.40 J	1,2,3,4,7,8-HxCDD-13C	2.00	52
Total PeCDD	1.7	----	1.40 J	1,2,3,6,7,8-HxCDD-13C	2.00	48
				1,2,3,4,6,7,8-HpCDF-13C	2.00	54
1,2,3,4,7,8-HxCDF	1.8	----	0.67 J	1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,6,7,8-HxCDF	1.8	----	0.79 BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	53
2,3,4,6,7,8-HxCDF	1.4	----	0.69 J	OCDD-13C	4.00	56
1,2,3,7,8,9-HxCDF	1.2	----	0.65 J			
Total HxCDF	7.2	----	0.70 BJ	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	----	1.4	0.87 I			
1,2,3,6,7,8-HxCDD	----	1.5	0.89 I	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,7,8,9-HxCDD	1.9	----	0.81 J			
Total HxCDD	1.9	----	0.86 J			
1,2,3,4,6,7,8-HpCDF	----	2.9	1.40 I			
1,2,3,4,7,8,9-HpCDF	ND	----	1.30			
Total HpCDF	5.7	----	1.40 BJ			
1,2,3,4,6,7,8-HpCDD	5.6	----	1.10 BJ			
Total HpCDD	12.0	----	1.10 BJ			
OCDF	8.2	----	2.10 BJ			
OCDD	----	44.0	2.30 I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 = See Discussion

Report No.....105776

## REPORT OF LABORATORY ANALYSIS

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**MEC VALIDATED**

**LEVEL I**


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ11  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazines

Date: 04/11/05  
 Reviewer's Signature  


**ACTION ITEMS\***

1. Case Narrative Deficiencies
2. Out of Scope Analyses
3. Analyses Not Conducted
4. Missing Hardcopy Deliverables
5. Incorrect Hardcopy Deliverables
6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS\***      Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOC2063, 2064  
Analysis: Hydrazines

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

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INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOC2063

**P.O. Number:** IOC2063

**Method Number:** 6316 (Modified)

**Investigation:** Hydrazines In Liquid

**Laboratory No:** 941100

**Report Date:** March 30, 2005

**Sampling Date:** March 25, 2005

**Receiving Date:** March 28, 2005

**Extraction Date:** March 28, 2005

**Analysis Date:** March 29, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Hydrazine	Rev Qual	Hydrazine	Rev Qual	Hydrazine	Rev Qual
704871-MB	Method Blank	ND	*	ND	*	ND	*
941100	Outfall oil Grab IOC2063-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*pm 4/4/05*

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantization Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

# LEVEL IV

Xuan Dang, Project Manager  
Environmental Services

Analytical Not Validated

## AMEC VALIDATED

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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## REPORT

**Client:** Del Mar Analytical  
17461 Dorian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2064  
**P.O. Number:** IOC2064  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** ug/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qul	Qul Code	Qul	Qul Code	Qul	Qul Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101	Oil Composite IOC2064-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

PM 4/6/05

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

# AMEC VALIDATED

\*Analysis Not Validated

# LEVEL IV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ2  
 Task Order 313150010  
 SDG No. IOA0121, IOA0131

No. of Analyses 2

Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazine

Date: 02/14/05  
 Reviewer's Signature  
P. Meeks

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS*	Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOA0121 & IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121 & IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: February 10, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011	IOA0121-01	938344	water	Hydrazines by 8315
Outfall 011	IOA0131-01	938345	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. The transfer COCs accounted for the samples. The original COC for the Outfall 011 grab sample in SDG IOA0121 did not request hydrazine analyses while the original COC for the Outfall 011 composite sample in SDG IOA0131 did request monomethyl hydrazine analysis. Both transfer COCs requested only monomethyl hydrazine; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. A memo from MWH personnel dated 02/15/05 requested monomethyl hydrazine analysis for the Outfall 011 grab sample in SDG IOA0121.

The case narratives for these SDGs noted that the samples were received intact. As the samples were transported to Del Mar by courier, no custody seals were required. No custody seals were present upon arrival at Truesdail Laboratories. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met and the samples were analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 01/07/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on the Outfall 011 composite sample in SDG IOA0131. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . No qualifications were required.

### 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

#### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

#### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

### 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data, at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

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## REPORT

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**Client:** Del Mar Analytical-Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0131  
**P.O. Number:** IOA0131  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938345  
**Report Date:** January 10, 2005  
**Sampling Date:** January 5, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine	Dimethyl Hydrazine	Unsymmetrical Dimethyl Hydrazine	Hydrazine
704641-MB	Method Blank	ND	ND	ND	ND
938345	IOA0131-01	ND	ND	ND	ND
PQL	Outfall Oil	5.0	5.0	5.0	5.0
Sample Report Limits		5.0	5.0	5.0	5.0

\*Analysis not validated

pm 2/17/05

PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Pang, Project Manager  
Environmental Services

# AMEC VALIDATED LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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## REPORT

**Client:** Del Mar Analytical-Ait.  
17461 Derlan Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0121  
**P.O. Number:** IOA0121  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines In Liquid

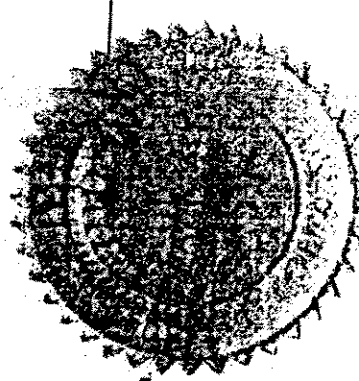
**Laboratory No:** 938344  
**Report Date:** January 10, 2005  
**Sampling Date:** January 4, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Rev Qual	Hydrazine	Rev Qual	Hydrazine	Rev Qual
704641-MB	Method Blank	ND	✓	ND	✓	ND	✓
938344	IOA0121-01	ND	U	ND	U	ND	U
PQL	Outfall Oil	5.0		5.0		5.0	
Sample Report Limits		5.0		5.0		5.0	

PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.



*Xuan Dang*  
Xuan Dang, Project Manager  
Environmental Services

# AMEC VALIDATED LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT28  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses 1

Laboratory Del Mar  
 Reviewer P. Meeks

Date: 02/09/05  
 Reviewer's Signature  
P. Meeks

Analysis/Method Metals

**ACTION ITEMS\***

1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications applied for:
Holding Times	1. Reporting limit check standard %R outliers
GC/MS Tune/Inst. Performance	2. Detects in the CCBs
Calibrations	3. Detects below the RL
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	

**COMMENTS\***

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOA0121

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: February 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOA0121  
Analysis: MET

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0121-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses but did not report %RSDs. The laboratory SOP states that to be acceptable, the %RSD must be less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The chromium and iron reporting limit check standard recoveries were below the control limit; therefore, chromium and iron detected in Outfall 011 were qualified as estimated, "J." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

There were detects and negative results reported for the method blanks and bracketing ICBs/CCBs associated with the sample in this SDG. Arsenic and antimony were detected in a bracketing CCB at 0.633 and 0.415  $\mu\text{g/L}$ , respectively; therefore, arsenic and antimony detected in Outfall 011 were qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

No ICPMS interference check samples were analyzed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

An ICSA analysis was included in the raw data for the ICP boron analysis. The recoveries for the interferences were within the control limits of 80-120%. No sample qualifications were required due to the ICP ICS analysis.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5A05092-BS1, the ICP LCS sample was identified as 5A05093-BS1, and the Hg LCS sample was identified as 5A06051-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

MS/MSD analyses were performed on Outfall 011. The RPDs were less than the control limit of 20% and no qualifications were required.

## 2.8 MATRIX SPIKE

MS/MSD analyses were performed on Outfall 011. The recoveries for iron were below the control limit; therefore, iron detected in Outfall 011 was qualified as estimated, "J." The remaining recoveries were within the AMEC control limits of 75-125 and no further qualifications were required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP and ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site sample.



# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 57th St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-1620 FAX (702) 798-1621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: mg/l									Rev Qual
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.025	1	01/05/05	01/06/05	
Boron	EPA 200.7	5A05093	0.0074	0.050	0.060	1	01/05/05	01/05/05	
Iron	EPA 200.8	5A05092	0.0032	0.010	1.5	1	01/05/05	01/06/05	J M2 *3, Q

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 57th St., Suite B-120, Phoenix, AZ 85044 (480) 795-0043 FAX (480) 795-0831  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.87	1	01/05/05	01/06/05	J J B
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.80	1	01/05/05	01/06/05	J J B
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.14	1	01/05/05	01/06/05	J J B
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.25	1	01/05/05	01/06/05	J J DNQ
Chromium	EPA 200.8	5A05092	0.26	1.0	3.5	1	01/05/05	01/06/05	J J DNQ
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.59	1	01/05/05	01/06/05	J J *3
Copper	EPA 200.8	5A05092	0.49	2.0	6.3	1	01/05/05	01/06/05	J J DNQ
Lead	EPA 200.8	5A05092	0.13	1.0	1.4	1	01/05/05	01/06/05	
Manganese	EPA 200.8	5A05092	0.44	1.0	26	1	01/05/05	01/06/05	
Mercury	EPA 245.1	5A06051	0.063	0.20	0.25	1	01/06/05	01/06/05	
Nickel	EPA 200.8	5A05092	0.15	1.0	3.5	1	01/05/05	01/06/05	
Selenium	EPA 200.8	5A05092	0.36	2.0	0.63	1	01/05/05	01/06/05	
Silver	EPA 200.8	5A05092	0.089	1.0	ND	1	01/05/05	01/06/05	J J DNQ
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	J J U
Vanadium	EPA 200.8	5A05092	0.86	1.0	2.4	1	01/05/05	01/06/05	J J U
Zinc	EPA 200.8	5A05092	3.1	20	22	1	01/05/05	01/06/05	

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP10  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses 1

Laboratory Del Mar Analytical

Reviewer L. Calvin

Analysis/Method Pest/PCBs by Method 608

Date: February 14, 2005

Reviewer's Signature L. Calvin

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	_____
COMMENTS <sup>b</sup>	Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 16, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $4^{\circ}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narrative noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 10/26/04 associated with pesticide analysis of sample Outfall 011, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or  $r^2 \geq 0.995$  on both analytical columns. There was one initial calibration dated 01/04/05 associated with the PCB analysis of the sample. The PCB calibration consisted of five points for Arochlor 1016 and Arochlor 1260. Single point calibrations for Arochlor 1242, Arochlor 1248, and Arochlor 1254 were analyzed but were not provided in the data package. The average %RSDs for the individual peaks of Arochlor 1016 and Arochlor 1260 were  $\leq 10\%$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The pesticide sample analysis of this SDG was bracketed by four continuing calibrations. In one of the bracketing calibrations following the sample analysis several %Ds exceeded 15% on channel A with high responses; however, as all results in this SDG were reported from channel B, no qualifications were assigned. The %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. The PCB analysis of this sample was bracketed by two CCVs and the %Ds for Arochlor 1016 and Arochlor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of the analytical sequence. Cross-contamination was not evident in the sample. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5A05041-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5A05041-BS2/BSD2) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for this SDG were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water sample. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG however, as there were no detects reported in this SDG, quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the

DATA VALIDATION REPORT

Project: NPDES  
SDG: IOA0121  
Analysis: Pest/PCB

initial calibration and the laboratory MDL study. The water reporting limits were not adjusted for sample amount on the result summary; however, the dilution listed on the summary reflected the sample volume extracted. Results were reported in  $\mu\text{g/L}$  (ppb). No qualifications were required.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Aldrin	EPA 608	5A05041	0.029	0.10	ND	0.962	01/05/05	01/05/05	<i>new data code</i> ↓
alpha-BHC	EPA 608	5A05041	0.010	0.10	ND	0.962	01/05/05	01/05/05	
beta-BHC	EPA 608	5A05041	0.011	0.10	ND	0.962	01/05/05	01/05/05	
delta-BHC	EPA 608	5A05041	0.010	0.20	ND	0.962	01/05/05	01/05/05	
gamma-BHC (Lindane)	EPA 608	5A05041	0.0097	0.10	ND	0.962	01/05/05	01/05/05	
Chlordane	EPA 608	5A05041	0.18	1.0	ND	0.962	01/05/05	01/05/05	
4,4'-DDD	EPA 608	5A05041	0.011	0.10	ND	0.962	01/05/05	01/05/05	
4,4'-DDE	EPA 608	5A05041	0.017	0.10	ND	0.962	01/05/05	01/05/05	
4,4'-DDT	EPA 608	5A05041	0.015	0.10	ND	0.962	01/05/05	01/05/05	
Dieldrin	EPA 608	5A05041	0.010	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan I	EPA 608	5A05041	0.015	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan II	EPA 608	5A05041	0.037	0.10	ND	0.962	01/05/05	01/05/05	
Endosulfan sulfate	EPA 608	5A05041	0.013	0.20	ND	0.962	01/05/05	01/05/05	
Endrin	EPA 608	5A05041	0.0082	0.10	ND	0.962	01/05/05	01/05/05	
Endrin aldehyde	EPA 608	5A05041	0.045	0.10	ND	0.962	01/05/05	01/05/05	
Endrin ketone	EPA 608	5A05041	0.020	0.10	ND	0.962	01/05/05	01/05/05	
Heptachlor	EPA 608	5A05041	0.030	0.10	ND	0.962	01/05/05	01/05/05	
Heptachlor epoxide	EPA 608	5A05041	0.012	0.10	ND	0.962	01/05/05	01/05/05	
Methoxychlor	EPA 608	5A05041	0.034	0.10	ND	0.962	01/05/05	01/05/05	
Toxaphene	EPA 608	5A05041	0.77	5.0	ND	0.962	01/05/05	01/05/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					43 %				
Surrogate: Decachlorobiphenyl (45-120%)					66 %				

# AMEC VALIDATED LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Date	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05					see qual code
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5A05041	0.067	1.0	ND	0.962	01/05/05	01/05/05		u
Aroclor 1221	EPA 608	5A05041	0.057	1.0	ND	0.962	01/05/05	01/05/05		
Aroclor 1232	EPA 608	5A05041	0.13	1.0	ND	0.962	01/05/05	01/05/05		
Aroclor 1242	EPA 608	5A05041	0.12	1.0	ND	0.962	01/05/05	01/05/05		
Aroclor 1248	EPA 608	5A05041	0.21	1.0	ND	0.962	01/05/05	01/05/05		
Aroclor 1254	EPA 608	5A05041	0.16	1.0	ND	0.962	01/05/05	01/05/05		
Aroclor 1260	EPA 608	5A05041	0.17	1.0	ND	0.962	01/05/05	01/05/05		
Surrogate: Decachlorobiphenyl (45-120%)					86 %					

**AMEC VALIDATED**

**LEVEL IV**

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 DRAFT REPORT  
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA2  
 Task Order 313150010  
 SDG No. IOA0115, 0121, 0131

No. of Analyses 1

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Radionuclides

Date: 03/03/05

Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,  Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: 1. Exceeded holding time 2. Lack of preservation 3. Incorrect sample container 4. Detector efficiencies less than 20%
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available. *
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.



\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOA0115, IOA0121, IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0115, IOA0121, IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 03, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID <sup>a</sup>	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003 Unfiltered	IOA0115-01	8149-01	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOA0115-02	8149-02	water	900.0, 905.0, 906.0
Outfall 011	IOA0121-01	8148-01	water	900.0, 905.0, 906.0
Outfall 011 - Composite	IOA0131-01	8147-01	water	900.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were intact and in good condition.

According to the Eberline login sheet, none of the samples were received preserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As the strontium aliquot for Outfall 003 Filtered was not preserved; the nondetect strontium result was qualified as estimated, "UJ." Additionally, according to the 01/12/05 LARWQCB guidance letter, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As none of the tritium samples were submitted on glass containers, all nondetect tritium results were qualified as estimated, "UJ." No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. The original COCs for Outfall 003 did not request that an aliquot of each sample be filtered; however, the Del Mar project manager confirmed in a telephone conversation dated 1/31/05, that this was required by MWH. The original COC for Outfall 011 (SDG IOA0121) did not request that the sample containers received be analyzed for radionuclides. A memo from MWH personnel dated 2/17/05 requested these analyses. The transfer COCs accounted for all samples. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium and strontium samples were analyzed within 180 days of collection. The gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, the gross alpha and gross beta results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the nondetected alpha results were qualified as estimated, "UJ," for nondetects and "J," for detects.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable.

### Gross Beta and Strontium-90

The initial calibrations were performed in June 1997. All detector efficiencies were at least 20% and were considered acceptable. All continuing calibration results were within the laboratory control limits; therefore, no qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One blank spike (8147-002) was analyzed in association with the samples in these SDGs. All recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed a duplicate analysis on Outfall 011 Composite. The RPDs for gross beta, tritium, and strontium were  $\leq 20\%$ . The RPD for gross alpha was  $>20\%$ ; however, as the results were within the 3 sigma limit, no qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 Composite for gross alpha, gross beta and tritium. The recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs:

Eberline Services

ANALYSIS RESULTS

SDG 8149	Client DEL MAR ANAL
Work Order R501015-01	Contract PROJECT# IOA0115
Received Date 01/06/05	Matrix WATER

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Unfiltered IOA0115-01	8149-001	01/04/05	01/26/05	GrossAlpha	8.96 ± 2.2	pCi/L	1.30	J	H, #2
			01/26/05	Gross Beta	10.7 ± 1.6	pCi/L	1.78	J	H
			01/27/05	H3	25.3 ± 180	pCi/L	303	US	*1
			01/14/05	Sr90	0.740 ± 0.25	pCi/L	0.344		
Outfall 003 Filtered IOA0115-02	8149-002	01/04/05	01/26/05	GrossAlpha	0.179 ± 0.60	pCi/L	1.15	US	H, #2
			01/26/05	Gross Beta	4.87 ± 1.3	pCi/L	1.76	J	H
			01/27/05	H3	-12.7 ± 180	pCi/L	302	US	*1
			01/14/05	Sr90	0.822 ± 0.33	pCi/L	0.420	J	*1

Am 3/4/05

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Report Date 02/13/05
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8148</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501014-01</u>	Contract <u>PROJECT# IOA0121</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> Outfall 011 IOA0121-01  PM 3/4/05	8148-001		01/04/05	01/26/05	GrossAlpha	1.64 ± 0.96	pCi/L	0.839	J	H, *2
				01/26/05	Gross Beta	2.65 ± 1.2	pCi/L	1.74	J	H
				01/27/05	H3	-93.0 ± 170	pCi/L	303	US	*1
				01/14/05	Sr90	0.188 ± 0.25	pCi/L	0.456	U	

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Report Date <u>02/13/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8147</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501013-01</u>	Contract <u>PROJECT# IOA0131</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code
<u>Sample ID</u>	<u>Sample ID</u>								
	<u>Outfall Oil Composite</u>								
IOA0131-01	8147-001	01/05/05	01/22/05	GrossAlpha	-0.671 ± 1.0	pCi/L	1.99	UJ	H,*2
			01/22/05	Gross Beta	2.37 ± 1.2	pCi/L	1.80	J	H
			01/26/05	H3	-125 ± 170	pCi/L	300	UJ	*1
			01/14/05	Sr90	0.002 ± 0.22	pCi/L	0.446	U	

pm 3/4/05

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Report Date <u>02/13/05</u>
Page 1



**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711SV24  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses I

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Semivolatiles

Date: February 14, 2005  
 Reviewer's Signature 

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were required for LCS outliers.
COMMENTS*	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. b Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 14, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of 4°C ±2°C, at 5°C. The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 01/12/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 01/13/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20$ . A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.4 BLANKS

One method blank (5A03039-BLK1) was extracted and analyzed with this SDG. There were no reportable detects for the target compounds listed on the summary form. Review of the raw data indicated no reportable false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5A03039-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary,

to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples. All percent recoveries and RPDs were within the laboratory QC limits except for the recoveries of less than 10% for benzidine in both the LCS and LCSD and the recovery above the QC limit for 2,4-dinitrophenol in the LCSD only. Benzidine was rejected, "R," in the sample of this SDG. The RPD for hexachlorocyclopentadiene was above the QC limit and was qualified as an estimated nondetect, "UJ," in the sample of this SDG. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for five semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial and the method detection limit study. Detects below the reporting limit were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water)					Sampled: 01/04/05				
Reporting Units: ug/l									
Acenaphthene	EPA 625	5A05039	0.10	0.50	ND	0.962	01/05/05	01/14/05	U
Acenaphthylene	EPA 625	5A05039	0.10	0.50	ND	0.962	01/05/05	01/14/05	U
Aniline	EPA 625	5A05039	2.9	10	ND	0.962	01/05/05	01/14/05	U
Anthracene	EPA 625	5A05039	0.083	0.50	ND	0.962	01/05/05	01/14/05	U
Benzidine	EPA 625	5A05039	2.4	5.0	ND	0.962	01/05/05	01/14/05	U L2
Benzoic acid	EPA 625	5A05039	3.7	20	ND	0.962	01/05/05	01/14/05	U
Benzo(a)anthracene	EPA 625	5A05039	0.038	5.0	ND	0.962	01/05/05	01/14/05	U
Benzo(a)pyrene	EPA 625	5A05039	0.14	2.0	ND	0.962	01/05/05	01/14/05	U
Benzo(b)fluoranthene	EPA 625	5A05039	0.050	2.0	ND	0.962	01/05/05	01/14/05	U
Benzo(g,h,i)perylene	EPA 625	5A05039	0.059	5.0	ND	0.962	01/05/05	01/14/05	U
Benzo(k)fluoranthene	EPA 625	5A05039	0.053	0.50	ND	0.962	01/05/05	01/14/05	U
Benzyl alcohol	EPA 625	5A05039	0.21	5.0	0.27	0.962	01/05/05	01/14/05	J I DNR
Bis(2-chloroethoxy)methane	EPA 625	5A05039	0.072	0.50	ND	0.962	01/05/05	01/14/05	U
Bis(2-chloroethyl)ether	EPA 625	5A05039	0.084	0.50	ND	0.962	01/05/05	01/14/05	U
Bis(2-chloroisopropyl)ether	EPA 625	5A05039	0.11	0.50	ND	0.962	01/05/05	01/14/05	U
Bis(2-ethylhexyl)phthalate	EPA 625	5A05039	1.1	5.0	ND	0.962	01/05/05	01/14/05	U
4-Bromophenyl phenyl ether	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	U
Butyl benzyl phthalate	EPA 625	5A05039	0.34	5.0	ND	0.962	01/05/05	01/14/05	U
4-Chloroaniline	EPA 625	5A05039	0.20	2.0	ND	0.962	01/05/05	01/14/05	U
2-Chloronaphthalene	EPA 625	5A05039	0.059	0.50	ND	0.962	01/05/05	01/14/05	U
4-Chloro-3-methylphenol	EPA 625	5A05039	0.34	2.0	ND	0.962	01/05/05	01/14/05	U
4-Chlorophenyl phenyl ether	EPA 625	5A05039	0.056	0.50	ND	0.962	01/05/05	01/14/05	U
2-Chlorophenol	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	U
Chrysene	EPA 625	5A05039	0.072	0.50	ND	0.962	01/05/05	01/14/05	U
Dibenz(a,h)anthracene	EPA 625	5A05039	0.083	0.50	ND	0.962	01/05/05	01/14/05	U
Dibenzofuran	EPA 625	5A05039	0.075	0.50	ND	0.962	01/05/05	01/14/05	U
Di-n-butyl phthalate	EPA 625	5A05039	0.26	2.0	ND	0.962	01/05/05	01/14/05	U
1,2-Dichlorobenzene	EPA 625	5A05039	0.11	0.50	ND	0.962	01/05/05	01/14/05	U
1,3-Dichlorobenzene	EPA 625	5A05039	0.13	0.50	ND	0.962	01/05/05	01/14/05	U
1,4-Dichlorobenzene	EPA 625	5A05039	0.050	0.50	ND	0.962	01/05/05	01/14/05	U
3,3-Dichlorobenzidine	EPA 625	5A05039	0.93	5.0	ND	0.962	01/05/05	01/14/05	U
2,4-Dichlorophenol	EPA 625	5A05039	0.21	2.0	ND	0.962	01/05/05	01/14/05	U
Diethyl phthalate	EPA 625	5A05039	0.12	1.0	ND	0.962	01/05/05	01/14/05	U
2,4-Dimethylphenol	EPA 625	5A05039	0.31	2.0	ND	0.962	01/05/05	01/14/05	U
Dimethyl phthalate	EPA 625	5A05039	0.081	0.50	ND	0.962	01/05/05	01/14/05	U
4,6-Dinitro-2-methylphenol	EPA 625	5A05039	0.38	5.0	ND	0.962	01/05/05	01/14/05	U
2,4-Dinitrophenol	EPA 625	5A05039	2.7	5.0	ND	0.962	01/05/05	01/14/05	U
2,4-Dinitrotoluene	EPA 625	5A05039	0.23	5.0	ND	0.962	01/05/05	01/14/05	U
2,6-Dinitrotoluene	EPA 625	5A05039	0.24	5.0	ND	0.962	01/05/05	01/14/05	U
Di-n-octyl phthalate	EPA 625	5A05039	0.17	5.0	ND	0.962	01/05/05	01/14/05	U
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A05039	0.087	1.0	ND	0.962	01/05/05	01/14/05	U

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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LEVEL IV

MP 2-14-05





# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05					REV QUAL QUX2 CODE
Reporting Units: ug/l										
Fluoranthene	EPA 625	5A05039	0.089	0.50	ND	0.962	01/05/05	01/14/05	U	
Fluorene	EPA 625	5A05039	0.075	0.50	ND	0.962	01/05/05	01/14/05	U	
Hexachlorobenzene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	U	
Hexachlorobutadiene	EPA 625	5A05039	0.38	2.0	ND	0.962	01/05/05	01/14/05	U	
Hexachlorocyclopentadiene	EPA 625	5A05039	1.8	5.0	ND	0.962	01/05/05	01/14/05	U	
Hexachloroethane	EPA 625	5A05039	0.51	3.0	ND	0.962	01/05/05	01/14/05	U	
Indeno(1,2,3-cd)pyrene	EPA 625	5A05039	0.19	2.0	ND	0.962	01/05/05	01/14/05	U	
Isophorone	EPA 625	5A05039	0.059	1.0	0.12	0.962	01/05/05	01/14/05	J J DNG	
2-Methylnaphthalene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	U	
2-Methylphenol	EPA 625	5A05039	0.28	2.0	ND	0.962	01/05/05	01/14/05	U	
4-Methylphenol	EPA 625	5A05039	0.20	5.0	ND	0.962	01/05/05	01/14/05	U	
Naphthalene	EPA 625	5A05039	0.13	1.0	ND	0.962	01/05/05	01/14/05	U	
2-Nitroaniline	EPA 625	5A05039	0.18	5.0	ND	0.962	01/05/05	01/14/05	U	
3-Nitroaniline	EPA 625	5A05039	0.35	5.0	ND	0.962	01/05/05	01/14/05	U	
4-Nitroaniline	EPA 625	5A05039	0.49	5.0	ND	0.962	01/05/05	01/14/05	U	
Nitrobenzene	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	U	
2-Nitrophenol	EPA 625	5A05039	0.23	2.0	ND	0.962	01/05/05	01/14/05	U	
4-Nitrophenol	EPA 625	5A05039	0.73	5.0	ND	0.962	01/05/05	01/14/05	U	
N-Nitrosodimethylamine	EPA 625	5A05039	0.22	2.0	ND	0.962	01/05/05	01/14/05	U	
N-Nitroso-di-n-propylamine	EPA 625	5A05039	0.18	2.0	ND	0.962	01/05/05	01/14/05	U	
N-Nitrosodiphenylamine	EPA 625	5A05039	0.077	1.0	ND	0.962	01/05/05	01/14/05	U	
Pentachlorophenol	EPA 625	5A05039	0.78	2.0	ND	0.962	01/05/05	01/14/05	U	
Phenanthrene	EPA 625	5A05039	0.071	0.50	ND	0.962	01/05/05	01/14/05	U	
Phenol	EPA 625	5A05039	0.14	1.0	ND	0.962	01/05/05	01/14/05	U	
Pyrene	EPA 625	5A05039	0.059	0.50	ND	0.962	01/05/05	01/14/05	U	
1,2,4-Trichlorobenzene	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	U	
2,4,5-Trichlorophenol	EPA 625	5A05039	0.075	2.0	ND	0.962	01/05/05	01/14/05	U	
2,4,6-Trichlorophenol	EPA 625	5A05039	0.10	1.0	ND	0.962	01/05/05	01/14/05	U	
Surrogate: 2-Fluorophenol (35-120%)					78 %					
Surrogate: Phenol-d6 (45-120%)					86 %					
Surrogate: 2,4,6-Tribromophenol (50-125%)					91 %					
Surrogate: Nitrobenzene-d5 (45-120%)					78 %					
Surrogate: 2-Fluorobiphenyl (45-120%)					80 %					
Surrogate: Terphenyl-d14 (45-135%)					83 %					

# AMEC VALIDATED

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

## LEVEL IV

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF32  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses 1

Laboratory Del Mar Analytical

Date: February 14, 2005

Reviewer L. Calvin

Reviewer Signature

Analysis/Method EFH by 8015M

*L. Calvin*

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	
Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: Total Petroleum Hydrocarbons: Extractable

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 14, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $4^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. The TPH-Extractable analysis was not requested on the COC; however, a COC analytical request change form dated 02/16/05 clarified the requested analyses. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 12/22/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5A06045-BLK1) was extracted and analyzed with the sample in this SDG. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5A06045-BS1/BSD1) was extracted and analyzed with the sample in this SDG. The recoveries of alkane range C13-C40 from spiked diesel were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit

of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample was fortified with the surrogate compound n-octacosane. The sample surrogate recovery was within the laboratory-established QC of 40-125%. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the sample of this SDG. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. No qualifications were required.



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5A06045	0.082	0.50	ND	0.962	01/06/05	01/07/05	u
Surrogate: n-Octacosane (40-125%) 59 %									
						Sampled: 01/04/05			

*u*  
*not*  
*Qual*  
*Code*

*[Handwritten signature]*

DRAFT REPORT  
DRAFT REPORT  
DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711TF33  
Task Order 313150010  
SDG No. IOA0121

No. of Analyses 2

Laboratory Del Mar Analytical

Date: February 14, 2005

Reviewer L. Calvin

Reviewer's Signature  


Analysis/Method GRO by 8015M

**ACTION ITEMS\***

1. Case Narrative  
Deficiencies

2. Out of Scope  
Analyses

3. Analyses Not Conducted

4. Missing Hardcopy  
Deliverables

5. Incorrect Hardcopy  
Deliverables

6. Deviations from Analysis  
Protocol, e.g.,  
Holding Times  
GC/MS Tune/Inst. Performance  
Calibration  
Method blanks  
Surrogates  
Matrix Spike/Dup LCS  
Field QC  
Internal Standard Performance  
Compound Identification  
Quantitation  
System Performance

**COMMENTS<sup>b</sup>**

Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: Total Petroleum Hydrocarbons: Purgeable

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 14, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	8015M/GRO
Trip Blank	Trip Blank	IOA0121-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $4^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. The TPH-GRO analysis was not requested on the COC; however, a COC analytical request change form dated 02/16/05 clarified the requested analyses. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/26/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5A06001-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5A06001-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140% for both samples. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. There were no field blank or equipment rinsate samples associated with this SDG. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibrations and by the laboratory MDL. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05					rel qual Dua Deede
Reporting Units: mg/l										
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	u	
Surrogate: 4-BFB (FID) (65-140%)					84 %					
Sample ID: IOA0121-02 (DRAFT: Trip Blank - Water)					Sampled: 01/04/05					
Reporting Units: mg/l										
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	u	
Surrogate: 4-BFB (FID) (65-140%)					85 %					

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO43

Task Order 313150010

SDG No. IOA0121

No. of Analyses 1

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles (1,4-dioxane)

Date: February 11, 2005

Reviewer's Signature



**ACTION ITEMS\***

1. **Case Narrative**  
**Deficiencies**
2. **Out of Scope**  
**Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy**  
**Deliverables**
5. **Incorrect Hardcopy**  
**Deliverables**
6. **Deviations from Analysis**  
**Protocol, e.g.,**  
 Holding Times  
 GC/MS Tune/Inst. Perform  
 Calibrations  
 Blanks  
 Surrogates  
 Matrix Spike/Dup LCS  
 Field QC  
 Internal Standard Performance  
 Compound Identification and  
 Quantitation  
 System Performance

**COMMENTS\***      Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 b Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The sample was properly preserved. The COC noted that the sample was received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel. The COCs accounted for the analysis presented in this SDG. According to the sample login sheet, custody seals were not present on the cooler. No qualifications were required.

#### 2.1.3 Holding Times

The sample was analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the sample was analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 01/07/04, was associated with this SDG. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the %RSD was  $\leq 15\%$ . One continuing calibration, dated 01/07/05 was associated with this SDG. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The %RSD and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

### 2.4 BLANKS

One water method blank (P5A1203-BLK1) was associated with this SDG. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5A1203-BS1/BS1D) with this SDG. The recoveries and RPD for 1,4-dioxane were within the laboratory QC limits. A representative recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recovery for this sample was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample Outfall 011 was the MS/MSD analyses performed with this SDG. The recoveries and RPD for 1,4-dioxane were within the laboratory QC limits. A representative recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The sample in this SDG had no associated trip blank. No qualifications were required.

### 2.8.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the sample were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the sample and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

## DRAFT: 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				REV QUAL
Reporting Units: ug/l									CODE
1,4-Dioxane	EPA 8260B	PSA1203	0.49	1.0	ND	1	01/12/05	01/12/05	U
Surrogate: Dibromofluoromethane (80-125%)					93 %				

AMEC VALIDATED

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO46

Task Order 313150010

SDG No. IOA0121

No. of Analyses 2

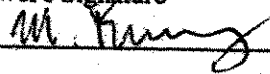
Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles

Date: February 11, 2005

Reviewer's Signature



**ACTION ITEMS\***

1. **Case Narrative**  
**Deficiencies**

2. **Out of Scope**  
**Analyses**

3. **Analyses Not Conducted**

4. **Missing Hardcopy**  
**Deliverables**

5. **Incorrect Hardcopy**  
**Deliverables**

6. **Deviations from Analysis**

**Protocol, e.g.,**

Holding Times

GC/MS Tune/Inst. Perform

Calibrations

Blanks

Surrogates

Matrix Spike/Dup LCS

Field QC

Internal Standard Performance

Compound Identification and

Quantitation

System Performance

Qualifications required for calibration outliers.

**COMMENTS<sup>b</sup>**

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0121-01	water	624
Trip Blank	Trip Blank	IOA0121-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . According to the COC, the samples were received intact, without headspace, and in good condition. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals are not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation report were consistent with those specified in the EPA Method 624. All ion abundances were within the established windows and were therefore acceptable. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations, dated 10/24/04 and 11/10/04, were associated with this SDG. The average RRFs were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  for the target compounds listed on the sample summary forms. Two continuing calibrations, dated 01/05/05 (16:00 and 16:33), were associated with this SDG. The RRFs for all target compounds were  $\geq 0.05$  and the %Ds were  $\leq 20\%$  except for the %Ds for methylene chloride, 2-chloroethylvinyl ether, bromoform, acrolein, and acrylonitrile. The aforementioned compounds were qualified as estimated nondetects, "UJ," in the site sample of this SDG. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blank (5A05017-BLK1 and 5A05012) were associated with this SDG. There were no detects for the target compounds listed on the summary forms. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5A05017-BS1 and 5A05012) were associated with this SDG. All spike recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were within the QC limits of 80-120%. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

An MS/MSD analyses was not performed with this SDG. Evaluation of method accuracy was based on the LCS results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOA0121-02) was the trip blank associated with the site sample of this SDG. Methylene chloride was detected in the trip blank; however, the sample of this SDG did not have any target compounds detected. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no other field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for a subset of volatile target compounds by EPA Method 624. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted.

The laboratory analyzed for 1,2-dichloro-1,1,2-trifluorethane and cyclohexane as TICs for this SDG. 1,2-dichloro-1,1,2-trifluorethane was present in the calibration standards. Neither compound was reported either as a TIC or as a target compound in the samples of this SDG and were reported as estimated nondetects, "UJ."

No further qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by MDL study. Compound quantitation was verified by recalculating any sample detect, and/or a representative number of blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory analyzed for 1,2-dichloro-1,1,2-trifluorethane and cyclohexane as TICs for this SDG. 1,2-dichloro-1,1,2-trifluorethane was present in the calibration standards. Neither compound was reported either as a TIC or as a target compound in the samples of this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water)										
Reporting Units: ug/l										
Sampled: 01/04/05										
Benzene	EPA 624	5A05017	0.28	1.0	ND	1	01/05/05	01/05/05	U	
Bromodichloromethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
Bromoform	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	U	
Bromomethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	U	
Carbon tetrachloride	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	U	
Chlorobenzene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	U	
Chloroethane	EPA 624	5A05017	0.33	5.0	ND	1	01/05/05	01/05/05	U	
Chloroform	EPA 624	5A05017	0.33	2.0	ND	1	01/05/05	01/05/05	U	
Chloromethane	EPA 624	5A05017	0.30	5.0	ND	1	01/05/05	01/05/05	U	
Dibromochloromethane	EPA 624	5A05017	0.28	2.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichlorobenzene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	U	
1,3-Dichlorobenzene	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	U	
1,4-Dichlorobenzene	EPA 624	5A05017	0.37	2.0	ND	1	01/05/05	01/05/05	U	
1,1-Dichloroethane	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichloroethane	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	U	
trans-1,2-Dichloroethene	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichloropropane	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	U	
cis-1,3-Dichloropropene	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	U	
trans-1,3-Dichloropropene	EPA 624	5A05017	0.22	2.0	ND	1	01/05/05	01/05/05	U	
Ethylbenzene	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	U	
Methylene chloride	EPA 624	5A05017	0.25	2.0	ND	1	01/05/05	01/05/05	U	
1,1,2,2-Tetrachloroethane	EPA 624	5A05017	0.48	5.0	ND	1	01/05/05	01/05/05	U	
Tetrachloroethene	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	U	
Toluene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	U	
1,1,1-Trichloroethane	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	U	
1,1,2-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
Trichloroethene	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
Trichlorofluoromethane	EPA 624	5A05017	0.26	2.0	ND	1	01/05/05	01/05/05	U	
Vinyl chloride	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	U	
Xylenes, Total	EPA 624	5A05017	0.26	0.50	ND	1	01/05/05	01/05/05	U	
Surrogate: Dibromofluoromethane (80-120%)			0.52	4.0	ND	1	01/05/05	01/05/05	U	
Surrogate: Toluene-d8 (80-120%)										100 %
Surrogate: 4-Bromofluorobenzene (80-120%)										101 %
										97 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water)					Sampled: 01/04/05				
Reporting Units: ug/l					REV QUAL				
Acrolein	EPA 624	5A05012	4.6	50	ND	1	01/05/05	01/05/05	UJ C
Acrylonitrile	EPA 624	5A05012	5.1	50	ND	1	01/05/05	01/05/05	UJ C
2-Chloroethyl vinyl ether	EPA 624	5A05012	1.3	5.0	ND	1	01/05/05	01/05/05	UJ C
Surrogate: Dibromofluoromethane (80-120%)					103 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					99 %				

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV QUAL	QUAL CODE
Sample ID: IOA0121-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
Sampled: 01/04/05										
Benzene	EPA 624	5A05017	0.28	1.0	ND	1	01/05/05	01/05/05	U	
Bromodichloromethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
Bromoform	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	U	
Bromomethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	U	
Carbon tetrachloride	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	U	
Chlorobenzene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	U	
Chloroethane	EPA 624	5A05017	0.33	5.0	ND	1	01/05/05	01/05/05	U	
Chloroform	EPA 624	5A05017	0.33	2.0	ND	1	01/05/05	01/05/05	U	
Chloromethane	EPA 624	5A05017	0.30	5.0	ND	1	01/05/05	01/05/05	U	
Dibromochloromethane	EPA 624	5A05017	0.28	2.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichlorobenzene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	U	
1,3-Dichlorobenzene	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	U	
1,4-Dichlorobenzene	EPA 624	5A05017	0.37	2.0	ND	1	01/05/05	01/05/05	U	
1,1-Dichloroethane	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichloroethane	EPA 624	5A05017	0.28	0.50	ND	1	01/05/05	01/05/05	U	
1,1-Dichloroethene	EPA 624	5A05017	0.32	5.0	ND	1	01/05/05	01/05/05	U	
trans-1,2-Dichloroethene	EPA 624	5A05017	0.27	2.0	ND	1	01/05/05	01/05/05	U	
1,2-Dichloropropane	EPA 624	5A05017	0.35	2.0	ND	1	01/05/05	01/05/05	U	
cis-1,3-Dichloropropene	EPA 624	5A05017	0.22	2.0	ND	1	01/05/05	01/05/05	U	
trans-1,3-Dichloropropene	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	U	
Ethylbenzene	EPA 624	5A05017	0.25	2.0	ND	1	01/05/05	01/05/05	U	
Methylene chloride	EPA 624	5A05017	0.48	5.0	0.50	1	01/05/05	01/05/05	J	DNR
1,1,2,2-Tetrachloroethane	EPA 624	5A05017	0.24	2.0	ND	1	01/05/05	01/05/05	U	
Tetrachloroethene	EPA 624	5A05017	0.32	2.0	ND	1	01/05/05	01/05/05	U	
Toluene	EPA 624	5A05017	0.36	2.0	ND	1	01/05/05	01/05/05	U	
1,1,1-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
1,1,2-Trichloroethane	EPA 624	5A05017	0.30	2.0	ND	1	01/05/05	01/05/05	U	
Trichloroethene	EPA 624	5A05017	0.26	2.0	ND	1	01/05/05	01/05/05	U	
Trichlorofluoromethane	EPA 624	5A05017	0.34	5.0	ND	1	01/05/05	01/05/05	U	
Vinyl chloride	EPA 624	5A05017	0.26	0.50	ND	1	01/05/05	01/05/05	U	
Xylenes, Total	EPA 624	5A05017	0.52	4.0	ND	1	01/05/05	01/05/05	U	
Surrogate: Dibromofluoromethane (80-120%)										98%
Surrogate: Toluene-d8 (80-120%)										98%
Surrogate: 4-Bromofluorobenzene (80-120%)										97%

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05

Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Sampled: 01/04/05									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	UJ Q #10
Cyclohexane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	UJ #10
Sample ID: IOA0121-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Sampled: 01/04/05									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	UJ #10
Cyclohexane	EPA 624 (MOD.)	5A05017	N/A	2.5	ND	1	01/05/05	01/05/05	UJ #10

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water)									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A05017	1.2	5.0	ND	1	01/05/05	01/05/05	U
Surrogate: Dibromofluoromethane (80-120%)					100%				
Surrogate: Toluene-d8 (80-120%)					101%				
Surrogate: 4-Bromofluorobenzene (80-120%)					97%				
Sample ID: IOA0121-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A05017	1.2	5.0	ND	1	01/05/05	01/05/05	U
Surrogate: Dibromofluoromethane (80-120%)					98%				
Surrogate: Toluene-d8 (80-120%)					98%				
Surrogate: 4-Bromofluorobenzene (80-120%)					97%				

AMEC VALIDATED

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC59  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses 1

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method General Minerals

Date: 02/14/05

Reviewer's Signature

*P. Meeks*

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	<p><u>Qualifications applied for hexavalent chromium detected in the method blank, exceeded hexavalent chromium holding time, and detects below the reporting limits.</u></p> <p>Holding Times _____</p> <p>GC/MS Tune/Inst. Performance _____</p> <p>Calibrations _____</p> <p>Blanks _____</p> <p>Surrogates _____</p> <p>Matrix Spike/Dup LCS _____</p> <p>Field QC _____</p> <p>Internal Standard Performance _____</p> <p>Compound Identification and Quantitation _____</p> <p>System Performance _____</p>
COMMENTS <sup>b</sup>	
<p><sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p><sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: February 14, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 425.1, 218.6, 120.1, 160.2, 160.5, 180.1, 150.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011 Grab	IOA0121-01	water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analyses. The remaining analyses were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for biological oxygen demand, surfactants, turbidity, nitrate/nitrite, and total settleable solids, and the 24-hour residual chlorine holding time were met. The 24-hour hexavalent chromium holding time was exceeded; therefore, nondetected hexavalent chromium in Outfall 011 Grab was qualified as estimated, "UJ." No further qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . All ICV and continuing calibration information was acceptable with %Rs within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine or total settleable solids. No qualifications were required.

### 2.3 BLANKS

Hexavalent chromium was detected in the method blank at 0.15 mg/L and in the bracketing CCB at 0.20 mg/L; therefore, hexavalent chromium detected in Outfall 011 Grab was qualified as an estimated nondetect, "UJ." The remaining method blank and CCB results reported on the summary forms and in the



raw data for blank analyses associated with the sample were nondetects at the reporting limit. No further qualifications were required.

#### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

#### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

#### **2.6 LABORATORY DUPLICATES**

A duplicate analysis was performed on Outfall 011 Grab for residual chlorine and MS/MSD analyses were performed for hexavalent chromium. Both RPDs were within the laboratory-established control limits. No qualifications were required.

#### **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on Outfall 011 Grab hexavalent chromium only. Both recoveries were within the laboratory-established control limits of 90-110% and no qualifications were required.

#### **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

#### **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

#### **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. MBAS was analyzed at a 100× dilution, as the sample had formed an

DATA VALIDATION REPORT

Project: NPDES  
SDG No.: IOA0121  
Analysis: Gen. Min.

emulsion. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

**2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

**2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

**2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

**DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers				
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water)					Sampled: 01/04/05								
Reporting Units: mg/l					<table border="1"> <tr> <td>Res</td> <td>Qual</td> </tr> <tr> <td></td> <td></td> </tr> </table>					Res	Qual		
Res	Qual												
Total Recoverable Hydrocarbons	EPA 418.1	5A06070	0.31	1.0	ND	1	01/06/05	01/06/05	U				

**AMEC VALIDATED**

**LEVEL IV**

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 2320 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5A05067	0.30	0.50	ND	1	01/05/05	01/05/05	U
Biochemical Oxygen Demand	EPA 405.1	5A05054	0.59	2.0	1.1	1	01/05/05	01/10/05	J J
Chloride	EPA 300.0	5A04042	0.26	0.50	4.2	1	01/04/05	01/04/05	J J
Fluoride	EPA 300.0	5A04042	0.074	0.50	0.25	1	01/04/05	01/04/05	J J
Nitrate/Nitrite-N	EPA 300.0	5A04042	0.072	0.26	2.1	1	01/04/05	01/04/05	J J
Oil & Grease	EPA 413.1	5A05068	0.94	5.0	ND	1	01/05/05	01/05/05	U
Residual Chlorine	EPA 330.5	5A05066	0.10	0.10	ND	1	01/05/05	01/05/05	U
Sulfate	EPA 300.0	5A04042	0.18	0.50	5.9	1	01/04/05	01/04/05	U
Surfactants (MBAS)	SM5540-C	5A04104	4.4	10	ND	100	01/04/05	01/04/05	RL-U
Total Dissolved Solids	SM2540C	5A06082	10	10	120	1	01/06/05	01/06/05	
Total Organic Carbon	EPA 415.1	5A05058	0.56	1.0	12	1	01/05/05	01/05/05	
Total Suspended Solids	EPA 160.2	5A07077	10	10	ND	1	01/07/05	01/07/05	U

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0051  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers				
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05								
Reporting Units: ml/l/hr					<table border="1"> <tr> <td>Aw Qual</td> <td>Qual Code</td> </tr> <tr> <td>U</td> <td></td> </tr> </table>					Aw Qual	Qual Code	U	
Aw Qual	Qual Code												
U													
Total Settlicable Solids	EPA 160.5	5A05055	0.10	0.10	ND	1	01/05/05	01/05/05					

# AMEC VALIDATED

# LEVEL IV

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 9484 Chocomaque Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9810 South 5th St., Suite B-120, Phoenix, AZ 85044 (480) 783-0643 FAX (480) 783-0951  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-1620 FAX (702) 798-1621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.											
Reporting Units: NTU											
Turbidity	EPA 180.1	5A05079	0.040	1.0	30	1	01/05/05	01/05/05	<table border="1"> <tr> <td>Per Qual</td> <td>Qual Code</td> </tr> </table>	Per Qual	Qual Code
Per Qual	Qual Code										

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LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0051  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-1620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
Received: 01/04/05

DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05					
Reporting Units: ug/l										
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.17	1	01/05/05	01/05/05	B, H-1, J, U	H, F
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05	U	
Perchlorate	EPA 314.0	5A06055	0.80	4.0	ND	1	01/06/05	01/06/05	U	

\* Analysis not validated

AMEC VALIDATED

LEVEL IV

DRAFT REPORT  
DRAFT REPORT  
DATA SUBJECT TO CHANGE

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 9444 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9669  
 9830 South 5th St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd., # 3, Las Vegas, NV 89120 (702) 798-1420 FAX (702) 798-1621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers				
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05								
Reporting Units: umhos/cm													
Specific Conductance	EPA 120.1	5A06081	1.0	1.0	100	1	01/06/05	01/06/05	<table border="1"> <tr> <td>AW</td> <td>Qual</td> </tr> <tr> <td>Qual</td> <td>Code</td> </tr> </table>	AW	Qual	Qual	Code
AW	Qual												
Qual	Code												

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC60  
 Task Order 313150010  
 SDG No. IOA0121

No. of Analyses 1

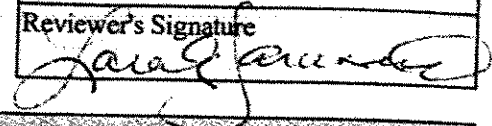
Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method Perchlorate

Date: 02/11/05

Reviewer's Signature



**ACTION ITEMS<sup>a</sup>**

1. Case Narrative Deficiencies
2. Out of Scope Analyses
3. Analyses Not Conducted
4. Missing Hardcopy Deliverables
5. Incorrect Hardcopy Deliverables
6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS<sup>b</sup>**

Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOA0121

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: February 11, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0121-01	water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel, and accounted for the sample and analysis presented in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV and IPC recoveries were within the control limits of 90-110%. The CCV recovery was above the control limits of 90-110%; however, as perchlorate was not detected in the site sample, no qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in this SDG.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample result reported on the Form I was verified against the raw data. No transcription errors or calculations errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with this package.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0121

Sampled: 01/04/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0121-01 (DRAFT: Outfall 011 - grab - Water) - cont.					Sampled: 01/04/05				
Reporting Units: ug/l									
Chromium VI	EPA 218.6	SA05064	0.041	1.0	0.17	1	01/05/05	01/05/05	*B, H-1, J
Total Cyanide	EPA 335.2	SA05078	2.2	5.0	ND	1	01/05/05	01/05/05	U
Perchlorate	EPA 314.0	SA06055	0.80	4.0	ND	1	01/06/05	01/06/05	U

\*Analysis Not Validated

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 25**

Outfall 011, January 11, 2005

Del Mar Analytical Laboratory Report





LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Routine Outfall 011 - Grab

Sampled: 01/11/05  
Received: 01/11/05  
Issued: 03/09/05 19:48

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 6 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOA0549-01	Outfall 011 - grab	Water
IOA0549-02	Trip Blanks	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

### CORRECTIVE ACTION REPORT

Department: Extractions

Date: 01/18/2005

Method: EPA 625

Matrix: Water

QC Batch: 5A12027

#### Identification and Definition of Problem:

- 1) The percent recoveries for 3,3-dichlorobenzidine, 4-chloroaniline, benzidine, and hexachlorobutadiene in the LCS and/or LCSD were below method acceptance limits.
- 2) The RPD between the LCS and LCSD exceeded method acceptance limits for 2-methylnaphthalene, 3,3-dichlorobenzidine, 4-chloroaniline, aniline, naphthalene.

#### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor. A definitive cause for the other QC failures has not been determined.

#### Corrective Action Taken:

All results reported for 3,3-dichlorobenzidine, 4-chloroaniline, benzidine, and hexachlorobutadiene are potentially biased low and can be considered estimates only. No acceptable precision data could be reported for 2-methylnaphthalene, 3,3-dichlorobenzidine, 4-chloroaniline, aniline, and naphthalene. Samples could not be reextracted within the method-specified holding time.

Quality Assurance Approval:



Dave Dawes

Date: 01/31/2005 11:14 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water)</b>									
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5A12075	0.31	1.0	ND	1	01/12/05	01/12/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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300 North Lake Avenue, Suite 1200  
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Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5A13035	0.082	0.50	ND	0.952	01/13/05	01/14/05	
Surrogate: n-Octacosane (40-125%)					57 %				

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Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A17030	0.050	0.10	ND	1	01/17/05	01/17/05	
Surrogate: 4-BFB (FID) (65-140%)					79 %				

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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05

Received: 01/11/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A12008	1.2	5.0	ND	1	01/12/05	01/12/05	P1
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Benzene	EPA 624	5A12008	0.28	1.0	ND	1	01/12/05	01/12/05	
Bromodichloromethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
Bromoform	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
Bromomethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Carbon tetrachloride	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
Chlorobenzene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05	
Chloroethane	EPA 624	5A12008	0.33	5.0	ND	1	01/12/05	01/12/05	
Chloroform	EPA 624	5A12008	0.33	2.0	ND	1	01/12/05	01/12/05	
Chloromethane	EPA 624	5A12008	0.30	5.0	ND	1	01/12/05	01/12/05	
Dibromochloromethane	EPA 624	5A12008	0.28	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichlorobenzene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
1,3-Dichlorobenzene	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
1,4-Dichlorobenzene	EPA 624	5A12008	0.37	2.0	ND	1	01/12/05	01/12/05	
1,1-Dichloroethane	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloroethane	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
1,1-Dichloroethene	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
trans-1,2-Dichloroethene	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloropropane	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
cis-1,3-Dichloropropene	EPA 624	5A12008	0.22	2.0	ND	1	01/12/05	01/12/05	
trans-1,3-Dichloropropene	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Ethylbenzene	EPA 624	5A12008	0.25	2.0	ND	1	01/12/05	01/12/05	
Methylene chloride	EPA 624	5A12008	0.48	5.0	ND	1	01/12/05	01/12/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Tetrachloroethene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
Toluene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05	
1,1,1-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
1,1,2-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
Trichloroethene	EPA 624	5A12008	0.26	2.0	ND	1	01/12/05	01/12/05	
Trichlorofluoromethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Vinyl chloride	EPA 624	5A12008	0.26	0.50	ND	1	01/12/05	01/12/05	
Xylenes, Total	EPA 624	5A12008	0.52	4.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-02 (Trip Blanks - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5A12008	0.28	1.0	ND	1	01/12/05	01/12/05	
Bromodichloromethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
Bromoform	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
Bromomethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Carbon tetrachloride	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
<b>Chlorobenzene</b>	EPA 624	5A12008	0.36	2.0	<b>0.73</b>	1	01/12/05	01/12/05	J
Chloroethane	EPA 624	5A12008	0.33	5.0	ND	1	01/12/05	01/12/05	
Chloroform	EPA 624	5A12008	0.33	2.0	ND	1	01/12/05	01/12/05	
Chloromethane	EPA 624	5A12008	0.30	5.0	ND	1	01/12/05	01/12/05	
Dibromochloromethane	EPA 624	5A12008	0.28	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichlorobenzene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
1,3-Dichlorobenzene	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
1,4-Dichlorobenzene	EPA 624	5A12008	0.37	2.0	ND	1	01/12/05	01/12/05	
1,1-Dichloroethane	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloroethane	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
1,1-Dichloroethene	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
trans-1,2-Dichloroethene	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloropropane	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
cis-1,3-Dichloropropene	EPA 624	5A12008	0.22	2.0	ND	1	01/12/05	01/12/05	
trans-1,3-Dichloropropene	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Ethylbenzene	EPA 624	5A12008	0.25	2.0	ND	1	01/12/05	01/12/05	
Methylene chloride	EPA 624	5A12008	0.48	5.0	ND	1	01/12/05	01/12/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Tetrachloroethene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
Toluene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05	
1,1,1-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
1,1,2-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
Trichloroethene	EPA 624	5A12008	0.26	2.0	ND	1	01/12/05	01/12/05	
Trichlorofluoromethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Vinyl chloride	EPA 624	5A12008	0.26	0.50	ND	1	01/12/05	01/12/05	
Xylenes, Total	EPA 624	5A12008	0.52	4.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)					96 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5A12008	4.6	50	ND	1	01/12/05	01/12/05	
Acrylonitrile	EPA 624	5A12008	5.1	50	ND	1	01/12/05	01/12/05	
2-Chloroethyl vinyl ether	EPA 624	5A12008	1.3	5.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)					100 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				
<b>Sample ID: IOA0549-02 (Trip Blanks - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5A12008	4.6	50	ND	1	01/12/05	01/12/05	
Acrylonitrile	EPA 624	5A12008	5.1	50	ND	1	01/12/05	01/12/05	
2-Chloroethyl vinyl ether	EPA 624	5A12008	1.3	5.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)					96 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

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 Michele Harper  
 Project Manager

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Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water)</b>									
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A12008	N/A	120	ND	1	01/12/05	01/12/05	
Cyclohexane	EPA 624 (MOD.)	5A12008	N/A	120	ND	1	01/12/05	01/12/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5A12027	0.10	0.50	ND	0.943	01/12/05	01/18/05	
Acenaphthylene	EPA 625	5A12027	0.10	0.50	ND	0.943	01/12/05	01/18/05	
Aniline	EPA 625	5A12027	2.9	10	ND	0.943	01/12/05	01/18/05	
Anthracene	EPA 625	5A12027	0.083	0.50	ND	0.943	01/12/05	01/18/05	
Benzidine	EPA 625	5A12027	2.4	5.0	ND	0.943	01/12/05	01/18/05	L2
Benzoic acid	EPA 625	5A12027	3.7	20	ND	0.943	01/12/05	01/18/05	
Benzo(a)anthracene	EPA 625	5A12027	0.038	5.0	ND	0.943	01/12/05	01/18/05	
Benzo(a)pyrene	EPA 625	5A12027	0.14	2.0	ND	0.943	01/12/05	01/18/05	
Benzo(b)fluoranthene	EPA 625	5A12027	0.050	2.0	ND	0.943	01/12/05	01/18/05	
Benzo(g,h,i)perylene	EPA 625	5A12027	0.059	5.0	ND	0.943	01/12/05	01/18/05	
Benzo(k)fluoranthene	EPA 625	5A12027	0.053	0.50	ND	0.943	01/12/05	01/18/05	
Benzyl alcohol	EPA 625	5A12027	0.21	5.0	ND	0.943	01/12/05	01/18/05	
Bis(2-chloroethoxy)methane	EPA 625	5A12027	0.072	0.50	ND	0.943	01/12/05	01/18/05	
Bis(2-chloroethyl)ether	EPA 625	5A12027	0.084	0.50	ND	0.943	01/12/05	01/18/05	
Bis(2-chloroisopropyl)ether	EPA 625	5A12027	0.11	0.50	ND	0.943	01/12/05	01/18/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5A12027	1.1	5.0	ND	0.943	01/12/05	01/18/05	
4-Bromophenyl phenyl ether	EPA 625	5A12027	0.12	1.0	ND	0.943	01/12/05	01/18/05	
Butyl benzyl phthalate	EPA 625	5A12027	0.34	5.0	ND	0.943	01/12/05	01/18/05	
4-Chloroaniline	EPA 625	5A12027	0.20	2.0	ND	0.943	01/12/05	01/18/05	L2
2-Chloronaphthalene	EPA 625	5A12027	0.059	0.50	ND	0.943	01/12/05	01/18/05	
4-Chloro-3-methylphenol	EPA 625	5A12027	0.34	2.0	ND	0.943	01/12/05	01/18/05	
4-Chlorophenyl phenyl ether	EPA 625	5A12027	0.056	0.50	ND	0.943	01/12/05	01/18/05	
2-Chlorophenol	EPA 625	5A12027	0.12	1.0	ND	0.943	01/12/05	01/18/05	
Chrysene	EPA 625	5A12027	0.072	0.50	ND	0.943	01/12/05	01/18/05	
Dibenz(a,h)anthracene	EPA 625	5A12027	0.083	0.50	ND	0.943	01/12/05	01/18/05	
Dibenzofuran	EPA 625	5A12027	0.075	0.50	ND	0.943	01/12/05	01/18/05	
Di-n-butyl phthalate	EPA 625	5A12027	0.26	2.0	ND	0.943	01/12/05	01/18/05	
1,2-Dichlorobenzene	EPA 625	5A12027	0.11	0.50	ND	0.943	01/12/05	01/18/05	
1,3-Dichlorobenzene	EPA 625	5A12027	0.13	0.50	ND	0.943	01/12/05	01/18/05	
1,4-Dichlorobenzene	EPA 625	5A12027	0.050	0.50	ND	0.943	01/12/05	01/18/05	
3,3-Dichlorobenzidine	EPA 625	5A12027	0.93	5.0	ND	0.943	01/12/05	01/18/05	L2
2,4-Dichlorophenol	EPA 625	5A12027	0.21	2.0	ND	0.943	01/12/05	01/18/05	
Diethyl phthalate	EPA 625	5A12027	0.12	1.0	ND	0.943	01/12/05	01/18/05	
2,4-Dimethylphenol	EPA 625	5A12027	0.31	2.0	ND	0.943	01/12/05	01/18/05	
Dimethyl phthalate	EPA 625	5A12027	0.081	0.50	ND	0.943	01/12/05	01/18/05	
4,6-Dinitro-2-methylphenol	EPA 625	5A12027	0.38	5.0	ND	0.943	01/12/05	01/18/05	
2,4-Dinitrophenol	EPA 625	5A12027	2.7	5.0	ND	0.943	01/12/05	01/18/05	
2,4-Dinitrotoluene	EPA 625	5A12027	0.23	5.0	ND	0.943	01/12/05	01/18/05	
2,6-Dinitrotoluene	EPA 625	5A12027	0.24	5.0	ND	0.943	01/12/05	01/18/05	
Di-n-octyl phthalate	EPA 625	5A12027	0.17	5.0	ND	0.943	01/12/05	01/18/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A12027	0.087	1.0	ND	0.943	01/12/05	01/18/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5A12027	0.089	0.50	ND	0.943	01/12/05	01/18/05	
Fluorene	EPA 625	5A12027	0.075	0.50	ND	0.943	01/12/05	01/18/05	
Hexachlorobenzene	EPA 625	5A12027	0.13	1.0	ND	0.943	01/12/05	01/18/05	
Hexachlorobutadiene	EPA 625	5A12027	0.38	2.0	ND	0.943	01/12/05	01/18/05	L2
Hexachlorocyclopentadiene	EPA 625	5A12027	1.8	5.0	ND	0.943	01/12/05	01/18/05	
Hexachloroethane	EPA 625	5A12027	0.51	3.0	ND	0.943	01/12/05	01/18/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5A12027	0.19	2.0	ND	0.943	01/12/05	01/18/05	
Isophorone	EPA 625	5A12027	0.059	1.0	ND	0.943	01/12/05	01/18/05	
<b>2-Methylnaphthalene</b>	EPA 625	5A12027	0.13	1.0	<b>0.74</b>	0.943	01/12/05	01/18/05	B, L, J
2-Methylphenol	EPA 625	5A12027	0.28	2.0	ND	0.943	01/12/05	01/18/05	
4-Methylphenol	EPA 625	5A12027	0.20	5.0	ND	0.943	01/12/05	01/18/05	
<b>Naphthalene</b>	EPA 625	5A12027	0.13	1.0	<b>0.21</b>	0.943	01/12/05	01/18/05	L, J
2-Nitroaniline	EPA 625	5A12027	0.18	5.0	ND	0.943	01/12/05	01/18/05	
3-Nitroaniline	EPA 625	5A12027	0.35	5.0	ND	0.943	01/12/05	01/18/05	
4-Nitroaniline	EPA 625	5A12027	0.49	5.0	ND	0.943	01/12/05	01/18/05	
Nitrobenzene	EPA 625	5A12027	0.10	1.0	ND	0.943	01/12/05	01/18/05	
2-Nitrophenol	EPA 625	5A12027	0.23	2.0	ND	0.943	01/12/05	01/18/05	
4-Nitrophenol	EPA 625	5A12027	0.73	5.0	ND	0.943	01/12/05	01/18/05	
N-Nitrosodimethylamine	EPA 625	5A12027	0.22	2.0	ND	0.943	01/12/05	01/18/05	
N-Nitroso-di-n-propylamine	EPA 625	5A12027	0.18	2.0	ND	0.943	01/12/05	01/18/05	
N-Nitrosodiphenylamine	EPA 625	5A12027	0.077	1.0	ND	0.943	01/12/05	01/18/05	
Pentachlorophenol	EPA 625	5A12027	0.78	2.0	ND	0.943	01/12/05	01/18/05	
Phenanthrene	EPA 625	5A12027	0.071	0.50	ND	0.943	01/12/05	01/18/05	
Phenol	EPA 625	5A12027	0.14	1.0	ND	0.943	01/12/05	01/18/05	
Pyrene	EPA 625	5A12027	0.059	0.50	ND	0.943	01/12/05	01/18/05	
1,2,4-Trichlorobenzene	EPA 625	5A12027	0.10	1.0	ND	0.943	01/12/05	01/18/05	
2,4,5-Trichlorophenol	EPA 625	5A12027	0.075	2.0	ND	0.943	01/12/05	01/18/05	
2,4,6-Trichlorophenol	EPA 625	5A12027	0.10	1.0	ND	0.943	01/12/05	01/18/05	
Surrogate: 2-Fluorophenol (35-120%)					71 %				
Surrogate: Phenol-d6 (45-120%)					71 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					83 %				
Surrogate: Nitrobenzene-d5 (45-120%)					75 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					78 %				
Surrogate: Terphenyl-d14 (45-135%)					89 %				

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5A13049	0.029	0.10	ND	0.962	01/13/05	01/13/05	
alpha-BHC	EPA 608	5A13049	0.010	0.10	ND	0.962	01/13/05	01/13/05	
beta-BHC	EPA 608	5A13049	0.011	0.10	ND	0.962	01/13/05	01/13/05	
delta-BHC	EPA 608	5A13049	0.010	0.20	ND	0.962	01/13/05	01/13/05	
gamma-BHC (Lindane)	EPA 608	5A13049	0.0097	0.10	ND	0.962	01/13/05	01/13/05	
Chlordane	EPA 608	5A13049	0.18	1.0	ND	0.962	01/13/05	01/13/05	
4,4'-DDD	EPA 608	5A13049	0.011	0.10	ND	0.962	01/13/05	01/13/05	
4,4'-DDE	EPA 608	5A13049	0.017	0.10	ND	0.962	01/13/05	01/13/05	
4,4'-DDT	EPA 608	5A13049	0.015	0.10	ND	0.962	01/13/05	01/13/05	
Dieldrin	EPA 608	5A13049	0.010	0.10	ND	0.962	01/13/05	01/13/05	
Endosulfan I	EPA 608	5A13049	0.015	0.10	ND	0.962	01/13/05	01/13/05	
Endosulfan II	EPA 608	5A13049	0.037	0.10	ND	0.962	01/13/05	01/13/05	
Endosulfan sulfate	EPA 608	5A13049	0.013	0.20	ND	0.962	01/13/05	01/13/05	
Endrin	EPA 608	5A13049	0.0082	0.10	ND	0.962	01/13/05	01/13/05	
Endrin aldehyde	EPA 608	5A13049	0.045	0.10	ND	0.962	01/13/05	01/13/05	
Endrin ketone	EPA 608	5A13049	0.020	0.10	ND	0.962	01/13/05	01/13/05	
Heptachlor	EPA 608	5A13049	0.030	0.10	ND	0.962	01/13/05	01/13/05	
Heptachlor epoxide	EPA 608	5A13049	0.012	0.10	ND	0.962	01/13/05	01/13/05	
Methoxychlor	EPA 608	5A13049	0.034	0.10	ND	0.962	01/13/05	01/13/05	
Toxaphene	EPA 608	5A13049	0.77	5.0	ND	0.962	01/13/05	01/13/05	

Surrogate: Tetrachloro-m-xylene (35-120%)

53 %

Surrogate: Decachlorobiphenyl (45-120%)

68 %

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5A13049	0.067	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1221	EPA 608	5A13049	0.057	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1232	EPA 608	5A13049	0.13	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1242	EPA 608	5A13049	0.12	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1248	EPA 608	5A13049	0.21	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1254	EPA 608	5A13049	0.16	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1260	EPA 608	5A13049	0.17	1.0	ND	0.962	01/13/05	01/14/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					70 %				

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Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5A14051	0.00014	0.0010	<b>0.019</b>	1	01/14/05	01/14/05	
Boron	EPA 200.7	5A14046	0.0074	0.050	<b>0.065</b>	1	01/14/05	01/14/05	
Iron	EPA 200.8	5A14051	0.0032	0.010	<b>0.98</b>	1	01/14/05	01/14/05	

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Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5A12054	0.18	2.0	0.35	1	01/12/05	01/12/05	J
Arsenic	EPA 200.8	5A14051	0.49	1.0	1.6	1	01/14/05	01/18/05	J
Beryllium	EPA 200.8	5A14051	0.037	0.50	0.063	1	01/14/05	01/18/05	J
Cadmium	EPA 200.8	5A12054	0.015	1.0	0.14	1	01/12/05	01/12/05	J
Chromium	EPA 200.8	5A14051	0.26	1.0	1.8	1	01/14/05	01/18/05	B
Cobalt	EPA 200.8	5A14051	0.10	1.0	0.71	1	01/14/05	01/14/05	J
Copper	EPA 200.8	5A12054	0.49	2.0	4.2	1	01/12/05	01/12/05	J
Lead	EPA 200.8	5A12054	0.13	1.0	1.0	1	01/12/05	01/12/05	J
Manganese	EPA 200.8	5A14051	0.44	1.0	16	1	01/14/05	01/14/05	J
Mercury	EPA 245.1	5A12047	0.063	0.20	0.13	1	01/12/05	01/12/05	J
Nickel	EPA 200.8	5A12054	0.15	1.0	2.3	1	01/12/05	01/12/05	J
Selenium	EPA 200.8	5A14051	0.36	2.0	0.90	1	01/14/05	01/14/05	J
Silver	EPA 200.8	5A14051	0.089	1.0	0.26	1	01/14/05	01/14/05	J
Thallium	EPA 200.8	5A14051	0.075	1.0	0.90	1	01/14/05	01/16/05	J
Vanadium	EPA 200.8	5A14051	0.86	1.0	3.4	1	01/14/05	01/14/05	J
Zinc	EPA 200.8	5A12054	3.1	20	18	1	01/12/05	01/12/05	J

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

### INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5A13063	0.30	0.50	ND	1	01/13/05	01/13/05	
Biochemical Oxygen Demand	EPA 405.1	5A12041	0.59	2.0	<b>0.83</b>	1	01/12/05	01/17/05	J
Chloride	EPA 300.0	5A11040	0.26	0.50	<b>3.6</b>	1	01/11/05	01/11/05	
Fluoride	EPA 300.0	5A15022	0.074	0.50	<b>0.26</b>	1	01/15/05	01/15/05	B, J
Nitrate/Nitrite-N	EPA 300.0	5A11040	0.072	0.26	<b>0.91</b>	1	01/11/05	01/11/05	
Oil & Grease	EPA 413.1	5A13065	0.94	5.0	<b>15</b>	1	01/13/05	01/13/05	
Residual Chlorine	EPA 330.5	5A12045	0.10	0.10	ND	1	01/12/05	01/12/05	
Sulfate	EPA 300.0	5A11040	0.18	0.50	<b>4.9</b>	1	01/11/05	01/11/05	
Surfactants (MBAS)	SM5540-C	5A12059	0.044	0.10	ND	1	01/12/05	01/12/05	
Total Dissolved Solids	SM2540C	5A13089	10	10	<b>88</b>	1	01/13/05	01/13/05	
Total Organic Carbon	EPA 415.1	5A13053	0.56	1.0	<b>10</b>	1	01/12/05	01/12/05	
Total Suspended Solids	EPA 160.2	5A14084	10	10	ND	1	01/14/05	01/14/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
<b>Reporting Units: ml/hr</b>									
Total Settleable Solids	EPA 160.5	5A12043	0.10	0.10	ND	1	01/12/05	01/12/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5A12058	0.040	1.0	18	1	01/12/05	01/12/05	

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Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5A11092	0.041	1.0	ND	1	01/11/05	01/11/05	C
Total Cyanide	EPA 335.2	5A11108	2.2	5.0	ND	1	01/11/05	01/11/05	
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	

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Sampled: 01/11/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A13060	1.0	1.0	94	1	01/13/05	01/13/05	

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Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0549-01 (Outfall 011 - grab - Water) - cont.</b>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5A1502	0.49	1.0	ND	1	01/15/05	01/15/05	
Surrogate: Dibromofluoromethane (80-125%)					103 %				

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Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 - grab (IOA0549-01) - Water</b>					
EPA 160.5	2	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 09:30	01/12/2005 12:30
EPA 180.1	2	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 11:30	01/12/2005 12:30
EPA 218.6	1	01/11/2005 10:48	01/11/2005 18:50	01/11/2005 21:36	01/11/2005 21:40
EPA 300.0	2	01/11/2005 10:48	01/11/2005 18:50	01/11/2005 21:00	01/11/2005 21:28
EPA 330.5	1	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 10:00	01/12/2005 10:20
EPA 405.1	2	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 11:00	01/17/2005 16:00
EPA 624	3	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 00:00	01/12/2005 13:08
SM5540-C	2	01/11/2005 10:48	01/11/2005 18:50	01/12/2005 13:06	01/12/2005 20:16
<b>Sample ID: Trip Blanks (IOA0549-02) - Water</b>					
EPA 624	3	01/11/2005 14:55	01/11/2005 18:50	01/12/2005 00:00	01/12/2005 12:37

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Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12075 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12075-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 01/12/2005 (5A12075-BS1)</b>											
Total Recoverable Hydrocarbons	4.64	1.0	0.31	mg/l	5.00		93	65-120			M-NR1
<b>LCS Dup Analyzed: 01/12/2005 (5A12075-BSD1)</b>											
Total Recoverable Hydrocarbons	4.99	1.0	0.31	mg/l	5.00		100	65-120	7	20	

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 Received: 01/11/05

## METHOD BLANK/QC DATA

### EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13035 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/14/2005 (5A13035-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.143			mg/l	0.200		72	40-125			
<b>LCS Analyzed: 01/14/2005 (5A13035-BS1)</b>											
EFH (C13 - C40)	0.651	0.50	0.082	mg/l	0.775		84	40-120			
Surrogate: n-Octacosane	0.151			mg/l	0.200		75	40-125			
<b>Matrix Spike Analyzed: 01/14/2005 (5A13035-MS1)</b>											
						<b>Source: IOA0635-03</b>					
EFH (C13 - C40)	0.647	0.50	0.082	mg/l	0.731	ND	89	40-120			
Surrogate: n-Octacosane	0.151			mg/l	0.189		80	40-125			
<b>Matrix Spike Dup Analyzed: 01/14/2005 (5A13035-MSD1)</b>											
						<b>Source: IOA0635-03</b>					
EFH (C13 - C40)	0.456	0.50	0.082	mg/l	0.731	ND	62	40-120	35	30	R-2, J
Surrogate: n-Octacosane	0.103			mg/l	0.189		54	40-125			

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 Received: 01/11/05

**METHOD BLANK/QC DATA**

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A17030 Extracted: 01/17/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A17030-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00915			mg/l	0.0100		92	65-140			
<b>LCS Analyzed: 01/17/2005 (5A17030-BS1)</b>											
GRO (C4 - C12)	0.233	0.10	0.050	mg/l	0.220		106	70-140			
Surrogate: 4-BFB (FID)	0.0120			mg/l	0.0100		120	65-140			
<b>Matrix Spike Analyzed: 01/17/2005 (5A17030-MS1)</b>											
						<b>Source: IOA0539-07</b>					
GRO (C4 - C12)	0.244	0.10	0.050	mg/l	0.220	ND	111	60-140			
Surrogate: 4-BFB (FID)	0.0120			mg/l	0.0100		120	65-140			
<b>Matrix Spike Dup Analyzed: 01/17/2005 (5A17030-MSD1)</b>											
						<b>Source: IOA0539-07</b>					
GRO (C4 - C12)	0.219	0.10	0.050	mg/l	0.220	ND	100	60-140	11	20	
Surrogate: 4-BFB (FID)	0.0114			mg/l	0.0100		114	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting		Spike	Source	%REC		RPD	RPD	Data
		Limit	MDL			Units	Level			
<b>Batch: 5A12008 Extracted: 01/12/05</b>										
<b>Blank Analyzed: 01/12/2005 (5A12008-BLK1)</b>										
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	24.6			ug/l	25.0	98	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0	100	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0	99	80-120			

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METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12008-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.48	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Surrogate: Dibromofluoromethane	24.6			ug/l	25.0		98	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			

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METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>LCS Analyzed: 01/12/2005 (5A12008-BS1)</b>											
Benzene	23.0	1.0	0.28	ug/l	25.0		92	70-120			
Bromodichloromethane	26.3	2.0	0.30	ug/l	25.0		105	70-140			
Bromoform	26.3	5.0	0.32	ug/l	25.0		105	55-135			
Bromomethane	27.1	5.0	0.34	ug/l	25.0		108	60-140			
Carbon tetrachloride	29.2	0.50	0.28	ug/l	25.0		117	70-140			
Chlorobenzene	25.8	2.0	0.36	ug/l	25.0		103	80-125			
Chloroethane	24.9	5.0	0.33	ug/l	25.0		100	60-145			
Chloroform	24.5	2.0	0.33	ug/l	25.0		98	75-130			
Chloromethane	22.8	5.0	0.30	ug/l	25.0		91	40-145			
Dibromochloromethane	26.7	2.0	0.28	ug/l	25.0		107	65-145			
1,2-Dichlorobenzene	25.6	2.0	0.32	ug/l	25.0		102	80-120			
1,3-Dichlorobenzene	24.3	2.0	0.35	ug/l	25.0		97	80-120			
1,4-Dichlorobenzene	24.0	2.0	0.37	ug/l	25.0		96	80-120			
1,1-Dichloroethane	23.8	2.0	0.27	ug/l	25.0		95	70-135			
1,2-Dichloroethane	26.9	0.50	0.28	ug/l	25.0		108	60-150			
1,1-Dichloroethene	24.2	5.0	0.32	ug/l	25.0		97	75-135			
trans-1,2-Dichloroethene	25.2	2.0	0.27	ug/l	25.0		101	70-130			
1,2-Dichloropropane	24.3	2.0	0.35	ug/l	25.0		97	70-120			
cis-1,3-Dichloropropene	26.7	2.0	0.22	ug/l	25.0		107	75-130			
trans-1,3-Dichloropropene	27.4	2.0	0.24	ug/l	25.0		110	75-135			
Ethylbenzene	26.5	2.0	0.25	ug/l	25.0		106	80-120			
Methylene chloride	24.3	5.0	0.48	ug/l	25.0		97	60-135			
1,1,2,2-Tetrachloroethane	21.8	2.0	0.24	ug/l	25.0		87	60-135			
Tetrachloroethene	27.2	2.0	0.32	ug/l	25.0		109	75-125			
Toluene	24.2	2.0	0.36	ug/l	25.0		97	75-120			
1,1,1-Trichloroethane	28.0	2.0	0.30	ug/l	25.0		112	75-140			
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0		100	70-125			
Trichloroethene	25.9	2.0	0.26	ug/l	25.0		104	80-120			
Trichlorofluoromethane	28.6	5.0	0.34	ug/l	25.0		114	65-145			
Vinyl chloride	22.0	0.50	0.26	ug/l	25.0		88	50-130			
Surrogate: Dibromofluoromethane	23.9			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.2			ug/l	25.0		101	80-120			

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Michele Harper  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>Matrix Spike Analyzed: 01/12/2005 (5A12008-MS1)</b>						<b>Source: IOA0549-01</b>					
Benzene	26.0	1.0	0.28	ug/l	25.0	ND	104	70-120			
Bromodichloromethane	30.0	2.0	0.30	ug/l	25.0	ND	120	70-140			
Bromoform	29.1	5.0	0.32	ug/l	25.0	ND	116	55-140			
Bromomethane	31.9	5.0	0.34	ug/l	25.0	ND	128	50-145			
Carbon tetrachloride	32.8	0.50	0.28	ug/l	25.0	ND	131	70-145			
Chlorobenzene	28.8	2.0	0.36	ug/l	25.0	ND	115	80-125			
Chloroethane	29.8	5.0	0.33	ug/l	25.0	ND	119	50-145			
Chloroform	28.4	2.0	0.33	ug/l	25.0	ND	114	70-135			
Chloromethane	27.4	5.0	0.30	ug/l	25.0	ND	110	35-145			
Dibromochloromethane	30.2	2.0	0.28	ug/l	25.0	ND	121	65-145			
1,2-Dichlorobenzene	28.8	2.0	0.32	ug/l	25.0	ND	115	75-130			
1,3-Dichlorobenzene	27.3	2.0	0.35	ug/l	25.0	ND	109	75-130			
1,4-Dichlorobenzene	27.0	2.0	0.37	ug/l	25.0	ND	108	80-120			
1,1-Dichloroethane	27.8	2.0	0.27	ug/l	25.0	ND	111	65-135			
1,2-Dichloroethane	30.3	0.50	0.28	ug/l	25.0	ND	121	60-150			
1,1-Dichloroethene	28.1	5.0	0.32	ug/l	25.0	ND	112	65-140			
trans-1,2-Dichloroethene	29.4	2.0	0.27	ug/l	25.0	ND	118	65-135			
1,2-Dichloropropane	27.7	2.0	0.35	ug/l	25.0	ND	111	65-130			
cis-1,3-Dichloropropene	30.2	2.0	0.22	ug/l	25.0	ND	121	70-140			
trans-1,3-Dichloropropene	30.6	2.0	0.24	ug/l	25.0	ND	122	70-140			
Ethylbenzene	29.7	2.0	0.25	ug/l	25.0	ND	119	70-130			
Methylene chloride	28.3	5.0	0.48	ug/l	25.0	ND	113	60-135			
1,1,1,2-Tetrachloroethane	24.8	2.0	0.24	ug/l	25.0	ND	99	60-145			
Tetrachloroethene	30.4	2.0	0.32	ug/l	25.0	ND	122	70-130			
Toluene	27.6	2.0	0.36	ug/l	25.0	ND	110	70-120			
1,1,1-Trichloroethane	32.6	2.0	0.30	ug/l	25.0	ND	130	75-140			
1,1,2-Trichloroethane	27.8	2.0	0.30	ug/l	25.0	ND	111	60-135			
Trichloroethene	28.9	2.0	0.26	ug/l	25.0	ND	116	70-125			
Trichlorofluoromethane	33.3	5.0	0.34	ug/l	25.0	ND	133	55-145			
Vinyl chloride	26.1	0.50	0.26	ug/l	25.0	ND	104	40-135			
Surrogate: Dibromofluoromethane	24.7			ug/l	25.0		99	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12008-MSD1)</b>						<b>Source: IOA0549-01</b>					
Benzene	22.7	1.0	0.28	ug/l	25.0	ND	91	70-120	14	20	
Bromodichloromethane	25.6	2.0	0.30	ug/l	25.0	ND	102	70-140	16	20	
Bromoform	24.9	5.0	0.32	ug/l	25.0	ND	100	55-140	16	25	
Bromomethane	28.8	5.0	0.34	ug/l	25.0	ND	115	50-145	10	25	
Carbon tetrachloride	28.3	0.50	0.28	ug/l	25.0	ND	113	70-145	15	25	
Chlorobenzene	25.4	2.0	0.36	ug/l	25.0	ND	102	80-125	13	20	
Chloroethane	26.8	5.0	0.33	ug/l	25.0	ND	107	50-145	11	25	
Chloroform	24.5	2.0	0.33	ug/l	25.0	ND	98	70-135	15	20	
Chloromethane	24.8	5.0	0.30	ug/l	25.0	ND	99	35-145	10	25	
Dibromochloromethane	26.2	2.0	0.28	ug/l	25.0	ND	105	65-145	14	25	
1,2-Dichlorobenzene	25.2	2.0	0.32	ug/l	25.0	ND	101	75-130	13	20	
1,3-Dichlorobenzene	24.2	2.0	0.35	ug/l	25.0	ND	97	75-130	12	20	
1,4-Dichlorobenzene	24.0	2.0	0.37	ug/l	25.0	ND	96	80-120	12	20	
1,1-Dichloroethane	23.8	2.0	0.27	ug/l	25.0	ND	95	65-135	16	20	
1,2-Dichloroethane	25.8	0.50	0.28	ug/l	25.0	ND	103	60-150	16	20	
1,1-Dichloroethene	24.4	5.0	0.32	ug/l	25.0	ND	98	65-140	14	20	
trans-1,2-Dichloroethene	25.5	2.0	0.27	ug/l	25.0	ND	102	65-135	14	20	
1,2-Dichloropropane	24.0	2.0	0.35	ug/l	25.0	ND	96	65-130	14	20	
cis-1,3-Dichloropropene	25.9	2.0	0.22	ug/l	25.0	ND	104	70-140	15	20	
trans-1,3-Dichloropropene	26.5	2.0	0.24	ug/l	25.0	ND	106	70-140	14	25	
Ethylbenzene	26.2	2.0	0.25	ug/l	25.0	ND	105	70-130	13	20	
Methylene chloride	24.7	5.0	0.48	ug/l	25.0	ND	99	60-135	14	20	
1,1,2,2-Tetrachloroethane	21.7	2.0	0.24	ug/l	25.0	ND	87	60-145	13	30	
Tetrachloroethene	26.8	2.0	0.32	ug/l	25.0	ND	107	70-130	13	20	
Toluene	24.0	2.0	0.36	ug/l	25.0	ND	96	70-120	14	20	
1,1,1-Trichloroethane	27.9	2.0	0.30	ug/l	25.0	ND	112	75-140	16	20	
1,1,2-Trichloroethane	23.6	2.0	0.30	ug/l	25.0	ND	94	60-135	16	25	
Trichloroethene	25.0	2.0	0.26	ug/l	25.0	ND	100	70-125	14	20	
Trichlorofluoromethane	28.6	5.0	0.34	ug/l	25.0	ND	114	55-145	15	25	
Vinyl chloride	23.4	0.50	0.26	ug/l	25.0	ND	94	40-135	11	30	
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97	80-120			
Surrogate: Toluene-d8	24.8			ug/l	25.0		99	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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MWH-Pasadena/Boeing  
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Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12008-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	24.6			ug/l	25.0		98	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			
<b>LCS Analyzed: 01/12/2005 (5A12008-BS1)</b>											
2-Chloroethyl vinyl ether	23.4	5.0	1.3	ug/l	25.0		94	20-175			
Surrogate: Dibromofluoromethane	23.9			ug/l	25.0		96	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.2			ug/l	25.0		101	80-120			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12008-MS1)</b>					<b>Source: IOA0549-01</b>						
2-Chloroethyl vinyl ether	26.2	5.0	1.3	ug/l	25.0	ND	105	20-175			
Surrogate: Dibromofluoromethane	24.7			ug/l	25.0		99	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12008-MSD1)</b>					<b>Source: IOA0549-01</b>						
2-Chloroethyl vinyl ether	21.8	5.0	1.3	ug/l	25.0	ND	87	20-175	18	25	
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97	80-120			
Surrogate: Toluene-d8	24.8			ug/l	25.0		99	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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 Michele Harper  
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12008 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12008-BLK1)</b>											
1,2-Dichloro-1,1,2-trifluoroethane	ND	120	N/A	ug/l							
Cyclohexane	ND	120	N/A	ug/l							

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting		Spike	Source	%REC		RPD	Data	
		Limit	MDL			Units	Level			Result
<b>Batch: 5A12027 Extracted: 01/12/05</b>										
<b>Blank Analyzed: 01/17/2005 (5A12027-BLK1)</b>										
Acenaphthene	ND	0.50	0.10	ug/l						
Acenaphthylene	ND	0.50	0.10	ug/l						
Aniline	ND	10	2.9	ug/l						
Anthracene	ND	0.50	0.083	ug/l						
Benzidine	ND	5.0	2.4	ug/l						
Benzoic acid	ND	20	3.7	ug/l						
Benzo(a)anthracene	ND	5.0	0.038	ug/l						
Benzo(a)pyrene	ND	2.0	0.14	ug/l						
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l						
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l						
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l						
Benzyl alcohol	ND	5.0	0.21	ug/l						
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l						
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l						
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l						
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l						
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l						
Butyl benzyl phthalate	0.340	5.0	0.34	ug/l						J
4-Chloroaniline	ND	2.0	0.20	ug/l						
2-Chloronaphthalene	ND	0.50	0.059	ug/l						
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l						
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l						
2-Chlorophenol	ND	1.0	0.12	ug/l						
Chrysene	ND	0.50	0.072	ug/l						
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l						
Dibenzofuran	ND	0.50	0.075	ug/l						
Di-n-butyl phthalate	0.400	2.0	0.26	ug/l						J
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l						
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l						
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l						
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l						
2,4-Dichlorophenol	ND	2.0	0.21	ug/l						
Diethyl phthalate	ND	1.0	0.12	ug/l						
2,4-Dimethylphenol	ND	2.0	0.31	ug/l						
Dimethyl phthalate	ND	0.50	0.081	ug/l						

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METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A12027-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	ND	0.50	0.075	ug/l							
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	0.200	1.0	0.13	ug/l							J
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	ND	1.0	0.13	ug/l							
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	ND	0.50	0.071	ug/l							
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	14.2			ug/l	20.0		71	35-120			

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METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A12027-BLK1)</b>											
Surrogate: Phenol-d6	14.7			ug/l	20.0		74	45-120			
Surrogate: 2,4,6-Tribromophenol	14.3			ug/l	20.0		72	50-125			
Surrogate: Nitrobenzene-d5	6.84			ug/l	10.0		68	45-120			
Surrogate: 2-Fluorobiphenyl	7.60			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	8.12			ug/l	10.0		81	45-135			
<b>LCS Analyzed: 01/17/2005 (5A12027-BS1)</b>											
Acenaphthene	7.90	0.50	0.10	ug/l	10.0		79	55-120			
Acenaphthylene	8.16	0.50	0.10	ug/l	10.0		82	55-120			
Aniline	7.02	10	2.9	ug/l	10.0		70	30-120			J
Anthracene	8.44	0.50	0.083	ug/l	10.0		84	60-120			
Benizidine	ND	5.0	2.4	ug/l	10.0			20-180			L2
Benzoic acid	6.80	20	3.7	ug/l	10.0		68	30-125			J
Benzo(a)anthracene	8.76	5.0	0.038	ug/l	10.0		88	65-120			
Benzo(a)pyrene	8.88	2.0	0.14	ug/l	10.0		89	55-125			
Benzo(b)fluoranthene	8.58	2.0	0.050	ug/l	10.0		86	50-125			
Benzo(g,h,i)perylene	8.94	5.0	0.059	ug/l	10.0		89	35-160			
Benzo(k)fluoranthene	8.86	0.50	0.053	ug/l	10.0		89	50-125			
Benzyl alcohol	8.34	5.0	0.21	ug/l	10.0		83	40-130			
Bis(2-chloroethoxy)methane	7.34	0.50	0.072	ug/l	10.0		73	55-120			
Bis(2-chloroethyl)ether	6.78	0.50	0.084	ug/l	10.0		68	50-120			
Bis(2-chloroisopropyl)ether	6.88	0.50	0.11	ug/l	10.0		69	50-120			
Bis(2-ethylhexyl)phthalate	8.56	5.0	1.1	ug/l	10.0		86	65-125			
4-Bromophenyl phenyl ether	7.70	1.0	0.12	ug/l	10.0		77	55-125			
Butyl benzyl phthalate	8.84	5.0	0.34	ug/l	10.0		88	60-125			
4-Chloroaniline	6.94	2.0	0.20	ug/l	10.0		69	55-120			
2-Chloronaphthalene	7.66	0.50	0.059	ug/l	10.0		77	60-120			
4-Chloro-3-methylphenol	8.00	2.0	0.34	ug/l	10.0		80	60-120			
4-Chlorophenyl phenyl ether	8.30	0.50	0.056	ug/l	10.0		83	55-120			
2-Chlorophenol	7.32	1.0	0.12	ug/l	10.0		73	45-120			
Chrysene	8.32	0.50	0.072	ug/l	10.0		83	65-120			
Dibenz(a,h)anthracene	8.94	0.50	0.083	ug/l	10.0		89	40-160			
Dibenzofuran	7.86	0.50	0.075	ug/l	10.0		79	60-120			
Di-n-butyl phthalate	10.2	2.0	0.26	ug/l	10.0		102	65-125			
1,2-Dichlorobenzene	5.52	0.50	0.11	ug/l	10.0		55	40-120			
1,3-Dichlorobenzene	5.08	0.50	0.13	ug/l	10.0		51	40-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>LCS Analyzed: 01/17/2005 (5A12027-BS1)</b>											
1,4-Dichlorobenzene	5.34	0.50	0.050	ug/l	10.0		53	40-120			
3,3-Dichlorobenzidine	3.54	5.0	0.93	ug/l	10.0		35	50-170			L2, J
2,4-Dichlorophenol	8.08	2.0	0.21	ug/l	10.0		81	55-120			
Diethyl phthalate	8.08	1.0	0.12	ug/l	10.0		81	60-120			
2,4-Dimethylphenol	6.30	2.0	0.31	ug/l	10.0		63	35-120			
Dimethyl phthalate	7.90	0.50	0.081	ug/l	10.0		79	60-120			
4,6-Dinitro-2-methylphenol	6.66	5.0	0.38	ug/l	10.0		67	55-120			
2,4-Dinitrophenol	7.08	5.0	2.7	ug/l	10.0		71	40-140			
2,4-Dinitrotoluene	7.36	5.0	0.23	ug/l	10.0		74	60-140			
2,6-Dinitrotoluene	7.58	5.0	0.24	ug/l	10.0		76	65-125			
Di-n-octyl phthalate	8.68	5.0	0.17	ug/l	10.0		87	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.34	1.0	0.087	ug/l	10.0		83	60-120			
Fluoranthene	9.16	0.50	0.089	ug/l	10.0		92	55-125			
Fluorene	8.44	0.50	0.075	ug/l	10.0		84	60-120			
Hexachlorobenzene	7.66	1.0	0.13	ug/l	10.0		77	50-120			
Hexachlorobutadiene	4.40	2.0	0.38	ug/l	10.0		44	45-120			L2
Hexachlorocyclopentadiene	4.94	5.0	1.8	ug/l	10.0		49	10-130			J
Hexachloroethane	4.18	3.0	0.51	ug/l	10.0		42	40-120			
Indeno(1,2,3-cd)pyrene	8.74	2.0	0.19	ug/l	10.0		87	35-150			
Isophorone	7.50	1.0	0.059	ug/l	10.0		75	55-120			
2-Methylnaphthalene	7.54	1.0	0.13	ug/l	10.0		75	50-120			
2-Methylphenol	7.68	2.0	0.28	ug/l	10.0		77	45-120			
4-Methylphenol	7.36	5.0	0.20	ug/l	10.0		74	45-120			
Naphthalene	6.88	1.0	0.13	ug/l	10.0		69	50-120			
2-Nitroaniline	7.88	5.0	0.18	ug/l	10.0		79	60-130			
3-Nitroaniline	8.02	5.0	0.35	ug/l	10.0		80	50-140			
4-Nitroaniline	9.10	5.0	0.49	ug/l	10.0		91	45-160			
Nitrobenzene	6.84	1.0	0.10	ug/l	10.0		68	50-120			
2-Nitrophenol	7.10	2.0	0.23	ug/l	10.0		71	55-120			
4-Nitrophenol	7.08	5.0	0.73	ug/l	10.0		71	50-135			
N-Nitrosodimethylamine	7.68	2.0	0.22	ug/l	10.0		77	40-120			
N-Nitroso-di-n-propylamine	7.14	2.0	0.18	ug/l	10.0		71	50-120			
N-Nitrosodiphenylamine	6.74	1.0	0.077	ug/l	10.0		67	60-120			
Pentachlorophenol	8.04	2.0	0.78	ug/l	10.0		80	50-125			
Phenanthrene	8.16	0.50	0.071	ug/l	10.0		82	55-120			

Del Mar Analytical, Irvine  
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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>LCS Analyzed: 01/17/2005 (5A12027-BS1)</b>											
Phenol	7.34	1.0	0.14	ug/l	10.0		73	45-120			
Pyrene	8.42	0.50	0.059	ug/l	10.0		84	50-120			
1,2,4-Trichlorobenzene	5.56	1.0	0.10	ug/l	10.0		56	50-120			
2,4,5-Trichlorophenol	8.66	2.0	0.075	ug/l	10.0		87	60-120			
2,4,6-Trichlorophenol	8.64	1.0	0.10	ug/l	10.0		86	60-120			
Surrogate: 2-Fluorophenol	14.5			ug/l	20.0		72	35-120			
Surrogate: Phenol-d6	14.5			ug/l	20.0		72	45-120			
Surrogate: 2,4,6-Tribromophenol	14.7			ug/l	20.0		74	50-125			
Surrogate: Nitrobenzene-d5	7.14			ug/l	10.0		71	45-120			
Surrogate: 2-Fluorobiphenyl	7.80			ug/l	10.0		78	45-120			
Surrogate: Terphenyl-d14	8.56			ug/l	10.0		86	45-135			
<b>LCS Dup Analyzed: 01/17/2005 (5A12027-BSD1)</b>											
Acenaphthene	8.36	0.50	0.10	ug/l	10.0		84	55-120	6	20	
Acenaphthylene	8.42	0.50	0.10	ug/l	10.0		84	55-120	3	20	
Aniline	3.20	10	2.9	ug/l	10.0		32	30-120	75	25	R-7, J
Anthracene	8.22	0.50	0.083	ug/l	10.0		82	60-120	3	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-180		35	L2
Benzoic acid	7.70	20	3.7	ug/l	10.0		77	30-125	12	30	J
Benzo(a)anthracene	8.52	5.0	0.038	ug/l	10.0		85	65-120	3	20	
Benzo(a)pyrene	9.10	2.0	0.14	ug/l	10.0		91	55-125	2	25	
Benzo(b)fluoranthene	8.74	2.0	0.050	ug/l	10.0		87	50-125	2	25	
Benzo(g,h,i)perylene	9.24	5.0	0.059	ug/l	10.0		92	35-160	3	25	
Benzo(k)fluoranthene	8.88	0.50	0.053	ug/l	10.0		89	50-125	0	20	
Benzyl alcohol	8.44	5.0	0.21	ug/l	10.0		84	40-130	1	20	
Bis(2-chloroethoxy)methane	7.60	0.50	0.072	ug/l	10.0		76	55-120	3	20	
Bis(2-chloroethyl)ether	6.80	0.50	0.084	ug/l	10.0		68	50-120	0	20	
Bis(2-chloroisopropyl)ether	6.90	0.50	0.11	ug/l	10.0		69	50-120	0	20	
Bis(2-ethylhexyl)phthalate	8.24	5.0	1.1	ug/l	10.0		82	65-125	4	20	
4-Bromophenyl phenyl ether	7.72	1.0	0.12	ug/l	10.0		77	55-125	0	25	
Butyl benzyl phthalate	8.26	5.0	0.34	ug/l	10.0		83	60-125	7	20	
4-Chloroaniline	4.02	2.0	0.20	ug/l	10.0		40	55-120	53	25	L2, R-2
2-Chloronaphthalene	7.78	0.50	0.059	ug/l	10.0		78	60-120	2	20	
4-Chloro-3-methylphenol	8.42	2.0	0.34	ug/l	10.0		84	60-120	5	25	
4-Chlorophenyl phenyl ether	8.06	0.50	0.056	ug/l	10.0		81	55-120	3	20	
2-Chlorophenol	7.50	1.0	0.12	ug/l	10.0		75	45-120	2	25	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>LCS Dup Analyzed: 01/17/2005 (5A12027-BSD1)</b>											
Chrysene	8.00	0.50	0.072	ug/l	10.0		80	65-120	4	20	M-NRI
Dibenz(a,h)anthracene	8.96	0.50	0.083	ug/l	10.0		90	40-160	0	25	
Dibenzofuran	8.18	0.50	0.075	ug/l	10.0		82	60-120	4	20	
Di-n-butyl phthalate	8.66	2.0	0.26	ug/l	10.0		87	65-125	16	20	
1,2-Dichlorobenzene	5.72	0.50	0.11	ug/l	10.0		57	40-120	4	25	
1,3-Dichlorobenzene	5.26	0.50	0.13	ug/l	10.0		53	40-120	3	25	
1,4-Dichlorobenzene	5.52	0.50	0.050	ug/l	10.0		55	40-120	3	25	
3,3-Dichlorobenzidine	1.96	5.0	0.93	ug/l	10.0		20	50-170	57	25	L2, R-2, J
2,4-Dichlorophenol	8.30	2.0	0.21	ug/l	10.0		83	55-120	3	20	
Diethyl phthalate	7.90	1.0	0.12	ug/l	10.0		79	60-120	2	20	
2,4-Dimethylphenol	7.02	2.0	0.31	ug/l	10.0		70	35-120	11	25	
Dimethyl phthalate	7.72	0.50	0.081	ug/l	10.0		77	60-120	2	20	
4,6-Dinitro-2-methylphenol	6.48	5.0	0.38	ug/l	10.0		65	55-120	3	25	
2,4-Dinitrophenol	6.86	5.0	2.7	ug/l	10.0		69	40-140	3	25	
2,4-Dinitrotoluene	7.48	5.0	0.23	ug/l	10.0		75	60-140	2	20	
2,6-Dinitrotoluene	7.78	5.0	0.24	ug/l	10.0		78	65-125	3	20	
Di-n-octyl phthalate	8.34	5.0	0.17	ug/l	10.0		83	60-130	4	20	
1,2-Diphenylhydrazine/Azobenzene	8.12	1.0	0.087	ug/l	10.0		81	60-120	3	25	
Fluoranthene	8.80	0.50	0.089	ug/l	10.0		88	55-125	4	20	
Fluorene	8.52	0.50	0.075	ug/l	10.0		85	60-120	1	20	
Hexachlorobenzene	7.96	1.0	0.13	ug/l	10.0		80	50-120	4	20	
Hexachlorobutadiene	5.06	2.0	0.38	ug/l	10.0		51	45-120	14	25	
Hexachlorocyclopentadiene	5.54	5.0	1.8	ug/l	10.0		55	10-130	11	30	
Hexachloroethane	5.06	3.0	0.51	ug/l	10.0		51	40-120	19	25	
Indeno(1,2,3-cd)pyrene	8.80	2.0	0.19	ug/l	10.0		88	35-150	1	25	
Isophorone	7.70	1.0	0.059	ug/l	10.0		77	55-120	3	20	
2-Methylnaphthalene	31.2	1.0	0.13	ug/l	10.0		312	50-120	122	20	L, R-2
2-Methylphenol	7.72	2.0	0.28	ug/l	10.0		77	45-120	1	20	
4-Methylphenol	7.66	5.0	0.20	ug/l	10.0		77	45-120	4	20	
Naphthalene	13.5	1.0	0.13	ug/l	10.0		135	50-120	65	20	L, R-2
2-Nitroaniline	8.60	5.0	0.18	ug/l	10.0		86	60-130	9	20	
3-Nitroaniline	7.20	5.0	0.35	ug/l	10.0		72	50-140	11	25	
4-Nitroaniline	8.14	5.0	0.49	ug/l	10.0		81	45-160	11	20	
Nitrobenzene	7.28	1.0	0.10	ug/l	10.0		73	50-120	6	25	
2-Nitrophenol	7.86	2.0	0.23	ug/l	10.0		79	55-120	10	25	

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12027 Extracted: 01/12/05</b>											
<b>LCS Dup Analyzed: 01/17/2005 (5A12027-BSD1)</b>											
4-Nitrophenol	7.28	5.0	0.73	ug/l	10.0		73	50-135	3	25	M-NR1
N-Nitrosodimethylamine	7.20	2.0	0.22	ug/l	10.0		72	40-120	6	20	
N-Nitroso-di-n-propylamine	7.58	2.0	0.18	ug/l	10.0		76	50-120	6	20	
N-Nitrosodiphenylamine	7.94	1.0	0.077	ug/l	10.0		79	60-120	16	20	
Pentachlorophenol	7.68	2.0	0.78	ug/l	10.0		77	50-125	5	25	
Phenanthrene	8.14	0.50	0.071	ug/l	10.0		81	55-120	0	20	
Phenol	7.04	1.0	0.14	ug/l	10.0		70	45-120	4	25	
Pyrene	8.22	0.50	0.059	ug/l	10.0		82	50-120	2	25	
1,2,4-Trichlorobenzene	5.90	1.0	0.10	ug/l	10.0		59	50-120	6	20	
2,4,5-Trichlorophenol	8.64	2.0	0.075	ug/l	10.0		86	60-120	0	20	
2,4,6-Trichlorophenol	8.76	1.0	0.10	ug/l	10.0		88	60-120	1	20	
Surrogate: 2-Fluorophenol	14.3			ug/l	20.0		72	35-120			
Surrogate: Phenol-d6	14.5			ug/l	20.0		72	45-120			
Surrogate: 2,4,6-Tribromophenol	15.0			ug/l	20.0		75	50-125			
Surrogate: Nitrobenzene-d5	7.38			ug/l	10.0		74	45-120			
Surrogate: 2-Fluorobiphenyl	7.66			ug/l	10.0		77	45-120			
Surrogate: Terphenyl-d14	9.00			ug/l	10.0		90	45-135			

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13049-BLK1)</b>											
Aldrin	ND	0.10	0.029	ug/l							
alpha-BHC	ND	0.10	0.010	ug/l							
beta-BHC	ND	0.10	0.011	ug/l							
delta-BHC	ND	0.20	0.010	ug/l							
gamma-BHC (Lindane)	ND	0.10	0.0097	ug/l							
Chlordane	ND	1.0	0.18	ug/l							
4,4'-DDD	ND	0.10	0.011	ug/l							
4,4'-DDE	ND	0.10	0.017	ug/l							
4,4'-DDT	ND	0.10	0.015	ug/l							
Dieldrin	ND	0.10	0.010	ug/l							
Endosulfan I	ND	0.10	0.015	ug/l							
Endosulfan II	ND	0.10	0.037	ug/l							
Endosulfan sulfate	ND	0.20	0.013	ug/l							
Endrin	ND	0.10	0.0082	ug/l							
Endrin aldehyde	ND	0.10	0.045	ug/l							
Endrin ketone	ND	0.10	0.020	ug/l							
Heptachlor	ND	0.10	0.030	ug/l							
Heptachlor epoxide	ND	0.10	0.012	ug/l							
Methoxychlor	ND	0.10	0.034	ug/l							
Toxaphene	ND	5.0	0.77	ug/l							
Surrogate: Tetrachloro-m-xylene	0.348			ug/l	0.500		70	35-120			
Surrogate: Decachlorobiphenyl	0.424			ug/l	0.500		85	45-120			
<b>LCS Analyzed: 01/13/2005 (5A13049-BS1)</b>											
Aldrin	0.517	0.10	0.029	ug/l	0.500		103	45-115			M-NR1
alpha-BHC	0.527	0.10	0.010	ug/l	0.500		105	45-115			
beta-BHC	0.496	0.10	0.011	ug/l	0.500		99	50-115			
delta-BHC	0.564	0.20	0.010	ug/l	0.500		113	55-120			
gamma-BHC (Lindane)	0.525	0.10	0.0097	ug/l	0.500		105	45-115			
4,4'-DDD	0.537	0.10	0.011	ug/l	0.500		107	60-120			
4,4'-DDE	0.534	0.10	0.017	ug/l	0.500		107	55-120			
4,4'-DDT	0.557	0.10	0.015	ug/l	0.500		111	60-130			
Dieldrin	0.540	0.10	0.010	ug/l	0.500		108	55-120			
Endosulfan I	0.512	0.10	0.015	ug/l	0.500		102	50-115			
Endosulfan II	0.525	0.10	0.037	ug/l	0.500		105	60-125			
Endosulfan sulfate	0.528	0.20	0.013	ug/l	0.500		106	60-120			

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Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
Report Number: IOA0549

Sampled: 01/11/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13049-BS1)</b>											
Endrin	0.578	0.10	0.0082	ug/l	0.500		116	55-125			M-NRI
Endrin aldehyde	0.553	0.10	0.045	ug/l	0.500		111	55-115			
Endrin ketone	0.513	0.10	0.020	ug/l	0.500		103	60-120			
Heptachlor	0.513	0.10	0.030	ug/l	0.500		103	45-115			
Heptachlor epoxide	0.527	0.10	0.012	ug/l	0.500		105	50-120			
Methoxychlor	0.535	0.10	0.034	ug/l	0.500		107	60-135			
Surrogate: Tetrachloro-m-xylene	0.435			ug/l	0.500		87	35-120			
Surrogate: Decachlorobiphenyl	0.527			ug/l	0.500		105	45-120			
<b>LCS Dup Analyzed: 01/13/2005 (5A13049-BSD1)</b>											
Aldrin	0.512	0.10	0.029	ug/l	0.500		102	45-115	1	30	
alpha-BHC	0.534	0.10	0.010	ug/l	0.500		107	45-115	1	30	
beta-BHC	0.487	0.10	0.011	ug/l	0.500		97	50-115	2	30	
delta-BHC	0.547	0.20	0.010	ug/l	0.500		109	55-120	3	30	
gamma-BHC (Lindane)	0.525	0.10	0.0097	ug/l	0.500		105	45-115	0	30	
4,4'-DDD	0.505	0.10	0.011	ug/l	0.500		101	60-120	6	30	
4,4'-DDE	0.510	0.10	0.017	ug/l	0.500		102	55-120	5	30	
4,4'-DDT	0.520	0.10	0.015	ug/l	0.500		104	60-130	7	30	
Dieldrin	0.515	0.10	0.010	ug/l	0.500		103	55-120	5	30	
Endosulfan I	0.493	0.10	0.015	ug/l	0.500		99	50-115	4	30	
Endosulfan II	0.495	0.10	0.037	ug/l	0.500		99	60-125	6	30	
Endosulfan sulfate	0.498	0.20	0.013	ug/l	0.500		100	60-120	6	30	
Endrin	0.550	0.10	0.0082	ug/l	0.500		110	55-125	5	30	
Endrin aldehyde	0.511	0.10	0.045	ug/l	0.500		102	55-115	8	30	
Endrin ketone	0.490	0.10	0.020	ug/l	0.500		98	60-120	5	30	
Heptachlor	0.510	0.10	0.030	ug/l	0.500		102	45-115	1	30	
Heptachlor epoxide	0.510	0.10	0.012	ug/l	0.500		102	50-120	3	30	
Methoxychlor	0.505	0.10	0.034	ug/l	0.500		101	60-135	6	30	
Surrogate: Tetrachloro-m-xylene	0.449			ug/l	0.500		90	35-120			
Surrogate: Decachlorobiphenyl	0.494			ug/l	0.500		99	45-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13049-BLK1)</b>											
Aroclor 1016	ND	1.0	0.067	ug/l							
Aroclor 1221	ND	1.0	0.057	ug/l							
Aroclor 1232	ND	1.0	0.13	ug/l							
Aroclor 1242	ND	1.0	0.12	ug/l							
Aroclor 1248	ND	1.0	0.21	ug/l							
Aroclor 1254	ND	1.0	0.16	ug/l							
Aroclor 1260	ND	1.0	0.17	ug/l							
Surrogate: Decachlorobiphenyl	0.387			ug/l	0.500		77	45-120			
<b>LCS Analyzed: 01/13/2005 (5A13049-BS2)</b>											
Aroclor 1016	2.82	1.0	0.067	ug/l	4.00		70	50-115			M-NR1
Aroclor 1260	2.91	1.0	0.17	ug/l	4.00		73	60-115			
Surrogate: Decachlorobiphenyl	0.389			ug/l	0.500		78	45-120			
<b>LCS Dup Analyzed: 01/13/2005 (5A13049-BSD2)</b>											
Aroclor 1016	2.68	1.0	0.067	ug/l	4.00		67	50-115	5	30	
Aroclor 1260	2.88	1.0	0.17	ug/l	4.00		72	60-115	1	25	
Surrogate: Decachlorobiphenyl	0.379			ug/l	0.500		76	45-120			

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12047 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12047-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 01/12/2005 (5A12047-BS1)</b>											
Mercury	8.12	0.20	0.063	ug/l	8.00		102	85-115			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12047-MS1)</b>											
Mercury	8.00	0.20	0.063	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12047-MSD1)</b>											
Mercury	8.26	0.20	0.063	ug/l	8.00	ND	103	70-130	3	20	
<b>Batch: 5A12054 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12054-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Copper	ND	2.0	0.49	ug/l							
Lead	ND	1.0	0.13	ug/l							
Nickel	ND	1.0	0.15	ug/l							
Zinc	ND	20	3.1	ug/l							
<b>LCS Analyzed: 01/12/2005 (5A12054-BS1)</b>											
Antimony	89.1	2.0	0.18	ug/l	80.0		111	85-115			
Cadmium	84.7	1.0	0.015	ug/l	80.0		106	85-115			
Copper	80.7	2.0	0.49	ug/l	80.0		101	85-115			
Lead	80.4	1.0	0.13	ug/l	80.0		100	85-115			
Nickel	83.0	1.0	0.15	ug/l	80.0		104	85-115			
Zinc	79.4	20	3.1	ug/l	80.0		99	85-115			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
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**Batch: 5A12054 Extracted: 01/12/05**

**Matrix Spike Analyzed: 01/12/2005 (5A12054-MS1)**

**Source: IOA0549-01**

Antimony	88.7	2.0	0.18	ug/l	80.0	0.35	110	70-130			
Cadmium	85.3	1.0	0.015	ug/l	80.0	0.14	106	70-130			
Copper	83.9	2.0	0.49	ug/l	80.0	4.2	100	70-130			
Lead	81.3	1.0	0.13	ug/l	80.0	1.0	100	70-130			
Nickel	84.7	1.0	0.15	ug/l	80.0	2.3	103	70-130			
Zinc	93.0	20	3.1	ug/l	80.0	18	94	70-130			

**Matrix Spike Dup Analyzed: 01/12/2005 (5A12054-MSD1)**

**Source: IOA0549-01**

Antimony	90.1	2.0	0.18	ug/l	80.0	0.35	112	70-130	2	20	
Cadmium	86.1	1.0	0.015	ug/l	80.0	0.14	107	70-130	1	20	
Copper	83.8	2.0	0.49	ug/l	80.0	4.2	100	70-130	0	20	
Lead	80.9	1.0	0.13	ug/l	80.0	1.0	100	70-130	1	20	
Nickel	85.0	1.0	0.15	ug/l	80.0	2.3	103	70-130	0	20	
Zinc	93.0	20	3.1	ug/l	80.0	18	94	70-130	0	20	

**Batch: 5A14046 Extracted: 01/14/05**

**Blank Analyzed: 01/14/2005 (5A14046-BLK1)**

Boron	ND	0.050	0.0074	mg/l							
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**LCS Analyzed: 01/14/2005 (5A14046-BS1)**

Boron	0.469	0.050	0.0074	mg/l	0.500		94	85-115			
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**Matrix Spike Analyzed: 01/14/2005 (5A14046-MS1)**

**Source: IOA0701-01**

Boron	0.675	0.050	0.0074	mg/l	0.500	0.18	99	70-130			
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**Matrix Spike Dup Analyzed: 01/14/2005 (5A14046-MSD1)**

**Source: IOA0701-01**

Boron	0.682	0.050	0.0074	mg/l	0.500	0.18	100	70-130	1	20	
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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A14051 Extracted: 01/14/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A14051-BLK1)</b>											
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Chromium	0.434	1.0	0.26	ug/l							J
Cobalt	ND	1.0	0.10	ug/l							
Iron	0.00901	0.010	0.0032	mg/l							J
Manganese	0.502	1.0	0.44	ug/l							J
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	1.0	0.86	ug/l							
<b>LCS Analyzed: 01/14/2005-01/16/2005 (5A14051-BS1)</b>											
Arsenic	83.5	1.0	0.49	ug/l	80.0		104	85-115			
Barium	0.0823	0.0010	0.00014	mg/l	0.0800		103	85-115			
Beryllium	87.2	0.50	0.037	ug/l	80.0		109	85-115			
Chromium	81.3	1.0	0.26	ug/l	80.0		102	85-115			
Cobalt	78.9	1.0	0.10	ug/l	80.0		99	85-115			
Iron	0.803	0.010	0.0032	mg/l	0.800		100	85-115			
Manganese	83.9	1.0	0.44	ug/l	80.0		105	85-115			
Selenium	79.6	2.0	0.36	ug/l	80.0		100	85-115			
Silver	78.8	1.0	0.089	ug/l	80.0		98	85-115			
Thallium	84.9	1.0	0.075	ug/l	80.0		106	85-115			
Vanadium	81.2	1.0	0.86	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 01/14/2005-01/18/2005 (5A14051-MS1)</b>											
						<b>Source: IOA0707-01</b>					
Arsenic	86.5	1.0	0.49	ug/l	80.0	1.8	106	70-130			
Barium	0.110	0.0010	0.00014	mg/l	0.0800	0.024	108	70-130			
Beryllium	74.8	0.50	0.037	ug/l	80.0	ND	94	70-130			
Chromium	108	1.0	0.26	ug/l	80.0	31	96	70-130			
Cobalt	78.5	1.0	0.10	ug/l	80.0	2.6	95	70-130			
Iron	0.787	0.010	0.0032	mg/l	0.800	0.19	75	70-130			
Manganese	182	1.0	0.44	ug/l	80.0	100	102	70-130			
Selenium	81.0	2.0	0.36	ug/l	80.0	1.4	100	70-130			
Silver	71.6	1.0	0.089	ug/l	80.0	ND	90	70-130			
Thallium	77.6	1.0	0.075	ug/l	80.0	0.47	96	70-130			

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05

Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A14051 Extracted: 01/14/05</b>											
<b>Matrix Spike Analyzed: 01/14/2005-01/18/2005 (5A14051-MS1)</b>						<b>Source: IOA0707-01</b>					
Vanadium	81.6	1.0	0.86	ug/l	80.0	1.4	100	70-130			
<b>Matrix Spike Dup Analyzed: 01/14/2005-01/16/2005 (5A14051-MSD1)</b>						<b>Source: IOA0707-01</b>					
Arsenic	86.0	1.0	0.49	ug/l	80.0	1.8	105	70-130	1	20	
Barium	0.108	0.0010	0.00014	mg/l	0.0800	0.024	105	70-130	2	20	
Beryllium	75.1	0.50	0.037	ug/l	80.0	ND	94	70-130	0	20	
Chromium	106	1.0	0.26	ug/l	80.0	31	94	70-130	2	20	
Cobalt	79.9	1.0	0.10	ug/l	80.0	2.6	97	70-130	2	20	
Iron	0.764	0.010	0.0032	mg/l	0.800	0.19	72	70-130	3	20	
Manganese	180	1.0	0.44	ug/l	80.0	100	100	70-130	1	20	
Selenium	81.2	2.0	0.36	ug/l	80.0	1.4	100	70-130	0	20	
Silver	71.5	1.0	0.089	ug/l	80.0	ND	89	70-130	0	20	
Thallium	78.3	1.0	0.075	ug/l	80.0	0.47	97	70-130	1	20	
Vanadium	80.9	1.0	0.86	ug/l	80.0	1.4	99	70-130	1	20	

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 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A11040 Extracted: 01/11/05</b>											
<b>Blank Analyzed: 01/11/2005 (5A11040-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 01/11/2005 (5A11040-BS1)</b>											
Chloride	4.84	0.50	0.26	mg/l	5.00		97	90-110			
Sulfate	10.1	0.50	0.18	mg/l	10.0		101	90-110			
<b>Matrix Spike Analyzed: 01/11/2005 (5A11040-MS1)</b>											
						<b>Source: IOA0494-01</b>					
Chloride	24.1	2.5	1.3	mg/l	5.00	20	82	80-120			
Sulfate	38.6	2.5	0.90	mg/l	10.0	29	96	80-120			
<b>Matrix Spike Dup Analyzed: 01/11/2005 (5A11040-MSD1)</b>											
						<b>Source: IOA0494-01</b>					
Chloride	24.1	2.5	1.3	mg/l	5.00	20	82	80-120	0	20	
Sulfate	38.8	2.5	0.90	mg/l	10.0	29	98	80-120	1	20	
<b>Batch: 5A11092 Extracted: 01/11/05</b>											
<b>Blank Analyzed: 01/11/2005 (5A11092-BLK1)</b>											
Chromium VI	0.149	1.0	0.041	ug/l							J
<b>LCS Analyzed: 01/11/2005 (5A11092-BS1)</b>											
Chromium VI	51.4	1.0	0.041	ug/l	50.0		103	90-110			
<b>Matrix Spike Analyzed: 01/11/2005 (5A11092-MS1)</b>											
						<b>Source: IOA0549-01</b>					
Chromium VI	48.5	1.0	0.041	ug/l	50.0	ND	97	90-110			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab

Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A11092 Extracted: 01/11/05</b>											
<b>Matrix Spike Dup Analyzed: 01/11/2005 (5A11092-MSD1)</b>						<b>Source: IOA0549-01</b>					
Chromium VI	48.7	1.0	0.041	ug/l	50.0	ND	97	90-110	0	10	
<b>Batch: 5A11108 Extracted: 01/11/05</b>											
<b>Blank Analyzed: 01/11/2005 (5A11108-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 01/11/2005 (5A11108-BS1)</b>											
Total Cyanide	184	5.0	2.2	ug/l	200		92	90-110			
<b>Matrix Spike Analyzed: 01/11/2005 (5A11108-MS1)</b>						<b>Source: IOA0214-01</b>					
Total Cyanide	171	5.0	2.2	ug/l	200	ND	86	70-115			
<b>Matrix Spike Dup Analyzed: 01/11/2005 (5A11108-MSD1)</b>						<b>Source: IOA0214-01</b>					
Total Cyanide	169	5.0	2.2	ug/l	200	ND	84	70-115	1	15	
<b>Batch: 5A12041 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A12041-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 01/17/2005 (5A12041-BS1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115			
<b>LCS Dup Analyzed: 01/17/2005 (5A12041-BSD1)</b>											
Biochemical Oxygen Demand	212	100	30	mg/l	198		107	85-115	2	20	

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12045 Extracted: 01/12/05</b>											
<b>Duplicate Analyzed: 01/12/2005 (5A12045-DUP1)</b>											
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5A12058 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12058-BLK1)</b>											
Turbidity	ND	1.0	0.040	NTU							
<b>Duplicate Analyzed: 01/12/2005 (5A12058-DUP1)</b>											
Turbidity	0.260	1.0	0.040	NTU		0.23			12	20	J
<b>Batch: 5A12059 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12059-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 01/12/2005 (5A12059-BS1)</b>											
Surfactants (MBAS)	0.248	0.10	0.044	mg/l	0.250		99	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12059-MS1)</b>											
Surfactants (MBAS)	0.191	0.10	0.044	mg/l	0.250	0.052	56	50-125			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12059-MSD1)</b>											
Surfactants (MBAS)	0.193	0.10	0.044	mg/l	0.250	0.052	56	50-125	1	20	
<b>Batch: 5A13051 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13051-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							

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Sampled: 01/11/05  
Received: 01/11/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13051 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13051-BS1)</b>											
Perchlorate	50.0	4.0	0.80	ug/l	50.0		100	85-115			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13051-MS1)</b>											
Perchlorate	49.6	4.0	0.80	ug/l	50.0	0.93	97	80-120			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13051-MSD1)</b>											
Perchlorate	50.7	4.0	0.80	ug/l	50.0	0.93	100	80-120	2	20	
<b>Batch: 5A13053 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A13053-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.56	mg/l							
<b>LCS Analyzed: 01/12/2005 (5A13053-BS1)</b>											
Total Organic Carbon	10.4	1.0	0.56	mg/l	10.0		104	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A13053-MS1)</b>											
Total Organic Carbon	10.3	1.0	0.56	mg/l	5.00	5.1	104	80-120			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A13053-MSD1)</b>											
Total Organic Carbon	10.2	1.0	0.56	mg/l	5.00	5.1	102	80-120	1	20	
<b>Batch: 5A13060 Extracted: 01/13/05</b>											
<b>Duplicate Analyzed: 01/13/2005 (5A13060-DUP1)</b>											
Specific Conductance	164	1.0	1.0	umhos/cm		160			2	5	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13063 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13063-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 01/13/2005 (5A13063-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0		98	80-115			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13063-MS1)</b>											
Ammonia-N (Distilled)	11.5	0.50	0.30	mg/l	10.0	0.56	109	70-120			
						<b>Source: IOA0632-01</b>					
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13063-MSD1)</b>											
Ammonia-N (Distilled)	11.2	0.50	0.30	mg/l	10.0	0.56	106	70-120	3	15	
<b>Batch: 5A13065 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13065-BLK1)</b>											
Oil & Grease	1.20	5.0	0.94	mg/l							J
<b>LCS Analyzed: 01/13/2005 (5A13065-BS1)</b>											
Oil & Grease	18.6	5.0	0.94	mg/l	20.0		93	65-120			M-NR1
<b>LCS Dup Analyzed: 01/13/2005 (5A13065-BSD1)</b>											
Oil & Grease	21.1	5.0	0.94	mg/l	20.0		106	65-120	13	20	
<b>Batch: 5A13089 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13089-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13089 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13089-BS1)</b>											
Total Dissolved Solids	994	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 01/13/2005 (5A13089-DUP1)</b>											
						<b>Source: IOA0549-01</b>					
Total Dissolved Solids	92.0	10	10	mg/l		88			4	10	
<b>Batch: 5A14084 Extracted: 01/14/05</b>											
<b>Blank Analyzed: 01/14/2005 (5A14084-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/14/2005 (5A14084-BS1)</b>											
Total Suspended Solids	949	10	10	mg/l	1000		95	85-115			
<b>Duplicate Analyzed: 01/14/2005 (5A14084-DUP1)</b>											
						<b>Source: IOA0607-01</b>					
Total Suspended Solids	ND	10	10	mg/l		ND				10	
<b>Batch: 5A15022 Extracted: 01/15/05</b>											
<b>Blank Analyzed: 01/15/2005 (5A15022-BLK1)</b>											
Fluoride	0.149	0.50	0.074	mg/l							J
<b>LCS Analyzed: 01/15/2005 (5A15022-BS1)</b>											
Fluoride	4.58	0.50	0.074	mg/l	5.00		92	90-110			
<b>Matrix Spike Analyzed: 01/15/2005 (5A15022-MS1)</b>											
						<b>Source: IOA0835-03</b>					
Fluoride	5.23	0.50	0.074	mg/l	5.00	0.31	98	80-120			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A15022 Extracted: 01/15/05</b>											
<b>Matrix Spike Dup Analyzed: 01/15/2005 (5A15022-MSD1)</b>						<b>Source: IOA0835-03</b>					
Fluoride	5.25	0.50	0.074	mg/l	5.00	0.31	99	80-120	0	20	

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## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5A1502 Extracted: 01/15/05</b>											
<b>Blank Analyzed: 01/15/2005 (P5A1502-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.03			ug/l	1.00		103	80-125			
<b>LCS Analyzed: 01/15/2005 (P5A1502-BS1)</b>											
1,4-Dioxane	9.04	1.0	0.49	ug/l	10.0		90	70-130			
Surrogate: Dibromofluoromethane	0.950			ug/l	1.00		95	80-125			
<b>LCS Dup Analyzed: 01/15/2005 (P5A1502-BSD1)</b>											
1,4-Dioxane	9.30	1.0	0.49	ug/l	10.0		93	70-130	3	20	
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Analyzed: 01/15/2005 (P5A1502-MS1)</b>											
						<b>Source: POA0240-01</b>					
1,4-Dioxane	10.7	1.0	0.49	ug/l	10.0	ND	107	70-150			
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Dup Analyzed: 01/15/2005 (P5A1502-MSD1)</b>											
						<b>Source: POA0240-01</b>					
1,4-Dioxane	9.07	1.0	0.49	ug/l	10.0	ND	91	70-150	16	25	
Surrogate: Dibromofluoromethane	0.940			ug/l	1.00		94	80-125			

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**DATA QUALIFIERS AND DEFINITIONS**

- B** Analyte was detected in the associated Method Blank.
- C** Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L** Laboratory Control Sample recovery was above the method control limits. Analyte not detected, data not impacted.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- P1** Sample received and analyzed without chemical preservation.
- R-2** The RPD exceeded the method control limit.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

**ADDITIONAL COMMENTS**

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

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### Certification Summary

#### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).

#### Subcontracted Laboratories

##### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chronic  
 Samples: IOA0549-01

Analysis Performed: Bioassay-Acute 96hr  
 Samples: IOA0549-01

##### Del Mar Analytical - Phoenix NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B

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**Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044  
Samples: IOA0549-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOA0549-01

Analysis Performed: Gross Alpha  
Samples: IOA0549-01

Analysis Performed: Gross Beta  
Samples: IOA0549-01

Analysis Performed: Radium, Combined  
Samples: IOA0549-01

Analysis Performed: Strontium 90  
Samples: IOA0549-01

Analysis Performed: Tritium  
Samples: IOA0549-01

**Pace Analytical, MN- SUB**

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR  
Samples: IOA0549-01

Analysis Performed: EDD + Level 4  
Samples: IOA0549-01

**Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOA0549-01

Analysis Performed: Level 4 Data Package  
Samples: IOA0549-01

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

IOA0549 <Page 58 of 58>

IOA 0549

Del Mar Analytical Version 5/8/12/04 CHAIN OF CUSTODY FORM

Client Name/Address:		Project:		ANALYSIS REQUIRED													Field readings:											
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 Routine/13267		Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Cu, Pb, Hg.	Settleable Solids	VOCs 624 + xylenes	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl-, SO4, NO3+NO2-N, Perchlorate	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) W/dist	Alpha BHC (8081A)	2,4,6 Trichlorophenol, 2,4 Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625)	Temp = 57.6 pH = 6.8	Comments			
Outfall 011	W	Poly-1L	1	1/11/05 1048	HNO3	1A	X																					
Outfall 011-Dup	W	Poly-1L	1		HNO3	1B	X																					
Outfall 011	W	Poly-1L	1		None	2																						
Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C																						
Outfall 011	W	1L Amber	2		None	4A, 4B							X															
Outfall 011	W	1L Amber	2		HCl	5A, 5B								X														
Outfall 011	W	Poly-500 ml	1		NaOH	6									X													
Outfall 011	W	Poly-1L	1		None	7										X												
Outfall 011	W	Poly-500 ml	2		None	8A, 8B											X											
Outfall 011	W	Poly-500 ml	2		None	9A, 9B												X										
Outfall 011	W	Poly-500 ml	2		None	10A, 10B													X									
Outfall 011	W	Poly-500 ml	1		H2SO4	11																						
Outfall 011	W	1L Amber	2		None	12A, 12B																						
Outfall 011	W	1L Amber	2		None	13A, 13B																						
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C																						
Relinquished By	Linda Hayes 1/11/05		Date/Time:	1455	Received By	Shirley Lee		Date/Time:	1455	Turn around Time: (check)	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check) Intact	On Ice	X										
Relinquished By	Linda Hayes 1/11/05		Date/Time:	1455	Received By	Shirley Lee		Date/Time:	1455	Turn around Time: (check)	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check) Intact	On Ice	X										
Relinquished By	Linda Hayes 1/11/05		Date/Time:	1455	Received By	Shirley Lee		Date/Time:	1455	Turn around Time: (check)	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check) Intact	On Ice	X										

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# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 5/8/12/04

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Outfall 011 Routine/13267 Perimeter Pond		<b>ANALYSIS REQUIRED</b>										Temp = 57.6 PH = 6.8 Comments											
<b>Project Manager:</b> Bronwyn Kelly Phone Number: (626) 568-6891 Fax Number: (626) 568-6515		<b>Sampler:</b> <i>DK/LH</i>		Residual Chlorine		TOC		Chromium VI (218.6)		Rad Chem		Total Rec. Petroleum Hydrocarbons (EPA 418.1)		Diesel		8015 (GRO)		Momomethylhydrazine		624-Mod A+A+2CVE		Acute and Chronic toxicity-bioassays			
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Residual Chlorine	TOC	Chromium VI (218.6)	Rad Chem	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Momomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity-bioassays	Turn around Time: (Check)	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check)	Intact	Office
Outfall 011	W	150ml Brown Poly	1	1/11/05	None		X																		
Outfall 011	W	VOA	3	1/11/05	HCl			X																	
Outfall 011	W	500ml Poly	1		None				X																
Outfall 011	W	Poly -1Gal	1		None					X															
Outfall 011	W	1L Amber	2		HCl						X														
Outfall 011	W	1L Amber	2		None							X													
Outfall 011	W	VOA	3		None								X												
Outfall 011	W	1L Amber	2		None									X											
Outfall 011	W	VOA	3		None										X										
Outfall 011	W	Poly -1Gal	2		None											X									
Trip Balnks	W	VOA	3		None																				
Relinquished By: <i>Andrew Hoyle</i> 1/11/05 1455 Date/Time:		Received By: <i>Bronwyn Kelly</i> 1-11-05 1455 Date/Time:		Relinquished By: <i>Andrew Hoyle</i> 1-11-05 1800 Date/Time:		Received By: <i>Bronwyn Kelly</i> 1-11-05 1800 Date/Time:		Turn around Time: (Check)		24 Hours		48 Hours		72 Hours		Perchlorate Only 72 Hours		Metals Only 72 Hours		Sample Integrity: (Check)		Intact		Office	

F A X



300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 03/01/05

To: Michele Harper / Del Mar Analytical      Fax No: 949-260-3297  
Krisi McIlvenna / MWH      925-975-3412

From: Bronwyn K. Kelly

sign: 

Subject: Chain-of-Custody Form Analytical Request Change      No. of Pages: 1  
(including cover)

**Per Request:**

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOA0567	Outfall 011 – Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.
IOA0549	Outfall 011 – Grab	01/11/05		608 Pest/PCB-PP list, 625-PP list, Sb, As, Ba, Be, B, Cd, Cr, Co, F, Fe, Mn, Ni, Se, Ag, Tl, V, Zn, 1,4-Dioxane, 624-Freon 113, Freon 123a, Cyclohexane
IOB1004	Outfall 011 – Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.

The reason for these changes:

*Incorrectly marked on COC form* \_\_\_\_\_

*Lack of sample volume* \_\_\_\_\_

*MWH office personnel require this change* \_\_\_\_\_ X \_\_\_\_\_

*Other: Containers mislabeled* \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

March 9, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)  
 Outfall 011 Grab  
 Sampled: 1/11/05  
 Del Mar Analytical Number: IOA0549

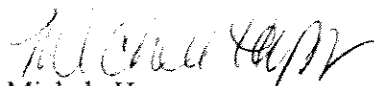
Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96hr Percent Survival Bioassay by EPA Method 2000.0 and Ceriodaphnia Survival and Reproduction Test by EPA Method 1002, Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), and Strontium-90 (Sr-90, EPA 905.0), Pace Analytical performed the TCDD analysis by USEPA Method 1613B, and Truesdail Laboratories performed the Hydrazines by EPA 8315B for the project referenced above. Please use the following cross-reference table when reviewing your results.

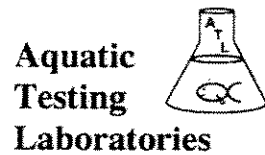
MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	PACE ID	TRUESDAIL ID
Outfall 011-Grab	IOA0549-01	A-05011205-001/002	R501122/8175-001	106132001	938566-1

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

  
 Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** January 19, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05011205-001/002  
**Sample I.D.:** IOA0549-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 01/11/05  
Date Received: 01/12/05  
Date Tested: 01/12/05 to 01/18/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TU<sub>a</sub></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TU<sub>c</sub></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05011205-001  
 Client/ID: Del Mar IOA0549-01

Start Date: 01/12/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 13 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050104.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.0	8.9	8.0	0	0	R 1400
	100%	20.2	9.8	6.9	0	0	
24 Hr	Control	19.2	8.6	7.6	0	0	R 1200
	100%	19.0	8.7	7.0	0	0	
48 Hr	Control	19.4	8.3	7.6	0	0	R 1200
	100%	19.4	8.2	7.1	0	0	
Renewal	Control	19.3	9.2	7.9	0	0	R 1200
	100%	19.5	10.8	6.8	0	0	
72 Hr	Control	19.2	8.0	7.7	0	0	R 1100
	100%	19.2	8.5	7.2	0	0	
96 Hr	Control	19.2	7.4	7.6	0	0	R 1400
	100%	19.1	8.5	7.6	0	0	

### Comments:

Sample as received: Chlorine: 0 mg/l; pH: 6.9; Conductivity: 78 umho; Temp: 4°C;  
 DO: 9.8 mg/l; Alkalinity: 24 mg/l; Hardness: 32 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No  
 Control: Alkalinity: 60 mg/l; Hardness: 100 mg/l; Conductivity: 315 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes / No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %



**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05011205  
Client/ID: Del Mar IOA0549-01

Date Tested: 01/12/05 to 01/18/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050104.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	23.0
6.25%	100%	24.0
12.5%	100%	29.1
25%	100%	30.3
50%	100%	30.5
100%	100%	30.7

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥ 80%	Pass (100% survival)
≥ 15 young per surviving control female	Pass (23.0 young)
≥ 60% surviving controls had 3 broods	Pass (70% with 3 broods)
PMSD < 47% for reproduction; if > 47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 25.4%)
Statistically significantly different concentrations relative difference > 13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOA0549

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone : (805) 650-0546 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments	
<b>Sample ID: IOA0549-01 Water</b>	<b>Sampled: 01/11/05 10:48</b>	<b>Instant Notification</b>	
Bioassay-7 dy Chronic	01/12/05 22:48	ceriodaphnia, 13267	
Bioassay-Acute 96hr	01/12/05 22:48	fathead minnow, 13267	
<b>Containers Supplied:</b>			
1 gal Poly (IOA0549-01AP)			
1 gal Poly (IOA0549-01AQ)			

### SAMPLE INTEGRITY:

All containers intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Custody Seals Present: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Samples Preserved Properly: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): <u>4°C</u>	

<i>Stacy Amador</i>		<i>1/12/05</i>	<i>0715</i>	<i>DeLong</i>		<i>1/12/05</i>	<i>0715</i>
Released By	Date	Time	Received By	Date	Time	Date	Time
<i>DeLong</i>	<i>1/14/05</i>	<i>1330</i>	<i>DeLong</i>	<i>1-12-05</i>	<i>1330</i>		
Released By	Date	Time	Received By	Date	Time	Date	Time



February 28, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOA0549  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R501122-8175

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on January 14, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/njv*

*Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice*

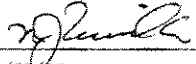
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SNG <u>8175</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501122-01</u>	Contract <u>PROJECT# IOAC549</u>
Received Date <u>01/14/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOAC549-01	8175-001	01/11/05	01/31/05	GrossAlpha	0.850 ± 0.70	pCi/L	0.930
			01/31/05	Gross Beta	2.40 ± 1.2	pCi/L	1.86
			02/16/05	H3	17.8 ± 150	pCi/L	249
			01/27/05	Sr90	-0.173 ± 0.29	pCi/L	0.607

Certified by <u></u>
Report Date <u>02/21/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8175</u> Work Order <u>RSC122-01</u> Received Date <u>01/14/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOA0549</u> Matrix <u>WATER</u>
---	---

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8174-002	GrossAlpha	10.8 ± 1.3	pCi/Smpl	11.2	0.643	96% recovery
		Gross Beta	12.0 ± 0.63	pCi/Smpl	12.1	0.571	99% recovery
		H3	246 ± 23	pCi/Smpl	260	24.4	95% recovery
		Sr90	12.4 ± 0.44	pCi/Smpl	11.1	0.156	112% recovery
<u>BLANK</u>							
	8174-003	GrossAlpha	0.293 ± 0.33	pCi/Smpl	NA	0.511	<MDA
		Gross Beta	-0.071 ± 0.35	pCi/Smpl	NA	0.501	<MDA
		H3	1.76 ± 14	pCi/Smpl	NA	24.7	<MDA
		Sr90	-0.053 ± 0.13	pCi/Smpl	NA	0.240	<MDA

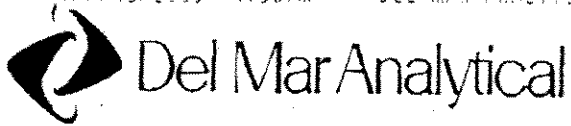
<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8174-004	GrossAlpha	1.73 ± 1.1	1.18
	Gross Beta	1.98 ± 1.1	1.76
	H3	-28.3 ± 140	248
	Sr90	-0.048 ± 0.27	0.558

<u>ORIGINALS</u>			
Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8174-001	0.294 ± 1.0	1.75	142 226 satis.
	2.50 ± 1.2	1.78	23 114 satis.
	-71.9 ± 140	252	- 0 satis.
	-0.023 ± 0.24	0.431	- 0 satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8174-005	GrossAlpha	84.6 ± 5.2	0.772
	Gross Beta	80.0 ± 3.6	1.75
	H3	8630 ± 380	249

<u>ORIGINAL SAMPLE</u>				
Sample ID	Results ± 2σ	MDA	Added	%Recv
8174-001	0.294 ± 1.0	1.75	76.6	110
	2.50 ± 1.2	1.78	74.0	105
	-71.9 ± 140	252	9490	94

Certified by <u><i>[Signature]</i></u> Report Date <u>02/27/05</u> Page 2
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NO. 467  
 17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1048  
 9424 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 509-9369 Fax (619) 505-9349  
 9830 South 51st Street, Suite B-142, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0251  
 2520 E. Sunset, PM., Suite 403, Las Vegas, NV 89120 Ph (702) 786-3826 Fax (702) 786-3821

**SUBCONTRACT ORDER - PROJECT # IOA0549**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Eberline Services  
 2030 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438

REVISED

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0549-01 Water	Sampled: 01/11/05 10:48	Instant Notification
Gross Alpha-O	01/11/06 10:48	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/11/06 10:48	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Radium, Combined-O	01/11/06 10:48	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/11/06 10:48	905.0
Tritium-O	01/11/06 10:48	906

Containers Supplied:  
 1 gal Poly (IOA0549-01AC)

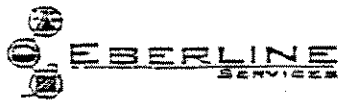
FAXED  
1/13/05

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (comp): _____

Released By: \_\_\_\_\_ Date: 1/13/05 Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



**RICHMOND, CA LABORATORY**

**SAMPLE RECEIPT CHECKLIST**

Client: Del Mar City: Irvine State: CA

Date/Time received: 1-14-05 / 10:00 CoC No.: IOA0549

Container I.D. No.: Cooler Requested TAT (Days): 14 P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [  ]

2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [  ]

3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [  ]

4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [  ]

5. Packing material is: Wet [  ] Dry [ ]

6. Number of samples in shipping container: 1 Sample Matrix: water

7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)

8. Samples are in correct container Yes [  ] No [ ]

9. Paperwork agrees with samples? Yes [  ] No [ ]

10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [  ]

11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]

12. Samples are: Preserved [ ] Not preserved [  ] pH: 7 Preservative \_\_\_\_\_

13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date: \_\_\_\_\_

15. Inspected by: JLP Date: 1-14-05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0549-01		
Lab Sample ID	106132001		
Filename	F50129B_14		
Injected By	BAL		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/11/2005
ICAL Date	11/29/2004	Received	01/13/2005
CCal Filename(s)	F50129B_02	Extracted	01/28/2005
Method Blank ID	BLANK-6220	Analyzed	01/30/2005 06:28

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	0.79	2,3,7,8-TCDF-13C	2.00	67
Total TCDF	ND	----	0.79	2,3,7,8-TCDD-13C	2.00	84
				1,2,3,7,8-PeCDF-13C	2.00	73
2,3,7,8-TCDD	ND	----	0.70	2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	ND	----	0.70	1,2,3,7,8-PeCDD-13C	2.00	91
				1,2,3,4,7,8-HxCDF-13C	2.00	77
1,2,3,7,8-PeCDF	ND	----	0.80	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	ND	----	0.53	2,3,4,6,7,8-HxCDF-13C	2.00	81
Total PeCDF	ND	----	0.66	1,2,3,7,8,9-HxCDF-13C	2.00	78
				1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	ND	----	0.72	1,2,3,6,7,8-HxCDD-13C	2.00	91
Total PeCDD	ND	----	0.72	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	----	0.44	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	ND	----	0.46	OCDD-13C	4.00	76
2,3,4,6,7,8-HxCDF	ND	----	0.55			
1,2,3,7,8,9-HxCDF	ND	----	0.66	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	0.53	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	0.51	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,6,7,8-HxCDD	ND	----	0.50			
1,2,3,7,8,9-HxCDD	ND	----	0.75			
Total HxCDD	2.0	----	0.59 J			
1,2,3,4,6,7,8-HpCDF	2.4	----	0.77 J			
1,2,3,4,7,8,9-HpCDF	ND	----	1.10			
Total HpCDF	9.4	----	0.95 BJ			
1,2,3,4,6,7,8-HpCDD	7.7	----	0.97 BJ			
Total HpCDD	18.0	----	0.97 BJ			
OCDF	9.1	----	1.30 BJ			
OCDD	81.0	----	1.70 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

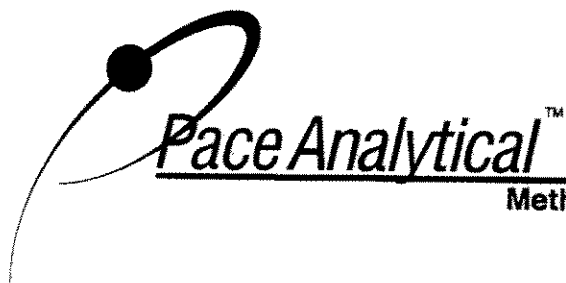
I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106132

## REPORT OF LABORATORY ANALYSIS

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### Method 1613B Blank Analysis Results

Client - Del Mar Analytical

Lab Sample ID	BLANK-6220	Matrix	Water
Filename	F50129B_06	Dilution	NA
Total Amount Extracted	1020 mL	Extracted	01/28/2005
ICAL Date	11/29/2004	Analyzed	01/29/2005 23:49
CCal Filename(s)	F50129B_02	Injected By	BAL

Native Isomers	Conc pg/L	EMPC pg/L	PRL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.20	2,3,7,8-TCDF-13C	2.00	58
Total TCDF	ND	-----	-----	2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	ND	-----	1.20	2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	ND	-----	-----	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	1.50	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	1.20	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	-----	1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	-----	1.60	1,2,3,6,7,8-HxCDD-13C	2.00	88
Total PeCDD	ND	-----	-----	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	ND	-----	0.75	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.86	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	1.10			
1,2,3,7,8,9-HxCDF	ND	-----	1.20	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	-----	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.10	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	ND	-----	0.99			
1,2,3,7,8,9-HxCDD	ND	-----	1.00			
Total HxCDD	ND	-----	-----			
1,2,3,4,6,7,8-HpCDF	ND	-----	2.10			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.90			
Total HpCDF	2.2	-----	----- J			
1,2,3,4,6,7,8-HpCDD	2.4	-----	1.40 J			
Total HpCDD	2.4	-----	----- J			
OCDF	5.2	-----	1.80 J			
OCDD	5.6	-----	2.90 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
PRL = Pace Analytical Reporting Limit  
A = Limit of Detection based on signal to noise  
P = Recovery outside of method 1613 control limits  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
J = Value below calibration range  
\* = See Discussion

Report No.....106124

## REPORT OF LABORATORY ANALYSIS

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## Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-6221		
Filename	F50129B_03	Matrix	Water
Total Amount Extracted	1040 mL	Dilution	NA
ICAL Date	11/29/2004	Extracted	01/28/2005
CCal Filename	F50129B_02	Analyzed	01/29/2005 21:22
Method Blank ID	BLANK-6220	Injected By	BAL

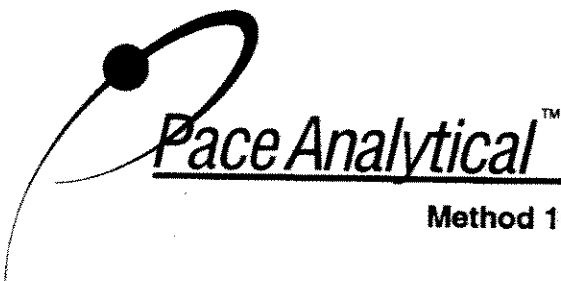
Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.9	7.5	15.8	99
2,3,7,8-TCDD	10	8.6	6.7	15.8	86
1,2,3,7,8-PeCDF	50	50.5	40.0	67.0	101
2,3,4,7,8-PeCDF	50	48.2	34.0	80.0	96
1,2,3,7,8-PeCDD	50	43.3	35.0	71.0	87
1,2,3,4,7,8-HxCDF	50	45.6	36.0	67.0	91
1,2,3,6,7,8-HxCDF	50	48.7	42.0	65.0	97
2,3,4,6,7,8-HxCDF	50	49.1	35.0	78.0	98
1,2,3,7,8,9-HxCDF	50	46.5	39.0	65.0	93
1,2,3,4,7,8-HxCDD	50	49.9	35.0	82.0	100
1,2,3,6,7,8-HxCDD	50	51.3	38.0	67.0	103
1,2,3,7,8,9-HxCDD	50	50.1	32.0	81.0	100
1,2,3,4,6,7,8-HpCDF	50	50.3	41.0	61.0	101
1,2,3,4,7,8,9-HpCDF	50	53.3	39.0	69.0	107
1,2,3,4,6,7,8-HpCDD	50	45.4	35.0	70.0	91
OCDF	100	95.6	63.0	170.0	96
OCDD	100	97.1	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	51.5	22.0	152.0	52
2,3,7,8-TCDD-13C	100	67.8	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	61.4	21.0	192.0	61
2,3,4,7,8-PeCDF-13C	100	65.9	13.0	328.0	66
1,2,3,7,8-PeCDD-13C	100	77.8	21.0	227.0	78
1,2,3,4,7,8-HxCDF-13C	100	70.2	19.0	202.0	70
1,2,3,6,7,8-HxCDF-13C	100	78.0	21.0	159.0	78
2,3,4,6,7,8-HxCDF-13C	100	74.1	22.0	176.0	74
1,2,3,7,8,9-HxCDF-13C	100	70.4	17.0	205.0	70
1,2,3,4,7,8-HxCDD-13C	100	69.0	21.0	193.0	69
1,2,3,6,7,8-HxCDD-13C	100	82.8	25.0	163.0	83
1,2,3,4,6,7,8-HpCDF-13C	100	72.1	21.0	158.0	72
1,2,3,4,7,8,9-HpCDF-13C	100	62.4	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	80.1	26.0	166.0	80
OCDD-13C	200	135.6	26.0	397.0	68

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision.  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....106124

## REPORT OF LABORATORY ANALYSIS

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-6222	Matrix	Water
Filename	F50129B_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	01/28/2005
ICAL Date	11/29/2004	Analyzed	01/29/2005 22:09
CCal Filename	F50129B_02	Injected By	BAL
Method Blank ID	BLANK-6220		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10.6	7.5	15.8	106
2,3,7,8-TCDD	10	9.4	6.7	15.8	94
1,2,3,7,8-PeCDF	50	53.2	40.0	67.0	106
2,3,4,7,8-PeCDF	50	50.7	34.0	80.0	101
1,2,3,7,8-PeCDD	50	46.0	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	47.6	36.0	67.0	95
1,2,3,6,7,8-HxCDF	50	50.9	42.0	65.0	102
2,3,4,6,7,8-HxCDF	50	50.9	35.0	78.0	102
1,2,3,7,8,9-HxCDF	50	49.0	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	52.4	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	54.2	38.0	67.0	108
1,2,3,7,8,9-HxCDD	50	52.5	32.0	81.0	105
1,2,3,4,6,7,8-HpCDF	50	55.0	41.0	61.0	110
1,2,3,4,7,8,9-HpCDF	50	55.7	39.0	69.0	111
1,2,3,4,6,7,8-HpCDD	50	48.0	35.0	70.0	96
OCDF	100	100.6	63.0	170.0	101
OCDD	100	101.9	78.0	144.0	102
2,3,7,8-TCDD-37Cl4	10	8.7	3.1	19.1	87
2,3,7,8-TCDF-13C	100	70.4	22.0	152.0	70
2,3,7,8-TCDD-13C	100	88.6	20.0	175.0	89
1,2,3,7,8-PeCDF-13C	100	73.6	21.0	192.0	74
2,3,4,7,8-PeCDF-13C	100	79.0	13.0	328.0	79
1,2,3,7,8-PeCDD-13C	100	95.5	21.0	227.0	96
1,2,3,4,7,8-HxCDF-13C	100	84.8	19.0	202.0	85
1,2,3,6,7,8-HxCDF-13C	100	89.5	21.0	159.0	90
2,3,4,6,7,8-HxCDF-13C	100	87.2	22.0	176.0	87
1,2,3,7,8,9-HxCDF-13C	100	82.1	17.0	205.0	82
1,2,3,4,7,8-HxCDD-13C	100	80.1	21.0	193.0	80
1,2,3,6,7,8-HxCDD-13C	100	97.0	25.0	163.0	97
1,2,3,4,6,7,8-HpCDF-13C	100	84.4	21.0	158.0	84
1,2,3,4,7,8,9-HpCDF-13C	100	71.7	20.0	186.0	72
1,2,3,4,6,7,8-HpCDD-13C	100	92.4	26.0	166.0	92
OCDD-13C	200	159.2	26.0	397.0	80

Cs = Concentration Spiked (ng/mL)  
 Cr = Concentration Recovered (ng/mL)  
 Rec. = Recovery (Expressed as Percent)  
 Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
 X = Background subtracted value  
 P = Recovery outside of control limits  
 Nn = Value obtained from additional analysis  
 \* = See Discussion

Report No.....106124

## REPORT OF LABORATORY ANALYSIS

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**SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS**

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-6221  
 SPIKE 1 Filename..... F50129B\_03  
 SPIKE 2 ID..... LCSD-6222  
 SPIKE 2 Filename..... F50129B\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	99	106	6.8
2378-TCDD	86	94	8.9
12378-PeCDF	101	106	4.8
23478-PeCDF	96	101	5.1
12378-PeCDD	87	92	5.6
123478-HxCDF	91	95	4.3
123678-HxCDF	97	102	5.0
234678-HxCDF	98	102	4.0
123789-HxCDF	93	98	5.2
123478-HxCDD	100	105	4.9
123678-HxCDD	103	108	4.7
123789-HxCDD	100	105	4.9
1234678-HpCDF	101	110	8.5
1234789-HpCDF	107	111	3.7
1234678-HpCDD	91	96	5.3
OCDF	96	101	5.1
OCDD	97	102	5.0

REC = Percent Recovered

RPD = The difference between the two values divided by the average.

NA = Not Applicable

Report No..... 106124, 106125, 106126  
 106127, 106128, 106130  
 106131, 106132, 106135

**REPORT OF LABORATORY ANALYSIS**

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**TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans**

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

\*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

## REPORT OF LABORATORY ANALYSIS

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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOA0549**

106132

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone : (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0549-01 Water	Sampled: 01/11/05 10:48	Instant Notification
1613-Dioxin-HR	01/18/05 10:48	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	02/08/05 10:48	Excel EDD email to pm, Include Std logs for Lvl IV

106132001

**Containers Supplied:**  
 1 L Amber (IOA0549-01G)  
 1 L Amber (IOA0549-01H)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 2-3°C

Released By: Stacy Gunawan      Date: 1/12/05      Time: 9:45      Received By: Kim Edwards      Date: 1/13/05      Time: 9:45

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

January 24, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOA0549  
**Date Received:** 01/12/05

**Truesdail Project:** 938566

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
938566-1	IOA0549-01	Water	01/11/05	1048	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOA0549  
**Date Received:** 01/12/05

**Truesdail Project:** 938566

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.

**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

On 1/24/05, client called to add a Level IV Data Package to the project. Since the request was made after the analysis was completed, the normal procedure for logging-in for Level IV was not followed. However, the data package for this project is completed as per the requirement.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager



# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



## REPORT

Established 1931

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical-Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0549  
**P.O. Number:** IOA0549  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938566  
**Report Date:** January 14, 2005  
**Sampling Date:** January 11, 2005  
**Receiving Date:** January 12, 2005  
**Extraction Date:** January 12, 2005  
**Analysis Date:** January 13, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

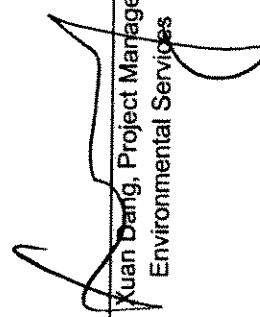
Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine
704660-MB	Method Blank	ND	ND	ND	ND
938566	IOA0549-01	ND	ND	ND	ND
PQL		5.0	5.0	5.0	5.0
Sample Report Limits		5.0	5.0	5.0	5.0

PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Kuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical- AIR  
17461 Derian Ave.  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOA0549  
**P.O. Number:** IOA0549  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2915; Analysis: 353  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704660  
**Project Lab. No.:** 938566  
**Spiked Sample ID:** 938566  
**Report Date:** January 14, 2005  
**Sampling Date:** January 11, 2005  
**Receiving Date:** January 12, 2005  
**Extraction Date:** January 12, 2005  
**Analysis Date:** January 13, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits		Flag
				Value	Limits	
Monomethyl Hydrazine	25.0	23.5	94.1	85-115		PASS
u-Dimethyl Hydrazine	25.0	23.2	93.0	85-115		PASS
Hydrazine	5.0	5.00	100	85-115		PASS

#### QCS

Parameter	Theoretical Value (ug/L)		% Rec.	Measured Value (ug/L)		% Control	Flag
	Value	Limits		Value	Limits		
Monomethyl Hydrazine	50.0		114	57.0	85-115		PASS
u-Dimethyl Hydrazine	50.0		106	52.8	85-115		PASS
Hydrazine	10.0		111	11.1	85-115		PASS

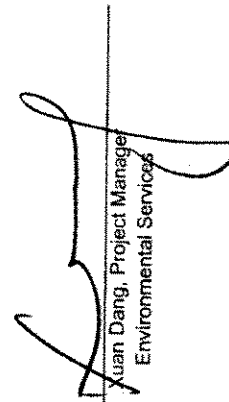
### Quality Control/Quality Assurance Spikes Report

#### MS/MSD

Parameter	Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	LCS/LCSD		Flag	Control Limits
		LCS	MB		LCS	%D		
Monomethyl Hydrazine	50.0	56.1	58.0	112	116	3.32%	PASS	70-130
u-Dimethyl Hydrazine	50.0	51.0	51.8	102	104	1.51%	PASS	70-130
Hydrazine	10.0	12.1	12.5	121	125	3.4%	PASS	70-130

Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	MS/MSD		Accuracy Control Limits
	MS	%D		MS	%D	
50.0	47.2	46.6	93.2	1.39%	PASS	20 0-150
50.0	50.3	49.6	99.1	1.52%	PASS	20 0-150
10.0	11.3	10.9	109	3.08%	PASS	20 0-150

ICV: Initial Calibration Verification  
CCV: Continued Calibration Verification  
LCS: Laboratory Control Spike  
MS: Matrix Spike  
%D: Percent Difference  
Flag: "Pass" if within Control Limits; otherwise "Fail"  
Note: Results based on detector #1 (UV=365nm) data.

  
Juan Dang, Project Manager  
Environmental Services

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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOA0549**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Truesdail Laboratories-SUB 14201 Franklin Avenue Tustin, CA 92680 Phone: (714) 730-6239 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0549-01 Water Hydrazine-OUT	Sampled: 01/11/05 10:48 01/14/05 10:48	Instant Notification Sub Truesdail for Monomethylhydrazine, 13267
<b>Containers Supplied:</b> 1 L Amber (IOA0549-01AK) 1 L Amber (IOA0549-01AL)		

Rec'd 01/12/05  
 sl5c 938566

**For Sample Conditions  
 See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: <i>Michele Harper</i>	Date: 1-12-05	Time: 7:10	Received By: <i>Michele Harper</i>	Date: 1-12-05	Time: 7:10
Released By: <i>Michele Harper</i>	Date: 1-12-05	Time: 7:30	Received By: <i>Rafael Davila</i>	Date: 1-12-05	Time: 7:30 AM



NO. 2299 P. 2/2  
 17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Corona, CA 92624 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9598 Fax (619) 505-9689  
 9850 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2525 E. Sunset Blvd., Suite 45, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOA0549**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Truesdail Laboratories-SUB 14201 Franklin Avenue Tustin, CA 92680 Phone : (714) 730-6239 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0549-01 Water	Sampled: 01/11/05 10:48	Instant Notification
Hydrazine-OUT	01/14/05 10:48	Sub Truesdail for Monomethylhydrazine, 13267
Level 4 Data Package	02/08/05 10:48	
Containers Supplied:		
1 L Amber (IOA0549-01AK)		
1 L Amber (IOA0549-01AL)		

*MH 1/24/05*

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 935566

Date Delivered: 1/12/05 Time: 7:30 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved by:  Truesdail  Client  Yes  No  N/A
12. Were samples pH checked? pH = NP  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: J Brown



"Chung, David H"  
<david.h.chung@boeing.com>

10/12/2006 12:03 PM

To "Robert G Aaserude"  
<Robert.G.Aaserude@us.mwhglobal.com>  
cc "Dixie A Hambrick" <Dixie.A.Hambrick@us.mwhglobal.com>,  
"Shelby R Valenzuela"  
<Shelby.R.Valenzuela@us.mwhglobal.com>, "Bronwyn K"  
bcc

Subject B/359 Area SW sampling

Bob,

There is rain/thunderstorm forecasted this weekend in Simi Valley. Please design a B/359 SW sampling plan and have a personnel standby to sample this weekend. I suggest a sight map with sampling location like we did last year.

This plan should be pretty similar to last seasons, except the collection pond at the NW corner of the B/359 area is gone. I believe that we need to continue to collect CLO4 samples at the NW corner of B/359 and near the palm tree down stream from it. Other samples including the one near the R1 pond should be put on hold.

Thanks,

David Chung

# **APPENDIX A**

## **Section 26**

Outfall 011, January 11, 2005

MEC<sup>X</sup> Data Validation Reports

## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

MEC<sup>x</sup>  
 12269 East Vassar Drive  
 Aurora, CO 80014

Package ID: B4HZ1  
 Task Order: 1261.001D.01  
 SDG No.: Multiple

No. of Analyses: 4

Laboratory: Truesdail Laboratory  
 Reviewer: P. Meeks  
 Analysis/Method: Hydrazines

Date: <u>April 10, 2006</u>
Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
<b>Case Narrative</b>	
<b>Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<p><sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p><sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	





## DATA VALIDATION REPORT

NPDES Monitoring Program  
Outfalls 001, 002, 011, 018

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IPB2637, IPB2639,  
IPB2641, IPB2643

Prepared by

MEC<sup>X</sup>, LLC  
12269 East Vassar Drive  
Aurora, CO 80014

## 1. INTRODUCTION

Task Order Title: NPDES  
MEC<sup>X</sup> Project Number: 1261.001D.01  
Sample Delivery Group: IPB2637, IPB2639, IPB2641, IPB2643  
Project Manager: P. Costa  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 8, 2006

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Truesdail Laboratory ID	Del Mar Laboratory ID	Matrix	COC Method
Outfall 001	952266	IPB2637-01	Water	8315
Outfall 002	952267	IPB2639-01	Water	8315
Outfall 011	952268	IPB2641-01	Water	8315
Outfall 018	952265	IPB2643-01	Water	8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. The original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported and therefore, validated. Custody seals were not required as the samples were transported to Del Mar and then to Truesdail by courier. Truesdail Laboratories did not list the client IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 03/03/06, with correlation coefficients of  $\geq 0.995$  for all three hydrazines. The ICV and CCV bracketing the sample analyses had hydrazine recoveries within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate pair was analyzed with these SDGs. The hydrazine recoveries and RPDs were within the laboratory-established control limits. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 002. The hydrazines recoveries and RPDs were within the laboratory-established control limits. No qualifications were required.

### 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

#### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC. No qualifications were required.

#### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. As there were no sample detects, compound quantification was verified from the raw data by recalculating LCS/LCSD and MS/MSD detects. No calculation or transcription error were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.



# REPORT

**Cliant:** Del Mar Analytical  
17461 Dartan Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michela Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2637  
**P.O. Number:** IPB2637  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 952266  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

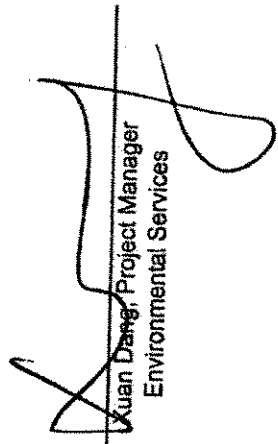
## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
705657-MB	Method Blank	ND	ND	ND	ND	ND
952266	IPB2637-01 Outfall	ND	ND	ND	ND	ND
MDL		1.2				
PQL		5.0		0.27		0.39
				5.0		1.0

\* Analysis not validated

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantification Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Juan Diego, Project Manager  
Environmental Services

LEVEL IV

This report applies only to the sample or samples investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2639  
**P.O. Number:** IPB2639  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**REPORT**

**Laboratory No:** 952267  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine		
705657-MB	Method Blank	ND	ND	ND	ND	ND	ND
952267	IPB2639-01	ND	ND	ND	ND	ND	ND
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xuan Dang*  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.





**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2641  
**P.O. Number:** IPB2641  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**REPORT**

**Laboratory No:** 952268  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
705657-MB	Method Blank	ND	*	ND	*	ND	*
952268	IPB2641-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

\*Analysis not validated

MDL: Method Detection Limit, µg/L  
 PQL: Practical Quantitation Limit, µg/L  
 ND: Not Detected at or above the MDL value.  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xuan Dang*  
 Xuan Dang, Project Manager  
 Environmental Services

LEVEL IV

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**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Attention:** Michele Chamberlin  
**Sample:** Liquid / 1 Sample  
**Project Name:** IPB2643  
**P.O. Number:** IPB2643  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**REPORT**

**Laboratory No:** 952265  
**Report Date:** March 20, 2006  
**Sampling Date:** February 28, 2006  
**Receiving Date:** March 1, 2006  
**Extraction Date:** March 1, 2006  
**Analysis Date:** March 3, 2006  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine	Hydrazine
705657-MB	Method Blank	ND	ND	ND	ND	ND	ND
952265	outfall on IPB2643-01	ND	0	*	0	ND	ND
MDL		1.2				0.27	0.39
PQL		5.0				5.0	1.0

\* Analysis Not Validated

MDL: Method Detection Limit, ug/L  
 PQL: Practical Quantitation Limit, ug/L  
 ND: Not Detected at or above the MDL value.  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xian Dang*  
 Project Manager  
 Environmental Services

Level IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT29  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1

Laboratory Del Mar Analytical

Reviewer K. Okonzak

Analysis/Method metals

Date: 2/15/05

Reviewer's Signature  
P. Marks for K. Okonzak

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were applied for detects in the bracketing ICP/MS CCB analyses. Qualifications were applied to analytes detected below the laboratory reporting limit.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*\* Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Okonzak-Lowry  
Date of Review: February 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0131-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses but did not report %RSDs. The laboratory SOP states that to be acceptable, the %RSD must be less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The applicable reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

## 2.4 BLANKS

There were detects and negative results reported for the method blanks and bracketing ICBs/CCBs associated with the sample in this SDG. Arsenic and silver were detected in a bracketing CCB at 0.63305 and 0.36341  $\mu\text{g/L}$ , respectively; therefore, the arsenic and silver detected in sample Outfall 011 were qualified "UJ." Selenium was detected in both bracketing CCBs at 0.90784 and 0.80914  $\mu\text{g/L}$ , respectively; therefore, the selenium detected in sample Outfall 011 was qualified "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

No ICPMS interference check samples were analyzed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

An ICSA analysis was included in the raw data for the ICP boron analysis. This ICSA analysis was performed two days before the site sample analysis and was not associated with the initial calibration performed for sample Outfall.011. The laboratory's ICP SOP No. MET-200.7/6010B, Revision 8, states that the ICSA and ICSAB samples need to be run consecutively at the beginning and end of each analytical run. Due to the low level of matrix interferents in the site sample matrix, no sample qualifications were required due to the ICP ICS analysis.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5A05092-BS1, the ICP LCS sample was identified as 5A06063-BS1, and the Hg LCS sample was identified as 5A06051-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

The ICP and ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.13.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site sample.



17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 360-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (658) 503-8596 FAX (658) 305-9629  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3630 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.42	1	01/05/05	01/06/05	J J DNQ
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.97	1	01/05/05	01/06/05	U J J B
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.072	1	01/05/05	01/06/05	J J R DNQ
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.12	1	01/05/05	01/06/05	J J DNQ
Chromium	EPA 200.8	5A05092	0.26	1.0	1.9	1	01/05/05	01/06/05	
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.34	1	01/05/05	01/06/05	J J DNQ
Copper	EPA 200.8	5A05092	0.49	2.0	4.4	1	01/05/05	01/06/05	
Lead	EPA 200.8	5A05092	0.13	1.0	0.82	1	01/05/05	01/06/05	J J DNQ
Manganese	EPA 200.8	5A05092	0.44	1.0	14	1	01/05/05	01/06/05	
Mercury	EPA 245.1	5A06051	0.063	0.20	0.17	1	01/06/05	01/06/05	J J DNQ
Nickel	EPA 200.8	5A05092	0.15	1.0	2.1	1	01/05/05	01/06/05	
Selenium	EPA 200.8	5A05092	0.36	2.0	0.66	1	01/05/05	01/06/05	U J J B
Silver	EPA 200.8	5A05092	0.089	1.0	0.13	1	01/05/05	01/06/05	U J J B
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	U
Vanadium	EPA 200.8	5A05092	0.86	1.0	1.1	1	01/05/05	01/06/05	
Zinc	EPA 200.8	5A05092	3.1	20	15	1	01/05/05	01/06/05	J J DNQ

*Handwritten:* 2/15/05

**AMEC VALIDATED**

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 803, San Diego, CA 92123 (858) 305-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				Rev Qual
Reporting Units: mg/l									
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.015	1	01/05/05	01/06/05	
Boron	EPA 200.7	5A06063	0.0074	0.050	0.051	1	01/06/05	01/06/05	
Iron	EPA 200.8	5A05092	0.0032	0.010	0.81	1	01/05/05	01/06/05	

# AMEC VALIDATED

## LEVEL IV

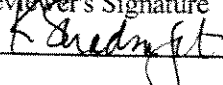
DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF22  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 9  
 Date: February 18, 2005  
 Reviewer's Signature  


Laboratory Pace  
 Reviewer K. Shadowlight  
 Analysis/Method Dioxins

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were assigned for the following: * Method blank contamination * EMPCs * Detects below the lower method calibration level
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 9  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: February 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 001	IOA0551-01	106124001	water	1613
Outfall 002	IOA0550-01	106130001	water	1613
Outfall 007	IOA0556-01	106128001	water	1613
Outfall 008	IOA0553-01	106126001	water	1613
Outfall 009	IOA0554-01	106131001	water	1613
Outfall 010	IOA0555-01	106127001	water	1613
Outfall 011	IOA0549-01	106132001	water	1613
Outfall 011	IOA0567-01	106135001	water	1613
Outfall 018	IOA0552-01	106125001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were subcontracted to Pace Analytical for the dioxin/furan analyses. The samples in these SDGs were received at Pace Analytical Services within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were received in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were signed by the appropriate field and laboratory personnel. The samples and analyses were accounted for on both the original COCs and transfer COCs. As the samples were couriered directly to the laboratory (Del Mar Analytical), custody seals were not required. There was no information regarding custody seals upon receipt at Pace. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A column performance standard was combined with the daily calibration verification and analyzed at the beginning of each analytical sequence. The GC column performance was acceptable with the chromatographic separation of 2,3,7,8-TCDD and other TCDD isomers resolved with a valley of  $\leq 25\%$ . No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance could not be evaluated as the laboratory did not provide selected ion current profiles for the lock-mass ions. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 11/29/04 on Instrument 10MSHR05. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the 2 native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in the Table 6 of the EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

One method blank (Blank-6220) was extracted and analyzed with the samples in these SDGs. Target compounds total HpCDF, 1,2,3,4,6,7,8-HpCDF, total HpCDF, OCDF, and OCDD were reported in the method blank. Any detects for the aforementioned target compounds reported at concentrations  $< 5\times$  the concentrations reported in the method blank were qualified as estimated nondetects "UJ," at the levels of interference in the samples of these SDGs. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One LCS/LCSD pair (LCS-6221/LCSD-6222) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. There are no method QC limits established for RPDs. The reported RPDs were within  $\pm 20\%$ . No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy and precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration limit (MCL) were qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.



### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0551-01	<i>out fall out</i>		
Lab Sample ID	106124001			
Filename	F50129B_07			
Injected By	BAL			
Total Amount Extracted	1050 mL		Matrix	Water
% Moisture	NA		Dilution	NA
Dry Weight Extracted	NA		Collected	01/11/2005
ICAL Date	11/29/2004		Received	01/13/2005
CCal Filename(s)	F50129B_02		Extracted	01/28/2005
Method Blank ID	BLANK-6220		Analyzed	01/30/2005 00:39

*Handwritten notes:*  
 1. 2,3,7,8-TCDF  
 2. 2,3,7,8-TCDD  
 3. 1,2,3,7,8-PeCDF  
 4. 2,3,4,7,8-PeCDF  
 5. 1,2,3,7,8-PeCDD  
 6. 1,2,3,4,7,8-HxCDF  
 7. 1,2,3,6,7,8-HxCDF  
 8. 2,3,4,6,7,8-HxCDF  
 9. 1,2,3,7,8,9-HxCDF  
 10. 1,2,3,4,7,8-HxCDD  
 11. 1,2,3,6,7,8-HxCDD  
 12. 1,2,3,7,8,9-HxCDD  
 13. 1,2,3,4,6,7,8-HpCDF  
 14. 1,2,3,4,7,8,9-HpCDF  
 15. 1,2,3,4,6,7,8-HpCDD  
 16. OCDF  
 17. OCDD

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	1.30	2,3,7,8-TCDF-13C	2.00	63
Total TCDF	ND	----	1.30	2,3,7,8-TCDD-13C	2.00	79
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	84
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	----	1.60	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	----	0.86	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	----	1.20	1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	ND	----	0.73	1,2,3,6,7,8-HxCDD-13C	2.00	89
Total PeCDD	ND	----	0.73	1,2,3,4,6,7,8-HpCDF-13C	2.00	78
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	----	1.00	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	----	1.40	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	ND	----	0.87			
1,2,3,7,8,9-HxCDF	ND	----	0.75	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	1.00	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.10	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	ND	----	0.87			
1,2,3,7,8,9-HxCDD	ND	----	1.10			
Total HxCDD	ND	----	1.00			
1,2,3,4,6,7,8-HpCDF	ND	----	1.10			
1,2,3,4,7,8,9-HpCDF	ND	----	1.70			
Total HpCDF	ND	----	1.40			
1,2,3,4,6,7,8-HpCDD	5.8	----	1.20	BJ		
Total HpCDD	12.0	----	1.20	BJ		
OCDF	7.1	----	1.70	BJ		
OCDD	56.0	----	1.90	J		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106124

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

# LEVEL IV

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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0550-01	<i>out (cell no. 2)</i>
Lab Sample ID	106130001	
Filename	F50129B_12	
Injected By	BAL	
Total Amount Extracted	1040 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/11/2005
ICAL Date	11/29/2004	Received 01/13/2005
CCal Filename(s)	F50129B_02	Extracted 01/28/2005
Method Blank ID	BLANK-6220	Analyzed 01/30/2005 04:48

	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>	2,3,7,8-TCDF	ND	----	0.63	2,3,7,8-TCDF-13C	2.00	60
<i>u</i>	Total TCDF	2.1	----	0.63 J	2,3,7,8-TCDD-13C	2.00	75
<i>u</i>	2,3,7,8-TCDD	ND	----	0.78	1,2,3,7,8-PeCDF-13C	2.00	67
<i>u</i>	Total TCDD	ND	----	0.78	2,3,4,7,8-PeCDF-13C	2.00	69
<i>u</i>	1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	83
<i>u</i>	2,3,4,7,8-PeCDF	ND	----	0.62	1,2,3,4,7,8-HxCDF-13C	2.00	68
<i>u</i>	Total PeCDF	ND	----	0.90	1,2,3,6,7,8-HxCDF-13C	2.00	82
<i>u</i>	1,2,3,7,8-PeCDD	ND	----	0.74	2,3,4,6,7,8-HxCDF-13C	2.00	74
<i>u</i>	Total PeCDD	ND	----	0.74	1,2,3,7,8,9-HxCDF-13C	2.00	71
<i>u</i>	1,2,3,4,7,8-HxCDF	ND	----	0.48	1,2,3,4,7,8-HxCDD-13C	2.00	61
<i>u</i>	1,2,3,6,7,8-HxCDF	ND	----	0.61	1,2,3,6,7,8-HxCDD-13C	2.00	88
<i>u</i>	2,3,4,6,7,8-HxCDF	ND	----	0.55	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
<i>u</i>	1,2,3,7,8,9-HxCDF	ND	----	0.63	1,2,3,4,7,8,9-HpCDF-13C	2.00	63
<i>u</i>	Total HxCDF	ND	----	0.57	1,2,3,4,6,7,8-HpCDD-13C	2.00	81
<i>u</i>	1,2,3,4,7,8-HxCDD	ND	----	0.91	OCDD-13C	4.00	70
<i>u</i>	1,2,3,6,7,8-HxCDD	ND	----	0.57	1,2,3,4-TCDD-13C	2.00	NA
<i>u</i>	1,2,3,7,8,9-HxCDD	ND	----	0.49	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>	Total HxCDD	1.5	----	0.66 J	2,3,7,8-TCDD-37Cl4	0.20	72
<i>u</i>	1,2,3,4,6,7,8-HpCDF	----	1.4	0.92 I			
<i>u</i>	1,2,3,4,7,8,9-HpCDF	ND	----	1.00			
<i>u</i>	Total HpCDF	ND	----	0.97			
<i>u</i>	1,2,3,4,6,7,8-HpCDD	8.0	----	0.95 BJ			
<i>u</i>	Total HpCDD	16.0	----	0.95 BJ			
<i>u</i>	OCDF	7.6	----	1.50 BJ			
<i>u</i>	OCDD	71.0	----	5.40 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106130

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LEVEL IV

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0556-01	<i>not fall out</i>
Lab Sample ID	106128001	
Filename	F50129B_11	
Injected By	BAL	
Total Amount Extracted	1040 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/11/2005
CCal Filename(s)	F50129B_02	Received 01/13/2005
Method Blank ID	BLANK-6220	Extracted 01/28/2005
		Analyzed 01/30/2005 03:58

Rev	Qual	Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u	J	2,3,7,8-TCDF	ND	----	1.00	2,3,7,8-TCDF-13C	2.00	64
		Total TCDF	1.4	----	1.00 J	2,3,7,8-TCDD-13C	2.00	81
u	u	2,3,7,8-TCDD	ND	----	1.10	1,2,3,7,8-PeCDF-13C	2.00	73
		Total TCDD	ND	----	1.10	2,3,4,7,8-PeCDF-13C	2.00	75
u	u	1,2,3,7,8-PeCDF	ND	----	1.30	1,2,3,7,8-PeCDD-13C	2.00	89
		2,3,4,7,8-PeCDF	ND	----	0.70	1,2,3,4,7,8-HxCDF-13C	2.00	74
		Total PeCDF	ND	----	0.98	1,2,3,6,7,8-HxCDF-13C	2.00	86
u	u	1,2,3,7,8-PeCDD	ND	----	0.81	2,3,4,6,7,8-HxCDF-13C	2.00	79
		Total PeCDD	ND	----	0.81	1,2,3,7,8,9-HxCDF-13C	2.00	76
u	u	1,2,3,4,7,8-HxCDF	ND	----	0.84	1,2,3,4,7,8-HxCDD-13C	2.00	68
		1,2,3,6,7,8-HxCDF	ND	----	0.83	1,2,3,6,7,8-HxCDD-13C	2.00	91
		2,3,4,6,7,8-HxCDF	ND	----	0.89	1,2,3,4,6,7,8-HpCDF-13C	2.00	79
		1,2,3,7,8,9-HxCDF	ND	----	0.91	1,2,3,4,7,8,9-HpCDF-13C	2.00	68
		Total HxCDF	ND	----	0.87	1,2,3,4,6,7,8-HpCDD-13C	2.00	88
						OCDD-13C	4.00	74
u	u	1,2,3,4,7,8-HxCDD	ND	----	0.76	1,2,3,4-TCDD-13C	2.00	NA
		1,2,3,6,7,8-HxCDD	ND	----	0.57	1,2,3,7,8,9-HxCDD-13C	2.00	NA
		1,2,3,7,8,9-HxCDD	ND	----	0.67			
		Total HxCDD	1.2	----	0.67 J	2,3,7,8-TCDD-37Cl4	0.20	81
J	J	1,2,3,4,6,7,8-HpCDF	2.1	----	1.40 J			
u	u	1,2,3,4,7,8,9-HpCDF	ND	----	1.80			
J	J	Total HpCDF	14.0	----	1.60 BJ			
u	u	1,2,3,4,6,7,8-HpCDD	4.3	----	0.94 BJ			
J	J	Total HpCDD	7.6	----	0.94 BJ			
u	u	OCDF	13.0	----	2.00 BJ			
u	u	OCDD	23.0	----	3.30 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

f = Interference  
E = PCDE interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106128

ANEC VALIDATED REPORT OF LABORATORY ANALYSIS

LEVEL IV

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# Pace Analytical™

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0553-01	<i>out full w/</i>
Lab Sample ID	106126001	
Filename	F50129B_09	
Injected By	BAL	
Total Amount Extracted	1010 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/11/2005
ICAL Date	11/29/2004	Received 01/13/2005
CCal Filename(s)	F50129B_02	Extracted 01/28/2005
Method Blank ID	BLANK-6220	Analyzed 01/30/2005 02:18

<i>Raw</i>	<i>Jud</i>	<i>Code</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>			2,3,7,8-TCDF	ND	----	0.98	2,3,7,8-TCDF-13C	2.00	68
<i>u</i>		<i>only</i>	Total TCDF	1.30	----	0.98 J	2,3,7,8-TCDD-13C	2.00	85
							1,2,3,7,8-PeCDF-13C	2.00	75
<i>u</i>			2,3,7,8-TCDD	ND	----	0.96	2,3,4,7,8-PeCDF-13C	2.00	79
<i>u</i>			Total TCDD	ND	----	0.96	1,2,3,7,8-PeCDD-13C	2.00	95
							1,2,3,4,7,8-HxCDF-13C	2.00	76
<i>u</i>			1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,6,7,8-HxCDF-13C	2.00	95
<i>u</i>			2,3,4,7,8-PeCDF	ND	----	0.86	2,3,4,6,7,8-HxCDF-13C	2.00	86
<i>u</i>			Total PeCDF	ND	----	1.10	1,2,3,7,8,9-HxCDF-13C	2.00	79
							1,2,3,4,7,8-HxCDD-13C	2.00	75
<i>u</i>			1,2,3,7,8-PeCDD	ND	----	0.78	1,2,3,6,7,8-HxCDD-13C	2.00	95
<i>u</i>			Total PeCDD	ND	----	0.78	1,2,3,4,6,7,8-HpCDF-13C	2.00	84
							1,2,3,4,7,8,9-HpCDF-13C	2.00	72
<i>u</i>			1,2,3,4,7,8-HxCDF	ND	----	0.80	1,2,3,4,6,7,8-HpCDD-13C	2.00	93
<i>u</i>			1,2,3,6,7,8-HxCDF	ND	----	0.74	OCDD-13C	4.00	80
<i>u</i>			2,3,4,6,7,8-HxCDF	ND	----	0.81			
<i>u</i>			1,2,3,7,8,9-HxCDF	ND	----	1.00	1,2,3,4-TCDD-13C	2.00	NA
<i>u</i>		<i>pkx</i>	Total HxCDF	0.95	----	0.84 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>			1,2,3,4,7,8-HxCDD	ND	----	0.79	2,3,7,8-TCDD-37Cl4	0.20	84
<i>u</i>			1,2,3,6,7,8-HxCDD	ND	----	0.94			
<i>u</i>			1,2,3,7,8,9-HxCDD	ND	----	0.93			
<i>u</i>			Total HxCDD	ND	----	0.89			
<i>u</i>			1,2,3,4,6,7,8-HpCDF	ND	----	1.30			
<i>u</i>			1,2,3,4,7,8,9-HpCDF	ND	----	1.20			
<i>u</i>			Total HpCDF	ND	----	1.20			
<i>u</i>			1,2,3,4,6,7,8-HpCDD	2.20	----	1.30 BJ			
<i>u</i>			Total HpCDD	4.40	----	1.30 BJ			
<i>u</i>			OCDF	5.20	----	1.50 BJ			
<i>u</i>			OCDD	18.00	----	2.50 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration.  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106126

### AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

**LEVEL III**  
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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0554-01		
Lab Sample ID	106131001		
Filename	F50129B_13		
Injected By	BAL		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/11/2005
ICAL Date	11/29/2004	Received	01/13/2005
CCal Filename(s)	F50129B_02	Extracted	01/28/2005
Method Blank ID	BLANK-6220	Analyzed	01/30/2005 05:38

Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u	2,3,7,8-TCDF	ND	----	0.85	2,3,7,8-TCDF-13C	2.00	71
u	Total TCDF	1.2	----	0.85 J	2,3,7,8-TCDD-13C	2.00	88
u	2,3,7,8-TCDD	ND	----	1.30	1,2,3,7,8-PeCDF-13C	2.00	78
u	Total TCDD	ND	----	1.30	2,3,4,7,8-PeCDF-13C	2.00	80
u	1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	95
u	2,3,4,7,8-PeCDF	ND	----	0.73	1,2,3,4,7,8-HxCDF-13C	2.00	80
u	Total PeCDF	ND	----	0.94	1,2,3,6,7,8-HxCDF-13C	2.00	91
u	1,2,3,7,8-PeCDD	ND	----	0.83	2,3,4,6,7,8-HxCDF-13C	2.00	85
u	Total PeCDD	ND	----	0.83	1,2,3,7,8,9-HxCDF-13C	2.00	81
u	1,2,3,4,7,8-HxCDF	ND	----	0.82	1,2,3,4,7,8-HxCDD-13C	2.00	74
u	1,2,3,6,7,8-HxCDF	ND	----	0.68	1,2,3,6,7,8-HxCDD-13C	2.00	95
u	2,3,4,6,7,8-HxCDF	ND	----	0.86	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
u	1,2,3,7,8,9-HxCDF	ND	----	0.72	1,2,3,4,7,8,9-HpCDF-13C	2.00	72
u	Total HxCDF	ND	----	0.77	1,2,3,4,6,7,8-HpCDD-13C	2.00	92
u	1,2,3,4,7,8-HxCDD	ND	----	0.83	OCDD-13C	4.00	81
u	1,2,3,6,7,8-HxCDD	ND	----	0.74	1,2,3,4-TCDD-13C	2.00	NA
u	1,2,3,7,8,9-HxCDD	ND	----	0.62	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u	Total HxCDD	ND	----	0.73	2,3,7,8-TCDD-37Cl4	0.20	86
u	1,2,3,4,6,7,8-HpCDF	-----	1.1	0.94 I			
u	1,2,3,4,7,8,9-HpCDF	ND	----	1.40			
u	Total HpCDF	5.4	----	1.10 BJ			
u	1,2,3,4,6,7,8-HpCDD	3.0	----	1.20 BJ			
u	Total HpCDD	7.4	----	1.20 BJ			
u	OCDF	7.7	----	1.30 BJ			
u	OCDD	26.0	----	1.50 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106131

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### REPORT OF LABORATORY ANALYSIS

LEVEL IV

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0555-01	<i>outfall 210</i>		
Lab Sample ID	106127001			
Filename	F50129B_10			
Injected By	BAL			
Total Amount Extracted	1010 mL		Matrix	Water
% Moisture	NA		Dilution	NA
Dry Weight Extracted	NA		Collected	01/11/2005
ICAL Date	11/29/2004		Received	01/13/2005
CCal Filename(s)	F50129B_02		Extracted	01/28/2005
Method Blank ID	BLANK-6220		Analyzed	01/30/2005 03:08

<i>Qual</i>	<i>Dist</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>		2,3,7,8-TCDF	ND	----	0.75	2,3,7,8-TCDF-13C	2.00	61
<i>J</i>	<i>u</i>	Total TCDF	2.3	----	0.75 <i>J</i>	2,3,7,8-TCDD-13C	2.00	76
<i>u</i>		2,3,7,8-TCDD	ND	----	1.00	1,2,3,7,8-PeCDF-13C	2.00	63
<i>u</i>		Total TCDD	ND	----	1.00	2,3,4,7,8-PeCDF-13C	2.00	69
						1,2,3,7,8-PeCDD-13C	2.00	82
<i>u</i>		1,2,3,7,8-PeCDF	ND	----	1.50	1,2,3,4,7,8-HxCDF-13C	2.00	71
<i>u</i>		2,3,4,7,8-PeCDF	ND	----	1.00	1,2,3,6,7,8-HxCDF-13C	2.00	74
<i>u</i>		Total PeCDF	ND	----	1.30	2,3,4,6,7,8-HxCDF-13C	2.00	69
						1,2,3,7,8,9-HxCDF-13C	2.00	70
<i>u</i>		1,2,3,7,8-PeCDD	ND	----	1.90	1,2,3,4,7,8-HxCDD-13C	2.00	66
<i>u</i>		Total PeCDD	ND	----	1.90	1,2,3,6,7,8-HxCDD-13C	2.00	82
						1,2,3,4,6,7,8-HpCDF-13C	2.00	71
<i>u</i>		1,2,3,4,7,8-HxCDF	ND	----	0.67	1,2,3,4,7,8,9-HpCDF-13C	2.00	62
<i>u</i>		1,2,3,6,7,8-HxCDF	ND	----	0.87	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
<i>u</i>		2,3,4,6,7,8-HxCDF	ND	----	0.96	OCDD-13C	4.00	69
<i>u</i>		1,2,3,7,8,9-HxCDF	ND	----	1.10			
<i>u</i>		Total HxCDF	ND	----	0.89	1,2,3,4-TCDD-13C	2.00	NA
						1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>		1,2,3,4,7,8-HxCDD	ND	----	1.80			
<i>u</i>		1,2,3,6,7,8-HxCDD	ND	----	1.40	2,3,7,8-TCDD-37Cl4	0.20	78
<i>u</i>		1,2,3,7,8,9-HxCDD	ND	----	1.40			
<i>u</i>		Total HxCDD	ND	----	1.60			
<i>J</i>	<i>u</i>	1,2,3,4,6,7,8-HpCDF	7.9	----	1.10 <i>J</i>			
<i>u</i>		1,2,3,4,7,8,9-HpCDF	ND	----	1.60			
<i>J</i>	<i>u</i>	Total HpCDF	7.9	----	1.30 <i>BJ</i>			
<i>J</i>	<i>u</i>	1,2,3,4,6,7,8-HpCDD	35.0	----	1.90 <i>J</i>			
<i>J</i>	<i>u</i>	Total HpCDD	66.0	----	1.90			
<i>J</i>	<i>u</i>	OCDF	69.0	----	1.70 <i>J</i>			
<i>J</i>	<i>u</i>	OCDD	320.0	----	2.80			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106127

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**REPORT OF LABORATORY ANALYSIS**  
 LEVEL IV  
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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0549-01	<i>Outfall oil</i>		
Lab Sample ID	106132001			
Filename	F50129B_14			
Injected By	BAL			
Total Amount Extracted	1030 mL		Matrix	Water
% Moisture	NA		Dilution	NA
Dry Weight Extracted	NA		Collected	01/11/2005
ICAL Date	11/29/2004		Received	01/13/2005
CCal Filename(s)	F50129B_02		Extracted	01/28/2005
Method Blank ID	BLANK-6220		Analyzed	01/30/2005 06:28

POV	Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	0.79	2,3,7,8-TCDF-13C	2.00	67
u		Total TCDF	ND	----	0.79	2,3,7,8-TCDD-13C	2.00	84
u		2,3,7,8-TCDD	ND	----	0.70	1,2,3,7,8-PeCDF-13C	2.00	73
u		Total TCDD	ND	----	0.70	2,3,4,7,8-PeCDF-13C	2.00	76
u						1,2,3,7,8-PeCDD-13C	2.00	91
u		1,2,3,7,8-PeCDF	ND	----	0.80	1,2,3,4,7,8-HxCDF-13C	2.00	77
u		2,3,4,7,8-PeCDF	ND	----	0.53	1,2,3,6,7,8-HxCDF-13C	2.00	86
u		Total PeCDF	ND	----	0.66	2,3,4,6,7,8-HxCDF-13C	2.00	81
u						1,2,3,7,8,9-HxCDF-13C	2.00	78
u		1,2,3,7,8-PeCDD	ND	----	0.72	1,2,3,4,7,8-HxCDD-13C	2.00	72
u		Total PeCDD	ND	----	0.72	1,2,3,6,7,8-HxCDD-13C	2.00	91
u						1,2,3,4,6,7,8-HpCDF-13C	2.00	80
u		1,2,3,4,7,8-HxCDF	ND	----	0.44	1,2,3,4,7,8,9-HpCDF-13C	2.00	68
u		1,2,3,6,7,8-HxCDF	ND	----	0.46	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
u		2,3,4,6,7,8-HxCDF	ND	----	0.55	OCDD-13C	4.00	76
u		1,2,3,7,8,9-HxCDF	ND	----	0.66			
u		Total HxCDF	ND	----	0.53	1,2,3,4-TCDD-13C	2.00	NA
u						1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	----	0.51			
u		1,2,3,6,7,8-HxCDD	ND	----	0.50	2,3,7,8-TCDD-37Cl4	0.20	81
u		1,2,3,7,8,9-HxCDD	ND	----	0.75			
u		Total HxCDD	2.0	----	0.59			J
u		1,2,3,4,6,7,8-HpCDF	2.4	----	0.77			J
u		1,2,3,4,7,8,9-HpCDF	ND	----	1.10			
u		Total HpCDF	9.4	----	0.95			BJ
u		1,2,3,4,6,7,8-HpCDD	7.7	----	0.97			BJ
u		Total HpCDD	18.0	----	0.97			BJ
u		OCDF	9.1	----	1.30			BJ
u		OCDD	81.0	----	1.70			J

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
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P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
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\* = See Discussion

Report No.....106132

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

LEVEL III

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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOA0567-01 *air filter oil*  
 Lab Sample ID 106135001  
 Filename F50129B\_15  
 Injected By BAL  
 Total Amount Extracted 995 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50129B\_02  
 Method Blank ID BLANK-6220

Matrix Water  
 Dilution NA  
 Collected 01/12/2005  
 Received 01/13/2005  
 Extracted 01/28/2005  
 Analyzed 01/30/2005 07:18

Rev	Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	----	0.83	2,3,7,8-TCDF-13C	2.00	65
U	DNQ	Total TCDF	1.2	----	0.83 J	2,3,7,8-TCDD-13C	2.00	78
U		2,3,7,8-TCDD	ND	----	1.20	1,2,3,7,8-PeCDF-13C	2.00	71
U		Total TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	73
						1,2,3,7,8-PeCDD-13C	2.00	85
U		1,2,3,7,8-PeCDF	ND	----	1.40	1,2,3,4,7,8-HxCDF-13C	2.00	70
U		2,3,4,7,8-PeCDF	ND	----	1.20	1,2,3,6,7,8-HxCDF-13C	2.00	85
U		Total PeCDF	ND	----	1.30	2,3,4,6,7,8-HxCDF-13C	2.00	77
						1,2,3,7,8,9-HxCDF-13C	2.00	73
U		1,2,3,7,8-PeCDD	ND	----	1.10	1,2,3,4,7,8-HxCDD-13C	2.00	64
U		Total PeCDD	ND	----	1.10	1,2,3,6,7,8-HxCDD-13C	2.00	89
						1,2,3,4,6,7,8-HpCDF-13C	2.00	76
U		1,2,3,4,7,8-HxCDF	ND	----	0.97	1,2,3,4,7,8,9-HpCDF-13C	2.00	64
U		1,2,3,6,7,8-HxCDF	ND	----	0.93	1,2,3,4,6,7,8-HpCDD-13C	2.00	82
U		2,3,4,6,7,8-HxCDF	ND	----	0.77	OCDD-13C	4.00	72
U		1,2,3,7,8,9-HxCDF	ND	----	1.10	1,2,3,4-TCDD-13C	2.00	NA
U		Total HxCDF	ND	----	0.95	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U		1,2,3,4,7,8-HxCDD	ND	----	1.20	2,3,7,8-TCDD-37CI4	0.20	80
U		1,2,3,6,7,8-HxCDD	ND	----	0.97			
U		1,2,3,7,8,9-HxCDD	ND	----	0.93			
U		Total HxCDD	ND	----	1.00			
U	DNQ	1,2,3,4,6,7,8-HpCDF	2.2	----	1.10 J			
U		1,2,3,4,7,8,9-HpCDF	ND	----	2.10			
U	DNQ	Total HpCDF	2.2	----	1.60 BJ			
US	B	1,2,3,4,6,7,8-HpCDD	7.4	----	1.40 BJ			
U	DNQ	Total HpCDD	18.0	----	1.40 BJ			
US	B	OCDF	8.4	----	2.10 BJ			
U	DNQ	OCDD	66.0	----	2.30 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
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 NC = Not Calculated  
 \* = See Discussion

Report No.....106135

**REPORT OF LABORATORY ANALYSIS**

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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0552-01	<i>out fall 017</i>
Lab Sample ID	106125001	
Filename	F50129B_08	
Injected By	BAL	
Total Amount Extracted	1040 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/11/2005
ICAL Date	11/29/2004	Received 01/13/2005
CCal Filename(s)	F50129B_02	Extracted 01/28/2005
Method Blank ID	BLANK-6220	Analyzed 01/30/2005 01:29

<i>Rev</i>	<i>Real</i>	<i>Dist</i>	<i>Lab</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>				2,3,7,8-TCDF	ND	----	1.30	2,3,7,8-TCDF-13C	2.00	65
<i>u</i>				Total TCDF	ND	----	1.30	2,3,7,8-TCDD-13C	2.00	81
								1,2,3,7,8-PeCDF-13C	2.00	72
<i>u</i>				2,3,7,8-TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	74
<i>u</i>				Total TCDD	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	88
								1,2,3,4,7,8-HxCDF-13C	2.00	73
<i>u</i>				1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,6,7,8-HxCDF-13C	2.00	87
<i>↓</i>				2,3,4,7,8-PeCDF	ND	----	0.81	2,3,4,6,7,8-HxCDF-13C	2.00	81
				Total PeCDF	ND	----	0.99	1,2,3,7,8,9-HxCDF-13C	2.00	76
								1,2,3,4,7,8-HxCDD-13C	2.00	73
<i>u</i>				1,2,3,7,8-PeCDD	ND	----	0.89	1,2,3,6,7,8-HxCDD-13C	2.00	89
<i>u</i>				Total PeCDD	ND	----	0.89	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
								1,2,3,4,7,8,9-HpCDF-13C	2.00	67
<i>u</i>				1,2,3,4,7,8-HxCDF	ND	----	0.81	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
<i>↓</i>				1,2,3,6,7,8-HxCDF	ND	----	0.85	OCDD-13C	4.00	74
				2,3,4,6,7,8-HxCDF	ND	----	0.59			
<i>↓</i>				1,2,3,7,8,9-HxCDF	ND	----	0.89	1,2,3,4-TCDD-13C	2.00	NA
				Total HxCDF	ND	----	0.79	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>				1,2,3,4,7,8-HxCDD	ND	----	0.91	2,3,7,8-TCDD-37Cl4	0.20	79
<i>↓</i>				1,2,3,6,7,8-HxCDD	ND	----	1.10			
				1,2,3,7,8,9-HxCDD	ND	----	0.81			
<i>↓</i>				Total HxCDD	1.2	----	0.95	J		
<i>u</i>	<i>X10</i>			1,2,3,4,6,7,8-HpCDF	----	2.2	0.84	I		
<i>u</i>				1,2,3,4,7,8,9-HpCDF	ND	----	0.80			
				Total HpCDF	ND	----	0.82			
<i>u</i>	<i>B</i>			1,2,3,4,6,7,8-HpCDD	12.0	----	1.90	BJ		
<i>↓</i>	<i>u</i>			Total HpCDD	26.0	----	1.90	J		
<i>u</i>	<i>B</i>			OCDF	10.0	----	1.70	BJ		
				OCDD	140.0	----	3.00			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
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D = Result obtained from analysis of diluted sample  
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P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
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NC = Not Calculated  
\* = See Discussion

Report No.....106125

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

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 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ11  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2  
 Date: 04/11/05  
 Reviewer's Signature  


Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazines

**ACTION ITEMS\***

- 1. **Case Narrative Deficiencies**
- 2. **Out of Scope Analyses**
- 3. **Analyses Not Conducted**
- 4. **Missing Hardcopy Deliverables**
- 5. **Incorrect Hardcopy Deliverables**
- 6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times \_\_\_\_\_
  - GC/MS Tune/Inst. Performance \_\_\_\_\_
  - Calibrations \_\_\_\_\_
  - Blanks \_\_\_\_\_
  - Surrogates \_\_\_\_\_
  - Matrix Spike/Dup LCS \_\_\_\_\_
  - Field QC \_\_\_\_\_
  - Internal Standard Performance \_\_\_\_\_
  - Compound Identification and Quantitation \_\_\_\_\_
  - System Performance \_\_\_\_\_

**COMMENTS\***      Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOC2063, 2064  
Analysis: Hydrazines

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

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INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOC2063

**P.O. Number:** IOC2063

**Method Number:** 9315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941100

**Report Date:** March 30, 2005

**Sampling Date:** March 25, 2005

**Receiving Date:** March 28, 2005

**Extraction Date:** March 28, 2005

**Analysis Date:** March 29, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Dimethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Rev	Qual Code	Rev	Qual Code	Rev	Qual Code	Rev	Qual Code
704871-MB	Method Blank	ND	*	ND	*	ND	*	ND	*
941100	Outfall oil Grab IOC2063-01	ND	U	ND	U	ND	U	ND	U
MDL		1.2							
PQL		5.0		0.27		5.0		0.39	

PM 4/4/05

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

**LEVEL IV**

Xuan Dang, Project Manager  
Environmental Services

Analytical Not Validated

**AMEC VALIDATED**

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



# TRUESDAIL LABORATORIES, INC.

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## REPORT

**Client:** Del Mar Analytical  
17461 Darian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michela Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2064  
**P.O. Number:** IOC2064  
**Method Number:** 8316 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qual	Code	Qual	Code	Qual	Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101	Outfall Oil Composite IOC2064-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.38	
PQL		5.0		5.0		1.0	

MDL: Method Detection Limit, ug/L

PQL: Practical Quantitation Limit, ug/L

ND: Not Detected at or above the MDL value.

N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

**LEVEL IV**

Xuqin Dang, Project Manager  
Environmental Services

**AMEC VALIDATED**

\*Analysis Not Validated

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

### CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711HZ4  
Task Order 313150010  
SDG No. IOA0549

No. of Analyses 1

Laboratory Truesdail

Reviewer P. Meeks

Analysis/Method Metals

Date: 03/09/05

Reviewer's Signature  
P. Meeks

#### ACTION ITEMS<sup>a</sup>

1. Case Narrative Deficiencies
2. Out of Scope Analyses
3. Analyses Not Conducted
4. Missing Hardcopy Deliverables
5. Incorrect Hardcopy Deliverables
6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

#### COMMENTS<sup>b</sup>

Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOA0549

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0549  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: March 09, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOA0549-01	938566	water	Hydrazines by 8315



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for this SDG noted that the sample was received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar was signed and dated by field and laboratory personnel, and the transfer COC from Del Mar to Truesdail Laboratories was signed and dated by personnel from both laboratories. Both the original COC and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the sample was transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 ID on the Form I; therefore, the reviewer hand-corrected the Form I to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met and the sample was analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 01/13/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with this SDG. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with this SDG. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on the Outfall 011. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The sample was analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data, at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

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## REPORT

Established 1937

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**Client:** Del Mar Analytical- Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0549  
**P.O. Number:** IOA0549  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938566  
**Report Date:** January 14, 2005  
**Sampling Date:** January 11, 2005  
**Receiving Date:** January 12, 2005  
**Extraction Date:** January 12, 2005  
**Analysis Date:** January 13, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Rev. Qual. Code	Hydrazine	Rev. Qual. Code	Hydrazine	Rev. Qual. Code
704660-MB	Method Blank	ND	*	ND	*	ND	*
938566	IOA0549-01 CUT Fz 11	ND	U	ND	U	ND	U
PQL		5.0		5.0		1.0	
Sample Report Limits		5.0		5.0		1.0	

\* Analysis not validated

PQL: Practical Quantitation Limit, ug/L *PM 3/10/05*  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

# LEVEL IV

# AMEC VALIDATED

Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**


AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT40  
 Task Order 313150010  
 SDG No. IOA0549, IOA0552  
 No. of Analyses 2

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Metals

Date: 03/10/05  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were applied for:
Holding Times	1. Detects in the associated blanks
GC/MS Tune/Inst. Performance	2. Reporting limit standard recovery outliers
Calibrations	3. Analytes detected below the reporting limit
Blanks	4. Antimony result raised to level of bracketing CCB results
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUP: IOA0549 & IOA0552

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0549, IOA0552  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 10, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	Outfall 011 Grab	IOA0549-01	water	ILM04
Outfall 018	Outfall 018	IOA0552-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COC for Outfall 011 Grab requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 03/01/05. The COC for Outfall 018 accounted for the sample and the analytes reported. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The beryllium and nickel reporting limit check standard recoveries were above the control limit; therefore, beryllium and nickel detected in Outfall 011 Grab were qualified as estimated, "J." Thallium and antimony were not recovered in the 0.1 and 0.2 ppb reporting limit check standards, respectively; therefore, nondetected antimony in Outfall 011 Grab was qualified as estimated, "UJ," and thallium detected in Outfall 011 Grab was qualified as estimated, "J." The remaining reporting limit

check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

There were detects reported for the method blanks and bracketing ICBs/CCBs associated with the samples in these SDGs. Selenium and silver were detected in bracketing CCBs at 0.672 and 0.102  $\mu\text{g/L}$ , respectively; therefore, selenium and silver detected in Outfall 011 Grab were qualified as estimated, "UJ." Chromium was detected in the method blank (5A14051-BLK1) at 0.434  $\mu\text{g/L}$ ; therefore, chromium detected in Outfall 011 Grab was qualified as estimated, "UJ."

Antimony was detected in both bracketing CCBs at approximately 0.800  $\mu\text{g/L}$ . The CCB detects combined with the laboratory's inability to recover antimony in the 0.2 ppb reporting limit check standard indicated the laboratory could not detect antimony at the level reported in the CCBs. The reviewer, therefore, raised the MDL for antimony to the level reported in the CCBs, 0.80  $\mu\text{g/L}$ . No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP boron analysis, but were not run on the day Outfall 011 Grab was analyzed. The recoveries for the interferents and boron were within the control limits of 80-120%.

ICSA and ICSAB analyses were included in the raw data for three of the four ICP-MS analytical runs. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride and lead was not spiked into the ICSAB solution. The results for potassium were above the calibration range of the instrument in all of the ICSA and ICSAB analyses and the results for sodium were above the calibration range in one of the ICSA/ICSAB pairs. Positive results, greater than the applicable reporting limits were reported for manganese and cobalt. The validator reviewed the raw data for the site sample ICP/MS analysis for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the level of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS samples were identified as 5A14051-BS1 and 5A12054-BS1. The ICP LCS sample was identified as 5A14046-BS1 and the Hg LCS sample was identified as 5A12047-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

The MS/MSD analyses were performed on Outfall 011 Grab for antimony, cadmium, copper, lead, nickel, and zinc only. The RPDs were less than the control limit of 20% and no qualifications were required.

## 2.8 MATRIX SPIKE

The MS/MSD analyses were performed on Outfall 011 Grab for antimony, cadmium, copper, lead, nickel, and zinc only. The recoveries were within the AMEC control limits of 75-125% and no qualifications were required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP and ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont. Reporting Units: ug/l									
Antimony	EPA 200.8	5A12054	0.18	2.0	<del>0.35</del> 0.80	1	01/12/05	01/12/05	U J
Arsenic	EPA 200.8	5A14051	0.49	1.0	1.6	1	01/14/05	01/18/05	J J
Beryllium	EPA 200.8	5A14051	0.037	0.50	0.063	1	01/14/05	01/18/05	J J
Cadmium	EPA 200.8	5A12054	0.015	1.0	0.14	1	01/12/05	01/12/05	J J
Chromium	EPA 200.8	5A14051	0.26	1.0	1.8	1	01/14/05	01/18/05	U J B
Cobalt	EPA 200.8	5A14051	0.10	1.0	0.71	1	01/14/05	01/14/05	J J
Copper	EPA 200.8	5A12054	0.49	2.0	4.2	1	01/12/05	01/12/05	
Lead	EPA 200.8	5A12054	0.13	1.0	1.0	1	01/12/05	01/12/05	
Manganese	EPA 200.8	5A14051	0.44	1.0	16	1	01/14/05	01/14/05	
Mercury	EPA 245.1	5A12047	0.063	0.20	0.13	1	01/12/05	01/12/05	J J
Nickel	EPA 200.8	5A12054	0.15	1.0	2.3	1	01/12/05	01/12/05	J J
Selenium	EPA 200.8	5A14051	0.36	2.0	0.90	1	01/14/05	01/14/05	U J J
Silver	EPA 200.8	5A14051	0.089	1.0	0.26	1	01/14/05	01/14/05	U J J
Thallium	EPA 200.8	5A14051	0.075	1.0	0.90	1	01/14/05	01/16/05	J J
Vanadium	EPA 200.8	5A14051	0.86	1.0	3.4	1	01/14/05	01/14/05	J J
Zinc	EPA 200.8	5A12054	3.1	20	18	1	01/12/05	01/12/05	J J

PM 3/10/05

**AMEC VALIDATED**

**LEVEL IV**

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5A14051	0.00014	0.0010	0.019	1	01/14/05	01/14/05	Rev Qual   Qual Code
Boron	EPA 200.7	5A14046	0.0074	0.050	0.065	1	01/14/05	01/14/05	
Iron	EPA 200.8	5A14051	0.0032	0.010	0.98	1	01/14/05	01/14/05	

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 018

Report Number: IOA0552

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) - cont.									
Reporting Units: ug/l									
Copper	EPA 200.8	5A12054	0.49	2.0	3.5	1	01/12/05	01/12/05	J J
Lead	EPA 200.8	5A12054	0.13	1.0	0.82	1	01/12/05	01/12/05	J J
Mercury	EPA 245.1	5A12047	0.063	0.20	0.16	1	01/12/05	01/12/05	J J

**AMEC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP15  
 Task Order 313150010  
 SDG No. IOA0549, IOA0552

No. of Analyses 2

Laboratory Del Mar Analytical.  
 Reviewer L. Calvin  
 Analysis/Method Pesticides/PCBs by Method 608

Date: March 10, 2005  
 Reviewer's Signature L. Calvin

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualification was assigned for the following:
Holding Times	--continuing calibration %D >15%
GC/MS Tune/Inst. Performance	--surrogate recoveries below the QC limits
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOA0549, IOA0552

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0549, IOA0552  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: March 10, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011	Outfall 011	IOA0549-01	water	608
Outfall 018	Outfall 018	IOA0552-01	water	608



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COC for Outfall 018 accounted for the analysis presented in this SDG. The Method 608 analysis for Outfall 011 was not listed on the COC; however, the analysis was requested in a memo dated 03/01/05 from MWH personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There were two initial calibrations dated 10/26/04 and 12/29/04 associated with the pesticide analyses of the samples, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  on both analytical columns. There was one initial calibration dated 01/03/05 associated with the PCB analysis of sample Outfall 011, consisting of five points for Arochlor 1016 and Arochlor 1260. Single point calibrations for Arochlor 1242, Arochlor 1248, and Arochlor 1254 were also analyzed. The average %RSDs for the individual peaks of Arochlor 1016 and Arochlor 1260 were  $\leq 10\%$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The pesticide analysis of sample Outfall 011 was bracketed by three continuing calibrations, one preceding and two following the analysis. In one of the bracketing calibrations following the sample analysis, the %D exceeded 15% on channel A for beta-bhc. As all results for this sample were reported from channel A, the nondetect result for beta-bhc was qualified as estimated, "UJ," in sample Outfall 011. The %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. The PCB analysis of this sample was bracketed by two CCVs and the %Ds for Arochlor 1016 and Arochlor 1260 were  $\leq 15\%$ .

The pesticide analysis of sample Outfall 018 was bracketed by three continuing calibrations. In two of the bracketing calibrations following the sample analysis, the %D exceeded 15% on channel A for alpha-bhc. As results were reported from channel B, no qualifications were assigned.

A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5A13049-BLK1) was extracted and analyzed with these SDGs. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5A13049-BS1/BSD1) was extracted and analyzed with these SDGs. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of

recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## **2.6 SURROGATE RECOVERY**

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of sample Outfall 011 were within the laboratory-established QC limits. Both surrogates were recovered below the QC limits but  $\geq 10\%$  in Outfall 018. A notation on the extraction benchsheet and in the raw data indicated an emulsion that may have affected surrogate recoveries. The result for alpha-bhc in sample Outfall 018 was qualified as estimated, "UJ." The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

There were no MS/MSD analyses associated with these SDGs. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## **2.8 SAMPLE CLEANUP PERFORMANCE**

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## **2.9 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.9.1 Field Blanks and Equipment Rinsates**

There were no field QC samples associated with the samples in these SDGs. No qualifications were required.

### **2.9.2 Field Duplicates**

There were no field duplicate samples associated with the sample in these SDGs.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs; however, as there were no detects reported in the samples, quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. No qualifications were required.



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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont. Reporting Units: ug/l									
Aldrin	EPA 608	5A13049	0.029	0.10	ND	0.962	01/13/05	01/13/05	u
alpha-BHC	EPA 608	5A13049	0.010	0.10	ND	0.962	01/13/05	01/13/05	u
beta-BHC	EPA 608	5A13049	0.011	0.10	ND	0.962	01/13/05	01/13/05	u
delta-BHC	EPA 608	5A13049	0.010	0.20	ND	0.962	01/13/05	01/13/05	u
gamma-BHC (Lindane)	EPA 608	5A13049	0.0097	0.10	ND	0.962	01/13/05	01/13/05	u
Chlordane	EPA 608	5A13049	0.18	1.0	ND	0.962	01/13/05	01/13/05	u
4,4'-DDD	EPA 608	5A13049	0.011	0.10	ND	0.962	01/13/05	01/13/05	u
4,4'-DDE	EPA 608	5A13049	0.017	0.10	ND	0.962	01/13/05	01/13/05	u
4,4'-DDT	EPA 608	5A13049	0.015	0.10	ND	0.962	01/13/05	01/13/05	u
Dieldrin	EPA 608	5A13049	0.010	0.10	ND	0.962	01/13/05	01/13/05	u
Endosulfan I	EPA 608	5A13049	0.015	0.10	ND	0.962	01/13/05	01/13/05	u
Endosulfan II	EPA 608	5A13049	0.037	0.10	ND	0.962	01/13/05	01/13/05	u
Endosulfan sulfate	EPA 608	5A13049	0.013	0.20	ND	0.962	01/13/05	01/13/05	u
Endrin	EPA 608	5A13049	0.0082	0.10	ND	0.962	01/13/05	01/13/05	u
Endrin aldehyde	EPA 608	5A13049	0.045	0.10	ND	0.962	01/13/05	01/13/05	u
Endrin ketone	EPA 608	5A13049	0.020	0.10	ND	0.962	01/13/05	01/13/05	u
Heptachlor	EPA 608	5A13049	0.030	0.10	ND	0.962	01/13/05	01/13/05	u
Heptachlor epoxide	EPA 608	5A13049	0.012	0.10	ND	0.962	01/13/05	01/13/05	u
Methoxychlor	EPA 608	5A13049	0.034	0.10	ND	0.962	01/13/05	01/13/05	u
Toxaphene	EPA 608	5A13049	0.77	5.0	ND	0.962	01/13/05	01/13/05	u
Surrogate: Tetrachloro-m-xylene (35-120%)					53%				
Surrogate: Decachlorobiphenyl (45-120%)					68%				

*Handwritten notes: 'very good quality' and 'code' with arrows pointing to the Data Qualifiers column.*

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: I3267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5A13049	0.067	1.0	ND	0.962	01/13/05	01/14/05	<i>new qual grade</i> u ↓
Aroclor 1221	EPA 608	5A13049	0.057	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1232	EPA 608	5A13049	0.13	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1242	EPA 608	5A13049	0.12	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1248	EPA 608	5A13049	0.21	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1254	EPA 608	5A13049	0.15	1.0	ND	0.962	01/13/05	01/14/05	
Aroclor 1260	EPA 608	5A13049	0.17	1.0	ND	0.962	01/13/05	01/14/05	
Surrogate: Decachlorobiphenyl (45-120%)					70 %				

**AMEC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9089  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 018

Report Number: IOA0552

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) - cont.									
Reporting Units: ug/l									
alpha-BHC	EPA 608	5A13049	0.00049	0.010	ND	0.962	01/13/05	01/14/05	UJ S
Surrogate: Decachlorobiphenyl (45-120%)					38 %				Z
Surrogate: Tetrachloro-m-xylene (35-120%)					14 %				Z


**AMEC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA3  
 Task Order 313150010  
 SDG No. IOA0549, IOA0567  
 No. of Analyses 2  
 Date: 03/09/05  
 Reviewer's Signature  


Laboratory Eberline  
 Reviewer P. Meeks  
 Analysis/Method Radionuclides

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,  Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were applied for: 1. Incorrect sample container 2. Exceeded holding time 3. Detector efficiencies less than 20%  <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



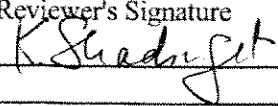
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO56  
 Task Order 313150010  
 SDG No. IOA0549, IOA552

No. of Analyses 4

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method Volatiles

Date March 10, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	Qualifications were assigned for the following:
Protocol, e.g.,	* %D outliers in the continuing calibration
Holding Times	* Compounds reported as TICs (not calibrated for on instrument)
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0549, IOA0552

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0549, IOA0552  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: March, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0549-01	water	624/8260B
Trip Blank	Trip Blank	IOA0549-02	water	624
Outfall 018	Outfall 018	IOA0552-01	water	624
Trip Blank	Trip Blank	IOA0552-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. In a memo from Montgomery Watson dated 03/01/05, additional target compounds trichlorotrifluoroethane (Freon 113), 1,2-dichloro-1,1,2-trifluoroethane (Freon 123), and cyclohexane were requested for volatile analysis in sample Outfall 011. The COCs accounted for the remaining analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Four initial calibrations dated 11/03/04 (acrolein and acrylonitrile only), 12/13/04 (GCMS36), 01/04/05 (GCMS33), and 01/04/05 (GCMS44) were associated with these SDGs. The average RRFs were  $\geq 0.05$  for all compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for the target compounds analyzed by EPA Method 624, and the %RSD for Freon 113 analyzed by EPA SW-846 Method 8260B was  $\leq 15\%$ . Three continuing calibrations associated with the sample analyses were analyzed 01/12/05 (instruments GCMS33, GCMS36, and GCMS44). The RRFs were  $\geq 0.05$  in all of the continuing calibrations. The %Ds for acrolein and acrylonitrile exceeded 20% in the continuing calibration analyzed on instrument GCMS33; therefore, the nondetect results for acrolein and acrylonitrile were qualified as estimated, "UJ," in sample Outfall 011. No qualifications were required for the Trip blank. The %Ds were  $\leq 20\%$  for the remaining



target compounds listed on the result summaries. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Three water method blanks (5A12003-BLK1, 5A12008-BLK1, and 512012-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Three water blank spikes (5A12003-BS1, 5A12008-BS1, and 5A12012-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed for samples Outfall 011 and Outfall 018 associated with these SDGs. All recoveries and RPDs were within QC limits for both MS/MSD pairs. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOA549) and Trip Blank (IOA552) were the trip blanks associated with site samples Outfall 011 and Outfall 018, respectively. Chlorobenzene was detected in Trip Blank (IOA549) at 0.73ug/L; however, chlorobenzene was not reported in associated sample Outfall 011. There were no other target compounds detected above the MDLs in the trip blanks. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in these SDGs were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed trichlorotrifluoroethane by EPA SW-846 8260B and the remaining volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trichloroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trichloroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in sample Outfall 011. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Detects reported between the MDL and the reporting limit were qualified as estimated, "J," by the laboratory. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for these SDGs. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 790-3620 FAX (702) 798-1021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 018

Report Number: IOA0552

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5A12003	0.28	2.0	ND	1	01/12/05	01/12/05	u
Carbon tetrachloride	EPA 624	5A12003	0.28	5.0	ND	1	01/12/05	01/12/05	u
Chloroform	EPA 624	5A12003	0.33	2.0	ND	1	01/12/05	01/12/05	u
1,1-Dichloroethane	EPA 624	5A12003	0.27	2.0	ND	1	01/12/05	01/12/05	u
1,2-Dichloroethane	EPA 624	5A12003	0.28	2.0	ND	1	01/12/05	01/12/05	u
1,1-Dichloroethene	EPA 624	5A12003	0.32	3.0	ND	1	01/12/05	01/12/05	u
Ethylbenzene	EPA 624	5A12003	0.25	2.0	ND	1	01/12/05	01/12/05	u
Tetrachloroethene	EPA 624	5A12003	0.32	2.0	ND	1	01/12/05	01/12/05	u
Toluene	EPA 624	5A12003	0.36	2.0	ND	1	01/12/05	01/12/05	u
1,1,1-Trichloroethane	EPA 624	5A12003	0.30	2.0	ND	1	01/12/05	01/12/05	u
1,1,2-Trichloroethane	EPA 624	5A12003	0.30	2.0	ND	1	01/12/05	01/12/05	u
Trichloroethene	EPA 624	5A12003	0.26	5.0	ND	1	01/12/05	01/12/05	u
Trichlorofluoromethane	EPA 624	5A12003	0.34	5.0	ND	1	01/12/05	01/12/05	u
Vinyl chloride	EPA 624	5A12003	0.26	5.0	ND	1	01/12/05	01/12/05	u
Xylenes, Total	EPA 624	5A12003	0.52	4.0	ND	1	01/12/05	01/12/05	u
Surrogate: Dibromofluoromethane (80-120%)					98 %				
Surrogate: Toluene-d8 (80-120%)					93 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					99 %				

Rev  
Qual  
Qual  
u

Sample ID: IOA0552-02 (DRAFT: Trip Blank - Water)  
 Reporting Units: ug/l

Benzene	EPA 624	5A12012	0.28	2.0	ND	1	01/12/05	01/13/05	u
Carbon tetrachloride	EPA 624	5A12012	0.28	5.0	ND	1	01/12/05	01/13/05	u
Chloroform	EPA 624	5A12012	0.33	2.0	ND	1	01/12/05	01/13/05	u
1,1-Dichloroethane	EPA 624	5A12012	0.27	2.0	ND	1	01/12/05	01/13/05	u
1,2-Dichloroethane	EPA 624	5A12012	0.28	2.0	ND	1	01/12/05	01/13/05	u
1,1-Dichloroethene	EPA 624	5A12012	0.32	3.0	ND	1	01/12/05	01/13/05	u
Ethylbenzene	EPA 624	5A12012	0.25	2.0	ND	1	01/12/05	01/13/05	u
Tetrachloroethene	EPA 624	5A12012	0.32	2.0	ND	1	01/12/05	01/13/05	u
Toluene	EPA 624	5A12012	0.36	2.0	ND	1	01/12/05	01/13/05	u
1,1,1-Trichloroethane	EPA 624	5A12012	0.30	2.0	ND	1	01/12/05	01/13/05	u
1,1,2-Trichloroethane	EPA 624	5A12012	0.30	2.0	ND	1	01/12/05	01/13/05	u
Trichloroethene	EPA 624	5A12012	0.26	5.0	ND	1	01/12/05	01/13/05	u
Trichlorofluoromethane	EPA 624	5A12012	0.34	5.0	ND	1	01/12/05	01/13/05	u
Vinyl chloride	EPA 624	5A12012	0.26	5.0	ND	1	01/12/05	01/13/05	u
Xylenes, Total	EPA 624	5A12012	0.52	4.0	ND	1	01/12/05	01/13/05	u
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					102 %				

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**LEVEL IV**

MWH-Pasadena/Boeing  
 90 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Benzene	EPA 624	5A12008	0.28	1.0	ND	1	01/12/05	01/12/05	u
Bromodichloromethane	EPA 624	5A12008	0.50	2.0	ND	1	01/12/05	01/12/05	
Bromoform	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
Bromomethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Carbon tetrachloride	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
Chlorobenzene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05	
Chloroethane	EPA 624	5A12008	0.33	5.0	ND	1	01/12/05	01/12/05	
Chloroform	EPA 624	5A12008	0.33	2.0	ND	1	01/12/05	01/12/05	
Chloromethane	EPA 624	5A12008	0.30	5.0	ND	1	01/12/05	01/12/05	
Dibromochloromethane	EPA 624	5A12008	0.28	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichlorobenzene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
1,3-Dichlorobenzene	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
1,4-Dichlorobenzene	EPA 624	5A12008	0.37	2.0	ND	1	01/12/05	01/12/05	
1,1-Dichloroethane	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloroethane	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05	
1,1-Dichloroethene	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05	
cis-1,2-Dichloroethene	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloropropane	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05	
cis-1,3-Dichloropropene	EPA 624	5A12008	0.22	2.0	ND	1	01/12/05	01/12/05	
trans-1,3-Dichloropropene	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Ethylbenzene	EPA 624	5A12008	0.25	2.0	ND	1	01/12/05	01/12/05	
Methylene chloride	EPA 624	5A12008	0.48	5.0	ND	1	01/12/05	01/12/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05	
Tetrachloroethene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05	
Toluene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05	
1,1,1-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
1,1,2-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05	
Trichloroethene	EPA 624	5A12008	0.26	2.0	ND	1	01/12/05	01/12/05	
Trichlorofluoromethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05	
Vinyl chloride	EPA 624	5A12008	0.26	0.50	ND	1	01/12/05	01/12/05	
Xylenes, Total	EPA 624	5A12008	0.52	4.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)									100 %
Surrogate: Toluene-d8 (80-120%)									100 %
Surrogate: 4-Bromofluorobenzene (80-120%)									98 %

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# LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

 Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

 Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOA0549-02 (DRAFT: Trip Blanks - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5A12008	0.28	1.0	ND	1	01/12/05	01/12/05	u		
Bromodichloromethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05			
Bromoform	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05			
Bromomethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05			
Carbon tetrachloride	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05			
Chlorobenzene	EPA 624	5A12008	0.36	2.0	0.73	1	01/12/05	01/12/05	J	J	NR
Chloroethane	EPA 624	5A12008	0.33	5.0	ND	1	01/12/05	01/12/05	u		
Chloroform	EPA 624	5A12008	0.33	2.0	ND	1	01/12/05	01/12/05			
Chloromethane	EPA 624	5A12008	0.30	5.0	ND	1	01/12/05	01/12/05			
Dibromochloromethane	EPA 624	5A12008	0.28	2.0	ND	1	01/12/05	01/12/05			
1,2-Dichlorobenzene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05			
1,3-Dichlorobenzene	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05			
1,4-Dichlorobenzene	EPA 624	5A12008	0.37	2.0	ND	1	01/12/05	01/12/05			
1,1-Dichloroethane	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05			
1,2-Dichloroethane	EPA 624	5A12008	0.28	0.50	ND	1	01/12/05	01/12/05			
1,1-Dichloroethene	EPA 624	5A12008	0.32	5.0	ND	1	01/12/05	01/12/05			
trans-1,2-Dichloroethene	EPA 624	5A12008	0.27	2.0	ND	1	01/12/05	01/12/05			
1,2-Dichloropropane	EPA 624	5A12008	0.35	2.0	ND	1	01/12/05	01/12/05			
cis-1,3-Dichloropropene	EPA 624	5A12008	0.22	2.0	ND	1	01/12/05	01/12/05			
trans-1,3-Dichloropropene	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05			
Ethylbenzene	EPA 624	5A12008	0.25	2.0	ND	1	01/12/05	01/12/05			
Methylene chloride	EPA 624	5A12008	0.43	5.0	ND	1	01/12/05	01/12/05			
1,1,2,2-Tetrachloroethane	EPA 624	5A12008	0.24	2.0	ND	1	01/12/05	01/12/05			
Tetrachloroethene	EPA 624	5A12008	0.32	2.0	ND	1	01/12/05	01/12/05			
Toluene	EPA 624	5A12008	0.36	2.0	ND	1	01/12/05	01/12/05			
1,1,1-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05			
1,1,2-Trichloroethane	EPA 624	5A12008	0.30	2.0	ND	1	01/12/05	01/12/05			
Trichloroethene	EPA 624	5A12008	0.26	2.0	ND	1	01/12/05	01/12/05			
Trichlorofluoromethane	EPA 624	5A12008	0.34	5.0	ND	1	01/12/05	01/12/05			
Vinyl chloride	EPA 624	5A12008	0.26	0.50	ND	1	01/12/05	01/12/05			
Xylenes, Total	EPA 624	5A12008	0.52	4.0	ND	1	01/12/05	01/12/05			
Surrogate: Dibromofluoromethane (80-120%)											96 %
Surrogate: Toluene-d8 (80-120%)											100 %
Surrogate: 4-Bromofluorobenzene (80-120%)											97 %

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**LEVEL IV**

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MWH-Pasadena/Boeing  
 00 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5A12008	4.6	50	ND	1	01/12/05	01/12/05	u S C
Acrylonitrile	EPA 624	5A12008	5.1	50	ND	1	01/12/05	01/12/05	u S C
2-Chloroethyl vinyl ether	EPA 624	5A12008	1.3	5.0	ND	1	01/12/05	01/12/05	u
Surrogate: Dibromofluoromethane (80-120%)					160 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				
Sample ID: IOA0549-02 (DRAFT: Trip Blanks - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5A12008	4.6	50	ND	1	01/12/05	01/12/05	u
Acrylonitrile	EPA 624	5A12008	5.1	50	ND	1	01/12/05	01/12/05	u
2-Chloroethyl vinyl ether	EPA 624	5A12008	1.3	5.0	ND	1	01/12/05	01/12/05	u
Surrogate: Dibromofluoromethane (80-120%)					96 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9230 South 51st St., Suite B-120, Phoenix, AZ 85014 (480) 785-0043 FAX (480) 785-0853  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-7620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 00 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A12008	N/A	120	ND	1	01/12/05	01/12/05	US
Cyclohexane	EPA 624 (MOD.)	5A12008	N/A	120	ND	1	01/12/05	01/12/05	US

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17461 Debra Ave., Suite 700, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0853  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A12008	1.2	5.0	ND	1	01/12/05	01/12/05	Pass Qual PI Qual
Surrogate: Dibromofluoromethane (80-120%)					100 %				u
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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The results herein apply only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC74  
 Task Order 313150010  
 SDG No. IOA0549/IOA0552

No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer L. Jarusewic  
 Analysis/Method General Minerals

Date: 03/10/05  
 Reviewer's Signature [Signature]

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications for:
	1) Detects between the MDL and reporting limit
	2) Detects in associated method blanks
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUP: IOA0549 & IOA0552

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0549 & IOA0552  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 10, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 425.1, 218.6, 120.1, 160.2, 160.5, 180.1, 150.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0549-01	Water	General Minerals
Outfall 018	Outfall 018	IOA0552-01	Water	General Minerals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for all analyses present in these SDGs except fluoride for Outfall 011. The fluoride analysis was requested in a memo from MWH personnel dated 03/01/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for surfactants, turbidity, nitrate/nitrite, biological oxygen demand, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with %Rs within the control limits of 90-110% for all analytes except hexavalent chromium. The CCV for hexavalent chromium exceeded the method control limits of 95-105%; however, as hexavalent chromium was not detected, no qualifications were required. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine or total settleable solids. The total cyanide RL check standard was recovered within the control limits of 70-130%. No qualifications were required.

### 2.3 BLANKS

Fluoride was detected in the associated method blank at 0.149 mg/L; therefore, fluoride detected in Outfall 011 was qualified as estimated, "UJ." Oil and grease was detected in the associated method blank for Outfall 011 and Outfall 018; however, the oil and grease method blank result was insufficient to qualify

the Outfall 011 and Outfall 018 results. Hexavalent chromium was detected in the associated method blank for Outfall 011; however, hexavalent chromium was not detected in Outfall 011 and no qualifications were required. The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No further qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, oil and grease, and total recoverable hydrocarbons only) recoveries and RPDs were within the laboratory-established control limits. The remaining LCS results were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## **2.6 LABORATORY DUPLICATES**

MS/MSD analyses were performed on Outfall 011 for hexavalent chromium. The RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on Outfall 011 for hexavalent chromium. The recoveries were within the laboratory-established control limits and no qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. BOD results detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5A12043	0.10	0.10	ND	1	01/12/05	01/12/05	U

REV  
 QUAL  
 CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: I3267 (Study I)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont. Reporting Units: NTU									
Turbidity	EPA 180.1	5A12058	0.040	1.0	18	1	01/12/05	01/12/05	REV QUAL COD

# AMEC VALIDATED

# LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5A11092	0.041	1.0	ND	1	01/11/05	01/11/05	U
Total Cyanide	EPA 335.2	5A11108	2.2	5.0	ND	1	01/11/05	01/11/05	↓
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	*

REV QUAL CODE

\*Analysis Not Validated

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A13060	1.0	1.0	94	1	01/13/05	01/13/05	REV QUAL QUAL CODE

### AMEC VALIDATED

### LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5A12075	0.31	1.0	ND	1	01/12/05	01/12/05	U

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	
									Qualifiers	Code
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.										
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5A13063	0.30	0.50	ND	1	01/13/05	01/13/05	U	
Biochemical Oxygen Demand	EPA 405.1	5A12041	0.59	2.0	0.83	1	01/12/05	01/17/05	J	J DN6
Chloride	EPA 300.0	5A11040	0.26	0.50	3.6	1	01/11/05	01/11/05		
Fluoride	EPA 300.0	5A15022	0.074	0.50	0.26	1	01/15/05	01/15/05	U	J B
Nitrate/Nitrite-N	EPA 300.0	5A11040	0.072	0.26	0.91	1	01/11/05	01/11/05		
Oil & Grease	EPA 413.1	5A13065	0.94	5.0	15.74	1	01/13/05	01/13/05		#
Residual Chlorine	EPA 330.5	5A12045	0.10	0.10	ND	1	01/12/05	01/12/05	U	
Sulfate	EPA 300.0	5A11040	0.18	0.50	4.9	1	01/11/05	01/11/05		
Surfactants (MBAS)	SM5540-C	5A12059	0.044	0.10	ND	1	01/12/05	01/12/05	U	
Total Dissolved Solids	SM2540C	5A13089	10	10	88	1	01/13/05	01/13/05		
Total Organic Carbon	EPA 415.1	5A13053	0.56	1.0	10	1	01/12/05	01/12/05		
Total Suspended Solids	EPA 160.2	5A14084	10	10	ND	1	01/14/05	01/14/05	U	

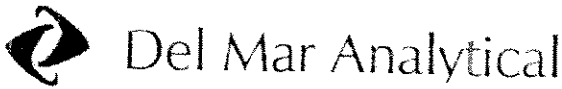
HJ 5-12-05

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**LEVEL IV**

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 018  
 Report Number: IOA0552

Sampled: 01/11/05  
 Received: 01/11/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) - cont. Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5A13063	0.30	0.50	ND	1	01/13/05	01/13/05	U
Biochemical Oxygen Demand	EPA 405.1	5A12041	0.59	2.0	1.1	1	01/12/05	01/17/05	J J DNG
Chloride	EPA 300.0	5A11041	0.26	0.50	6.0	1	01/11/05	01/11/05	
Nitrate/Nitrite-N	EPA 300.0	5A11041	0.072	0.26	0.76	1	01/11/05	01/11/05	
Oil & Grease	EPA 413.1	5A13065	0.94	5.0	19.17	1	01/13/05	01/13/05	#
Sulfate	EPA 300.0	5A11041	0.18	0.50	14	1	01/11/05	01/11/05	
Surfactants (MBAS)	EPA 425.1	5A12059	0.044	0.10	ND	1	01/12/05	01/12/05	U
Total Dissolved Solids	EPA 160.1	5A13089	10	10	140	1	01/13/05	01/13/05	U
Total Suspended Solids	EPA 160.2	5A14084	10	10	ND	1	01/14/05	01/14/05	U
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5A12043	0.10	0.10	ND	1	01/12/05	01/12/05	U
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) Reporting Units: NTU									
Turbidity	EPA 180.1	5A12058	0.040	1.0	19	1	01/12/05	01/12/05	
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5A11108	2.2	5.0	ND	1	01/11/05	01/11/05	U
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	*
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A13060	1.0	1.0	160	1	01/13/05	01/13/05	

Handwritten: JF 5-12-05

**AMEC VALIDATED**

\*Analysis Not Validated

**LEVEL IV**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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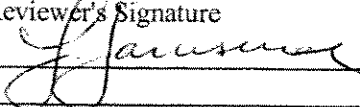
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC75  
 Task Order 313150010  
 SDG No. IOA0549/IOA0552

No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer L. Jarusewic  
 Analysis/Method Perchlorate

Date: 03/10/05  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	_____
GC/MS Tune/Inst. Performance	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
i	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
S	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
**	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUPS: IOA0549 & IOA0552

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0549/IOA0552  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 10, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0549-01	Water	Perchlorate
Outfall 018	Outfall 018	IOA0552-01	Water	Perchlorate



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the dates of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficients were  $\geq 0.995$ . The IPC-MA recoveries were within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculations errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Routine Outfall 011 - Grab  
 Report Number: IOA0549

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOA0549-01 (DRAFT: Outfall 011 - grab - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5A11092	0.041	1.0	ND	1	01/11/05	01/11/05	* C
Total Cyanide	EPA 335.2	5A11108	2.2	5.0	ND	1	01/11/05	01/11/05	↓
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	U

# AMEC VALIDATED

# LEVEL IV

~~Analysis Not Validated~~

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 018

Report Number: IOA0552

Sampled: 01/11/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5A13063	0.30	0.50	ND	1	01/13/05	01/13/05	*
Biochemical Oxygen Demand	EPA 405.1	5A12041	0.59	2.0	1.1	1	01/12/05	01/17/05	*
Chloride	EPA 300.0	5A11041	0.26	0.50	6.0	1	01/11/05	01/11/05	
Nitrate/Nitrite-N	EPA 300.0	5A11041	0.072	0.26	0.76	1	01/11/05	01/11/05	
Oil & Grease	EPA 413.1	5A13065	0.94	5.0	19	1	01/13/05	01/13/05	
Sulfate	EPA 300.0	5A11041	0.18	0.50	14	1	01/11/05	01/11/05	
Surfactants (MBAS)	EPA 425.1	5A12059	0.044	0.10	ND	1	01/12/05	01/12/05	
Total Dissolved Solids	EPA 160.1	5A13089	10	10	140	1	01/13/05	01/13/05	
Total Suspended Solids	EPA 160.2	5A14084	10	10	ND	1	01/14/05	01/14/05	
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water)									
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5A12043	0.10	0.10	ND	1	01/12/05	01/12/05	
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water)									
Reporting Units: NTU									
Turbidity	EPA 180.1	5A12058	0.040	1.0	19	1	01/12/05	01/12/05	
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water)									
Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5A11108	2.2	5.0	ND	1	01/11/05	01/11/05	✓
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	u
Sample ID: IOA0552-01 (DRAFT: Outfall 018 - Water)									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A13060	1.0	1.0	160	1	01/13/05	01/13/05	*

REV  
QUAL  
CODE

### AMEC VALIDATED

# LEVEL IV

~~Analysis Not Validated~~

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

# **APPENDIX A**

## **Section 27**

Outfall 011, February 11, 2005

Del Mar Analytical Laboratory Report



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 02/11/05  
Received: 02/11/05  
Issued: 04/07/05 18:09

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 9 pages, are included and are an integral part of this report. This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOB1014-01	Outfall 011-grab	Water
IOB1014-02	Trip Blank	Water
IOB1014-03	Outfall 011-grab/filtered	Water
IOB1014-04	Outfall 011-grab/Substrate	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

CORRECTIVE ACTION REPORT

Department: Extractions  
Method: EPA 625  
QC Batch: 5B14010

Date: 02/22/2005  
Matrix: Water

Identification and Definition of Problem:

The percent recovery for benzidine in the BSD was below method acceptance limits.

Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

Corrective Action Taken:

The percent recovery in the BS was within the acceptance limits. All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

Rima Angkasa

Date: 02/24/2005 10:17 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

## CORRECTIVE ACTION REPORT

Department: Extractions  
Method: EPA 625  
QC Batch: 5B14010

Date: 02/22/2005

Matrix: Water

### Identification and Definition of Problem:

The Method Blank result for 2-Methylnaphthalene was above the reporting limit (8.7ppb).

### Determination of the Cause of the Problem:

A definitive cause for the QC failure has not been determined.

### Corrective Action Taken:

There was insufficient sample volume for re-analysis. Samples had J-flag hits and were flagged with 'B' qualifier.

Quality Assurance Approval:

Rima Angkasa

Date: 02/24/2005 11:49 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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IOB1014 <Page 3 of 60>





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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOB1014	Sampled: 02/11/05 Received: 02/11/05
--	--	---

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5B15078	0.31	1.0	ND	1	02/15/05	02/15/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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300 North Lake Avenue, Suite 1200  
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Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5B14105	0.082	0.50	ND	0.98	02/14/05	02/15/05	
Surrogate: n-Octacosane (40-125%)					59 %				

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Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B22003	0.050	0.10	ND	1	02/22/05	02/22/05	
Surrogate: 4-BFB (FID) (65-140%)					78 %				
<b>Sample ID: IOB1014-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B23023	0.050	0.10	ND	1	02/23/05	02/23/05	
Surrogate: 4-BFB (FID) (65-140%)					93 %				

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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01RE1 (Outfall 011-grab - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B24007	1.2	5.0	ND	1	02/24/05	02/24/05	
Surrogate: Dibromofluoromethane (80-120%)					104 %				
Surrogate: Toluene-d8 (80-120%)					99 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					100 %				
<b>Sample ID: IOB1014-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					109 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					109 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	
Surrogate: Dibromofluoromethane (80-120%)					98 %				
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				
<b>Sample ID: IOB1014-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	
Surrogate: Dibromofluoromethane (80-120%)					97 %				
Surrogate: Toluene-d8 (80-120%)					105 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					100 %				

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Michele Harper  
Project Manager



MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOB1014	Sampled: 02/11/05 Received: 02/11/05
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**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
<b>Sample ID: IOB1014-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5B14010	0.10	0.50	ND	0.962	02/14/05	02/18/05	
Acenaphthylene	EPA 625	5B14010	0.10	0.50	ND	0.962	02/14/05	02/18/05	
Aniline	EPA 625	5B14010	2.9	10	ND	0.962	02/14/05	02/18/05	
Anthracene	EPA 625	5B14010	0.083	0.50	ND	0.962	02/14/05	02/18/05	
Benzidine	EPA 625	5B14010	2.4	5.0	ND	0.962	02/14/05	02/18/05	L2
Benzoic acid	EPA 625	5B14010	3.7	20	ND	0.962	02/14/05	02/18/05	
Benzo(a)anthracene	EPA 625	5B14010	0.038	5.0	ND	0.962	02/14/05	02/18/05	
Benzo(a)pyrene	EPA 625	5B14010	0.14	2.0	ND	0.962	02/14/05	02/18/05	
Benzo(b)fluoranthene	EPA 625	5B14010	0.050	2.0	ND	0.962	02/14/05	02/18/05	
Benzo(g,h,i)perylene	EPA 625	5B14010	0.059	5.0	ND	0.962	02/14/05	02/18/05	
Benzo(k)fluoranthene	EPA 625	5B14010	0.053	0.50	ND	0.962	02/14/05	02/18/05	
Benzyl alcohol	EPA 625	5B14010	0.21	5.0	ND	0.962	02/14/05	02/18/05	
Bis(2-chloroethoxy)methane	EPA 625	5B14010	0.072	0.50	ND	0.962	02/14/05	02/18/05	
Bis(2-chloroethyl)ether	EPA 625	5B14010	0.084	0.50	ND	0.962	02/14/05	02/18/05	
Bis(2-chloroisopropyl)ether	EPA 625	5B14010	0.11	0.50	ND	0.962	02/14/05	02/18/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5B14010	1.1	5.0	ND	0.962	02/14/05	02/18/05	
4-Bromophenyl phenyl ether	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	
Butyl benzyl phthalate	EPA 625	5B14010	0.34	5.0	ND	0.962	02/14/05	02/18/05	
4-Chloroaniline	EPA 625	5B14010	0.20	2.0	ND	0.962	02/14/05	02/18/05	
2-Chloronaphthalene	EPA 625	5B14010	0.059	0.50	ND	0.962	02/14/05	02/18/05	
4-Chloro-3-methylphenol	EPA 625	5B14010	0.34	2.0	ND	0.962	02/14/05	02/18/05	
4-Chlorophenyl phenyl ether	EPA 625	5B14010	0.056	0.50	ND	0.962	02/14/05	02/18/05	
2-Chlorophenol	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	
Chrysene	EPA 625	5B14010	0.072	0.50	ND	0.962	02/14/05	02/18/05	
Dibenz(a,h)anthracene	EPA 625	5B14010	0.083	0.50	ND	0.962	02/14/05	02/18/05	
Dibenzofuran	EPA 625	5B14010	0.075	0.50	ND	0.962	02/14/05	02/18/05	
Di-n-butyl phthalate	EPA 625	5B14010	0.26	2.0	ND	0.962	02/14/05	02/18/05	
1,2-Dichlorobenzene	EPA 625	5B14010	0.11	0.50	ND	0.962	02/14/05	02/18/05	
1,3-Dichlorobenzene	EPA 625	5B14010	0.13	0.50	ND	0.962	02/14/05	02/18/05	
1,4-Dichlorobenzene	EPA 625	5B14010	0.050	0.50	ND	0.962	02/14/05	02/18/05	
3,3-Dichlorobenzidine	EPA 625	5B14010	0.93	5.0	ND	0.962	02/14/05	02/18/05	
2,4-Dichlorophenol	EPA 625	5B14010	0.21	2.0	ND	0.962	02/14/05	02/18/05	
Diethyl phthalate	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	
2,4-Dimethylphenol	EPA 625	5B14010	0.31	2.0	ND	0.962	02/14/05	02/18/05	
Dimethyl phthalate	EPA 625	5B14010	0.081	0.50	ND	0.962	02/14/05	02/18/05	
4,6-Dinitro-2-methylphenol	EPA 625	5B14010	0.38	5.0	ND	0.962	02/14/05	02/18/05	
2,4-Dinitrophenol	EPA 625	5B14010	2.7	5.0	ND	0.962	02/14/05	02/18/05	
2,4-Dinitrotoluene	EPA 625	5B14010	0.23	5.0	ND	0.962	02/14/05	02/18/05	
2,6-Dinitrotoluene	EPA 625	5B14010	0.24	5.0	ND	0.962	02/14/05	02/18/05	
Di-n-octyl phthalate	EPA 625	5B14010	0.17	5.0	ND	0.962	02/14/05	02/18/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B14010	0.087	1.0	ND	0.962	02/14/05	02/18/05	

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Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5B14010	0.089	0.50	ND	0.962	02/14/05	02/18/05	
Fluorene	EPA 625	5B14010	0.075	0.50	ND	0.962	02/14/05	02/18/05	
Hexachlorobenzene	EPA 625	5B14010	0.13	1.0	ND	0.962	02/14/05	02/18/05	
Hexachlorobutadiene	EPA 625	5B14010	0.38	2.0	ND	0.962	02/14/05	02/18/05	
Hexachlorocyclopentadiene	EPA 625	5B14010	1.8	5.0	ND	0.962	02/14/05	02/18/05	
Hexachloroethane	EPA 625	5B14010	0.51	3.0	ND	0.962	02/14/05	02/18/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5B14010	0.19	2.0	ND	0.962	02/14/05	02/18/05	
Isophorone	EPA 625	5B14010	0.059	1.0	ND	0.962	02/14/05	02/18/05	
2-Methylnaphthalene	EPA 625	5B14010	0.13	1.0	ND	0.962	02/14/05	02/18/05	
2-Methylphenol	EPA 625	5B14010	0.28	2.0	ND	0.962	02/14/05	02/18/05	
4-Methylphenol	EPA 625	5B14010	0.20	5.0	ND	0.962	02/14/05	02/18/05	
Naphthalene	EPA 625	5B14010	0.13	1.0	ND	0.962	02/14/05	02/18/05	
2-Nitroaniline	EPA 625	5B14010	0.18	5.0	ND	0.962	02/14/05	02/18/05	
3-Nitroaniline	EPA 625	5B14010	0.35	5.0	ND	0.962	02/14/05	02/18/05	
4-Nitroaniline	EPA 625	5B14010	0.49	5.0	ND	0.962	02/14/05	02/18/05	
Nitrobenzene	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	
2-Nitrophenol	EPA 625	5B14010	0.23	2.0	ND	0.962	02/14/05	02/18/05	
4-Nitrophenol	EPA 625	5B14010	0.73	5.0	ND	0.962	02/14/05	02/18/05	
N-Nitrosodimethylamine	EPA 625	5B14010	0.22	2.0	ND	0.962	02/14/05	02/18/05	C
N-Nitroso-di-n-propylamine	EPA 625	5B14010	0.18	2.0	ND	0.962	02/14/05	02/18/05	
N-Nitrosodiphenylamine	EPA 625	5B14010	0.077	1.0	ND	0.962	02/14/05	02/18/05	
Pentachlorophenol	EPA 625	5B14010	0.78	2.0	ND	0.962	02/14/05	02/18/05	
Phenanthrene	EPA 625	5B14010	0.071	0.50	ND	0.962	02/14/05	02/18/05	
Phenol	EPA 625	5B14010	0.14	1.0	ND	0.962	02/14/05	02/18/05	
Pyrene	EPA 625	5B14010	0.059	0.50	ND	0.962	02/14/05	02/18/05	
1,2,4-Trichlorobenzene	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	
2,4,5-Trichlorophenol	EPA 625	5B14010	0.075	2.0	ND	0.962	02/14/05	02/18/05	
2,4,6-Trichlorophenol	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	
Surrogate: 2-Fluorophenol (35-120%)									77 %
Surrogate: Phenol-d6 (45-120%)									72 %
Surrogate: 2,4,6-Tribromophenol (50-125%)									77 %
Surrogate: Nitrobenzene-d5 (45-120%)									74 %
Surrogate: 2-Fluorobiphenyl (45-120%)									76 %
Surrogate: Terphenyl-d14 (45-135%)									75 %

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	
alpha-BHC	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
beta-BHC	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
delta-BHC	EPA 608	5B17042	0.020	0.20	ND	0.952	02/17/05	02/17/05	
gamma-BHC (Lindane)	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
Chlordane	EPA 608	5B17042	0.20	1.0	ND	0.952	02/17/05	02/17/05	
4,4'-DDD	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
4,4'-DDE	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	
4,4'-DDT	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	
Dieldrin	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	C5
Endosulfan I	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
Endosulfan II	EPA 608	5B17042	0.040	0.10	ND	0.952	02/17/05	02/17/05	
Endosulfan sulfate	EPA 608	5B17042	0.015	0.20	ND	0.952	02/17/05	02/17/05	
Endrin	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	
Endrin aldehyde	EPA 608	5B17042	0.045	0.10	ND	0.952	02/17/05	02/17/05	
Endrin ketone	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	C5
Heptachlor	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	
Heptachlor epoxide	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	
Methoxychlor	EPA 608	5B17042	0.035	0.10	ND	0.952	02/17/05	02/17/05	C5
Toxaphene	EPA 608	5B17042	1.5	5.0	ND	0.952	02/17/05	02/17/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					45 %				
Surrogate: Decachlorobiphenyl (45-120%)					72 %				

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5B17042	0.20	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1221	EPA 608	5B17042	0.10	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1232	EPA 608	5B17042	0.15	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1242	EPA 608	5B17042	0.15	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1248	EPA 608	5B17042	0.25	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1254	EPA 608	5B17042	0.25	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1260	EPA 608	5B17042	0.40	1.0	ND	0.952	02/17/05	02/18/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					70 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5B12041	0.00014	0.0010	<b>0.020</b>	1	02/12/05	02/14/05	
Boron	EPA 200.7	5B12044	0.0074	0.050	<b>0.063</b>	1	02/12/05	02/12/05	B
Iron	EPA 200.8	5B12041	0.0032	0.010	<b>1.6</b>	1	02/12/05	02/15/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5B12041	0.18	2.0	0.44	1	02/12/05	02/14/05	J
Arsenic	EPA 200.8	5B12041	0.49	1.0	1.0	1	02/12/05	02/14/05	
Beryllium	EPA 200.8	5B12041	0.037	0.50	0.052	1	02/12/05	02/14/05	J
Cadmium	EPA 200.8	5B12041	0.015	1.0	0.11	1	02/12/05	02/14/05	J
Chromium	EPA 200.8	5B12041	0.26	1.0	1.8	1	02/12/05	02/14/05	
Cobalt	EPA 200.8	5B12041	0.10	1.0	0.60	1	02/12/05	02/14/05	J
Copper	EPA 200.8	5B12041	0.49	2.0	3.4	1	02/12/05	02/14/05	
Lead	EPA 200.8	5B12041	0.13	1.0	1.3	1	02/12/05	02/14/05	
Manganese	EPA 200.8	5B12041	0.44	1.0	36	1	02/12/05	02/14/05	
Mercury	EPA 245.1	5B12033	0.063	0.20	0.14	1	02/12/05	02/12/05	J
Nickel	EPA 200.8	5B12041	0.15	1.0	1.4	1	02/12/05	02/14/05	
Selenium	EPA 200.8	5B12041	0.36	2.0	ND	1	02/12/05	02/14/05	
Silver	EPA 200.8	5B12041	0.089	1.0	ND	1	02/12/05	02/14/05	
Thallium	EPA 200.8	5B12041	0.075	1.0	ND	1	02/12/05	02/14/05	
Vanadium	EPA 200.8	5B12041	0.86	1.0	3.7	1	02/12/05	02/14/05	
Zinc	EPA 200.8	5B12041	3.1	20	16	1	02/12/05	02/15/05	J

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOB1014	Sampled: 02/11/05 Received: 02/11/05
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5B15110	0.30	0.50	ND	1	02/15/05	02/15/05	
Biochemical Oxygen Demand	EPA 405.1	5B12037	0.59	2.0	3.6	1	02/12/05	02/17/05	
Chloride	EPA 300.0	5B11120	0.26	0.50	5.4	1	02/11/05	02/12/05	
Fluoride	EPA 300.0	5B11120	0.10	0.50	0.29	1	02/11/05	02/12/05	J
Nitrate/Nitrite-N	EPA 300.0	5B11120	0.072	0.26	0.47	1	02/11/05	02/12/05	
Oil & Grease	EPA 413.1	5B14044	0.94	5.0	ND	1	02/14/05	02/14/05	
Residual Chlorine	EPA 330.5	5B12035	0.10	0.10	ND	1	02/12/05	02/12/05	
Sulfate	EPA 300.0	5B11120	0.18	0.50	14	1	02/11/05	02/12/05	
Surfactants (MBAS)	SM5540-C	5B12050	0.044	0.10	0.082	1	02/12/05	02/12/05	J
Total Dissolved Solids	SM2540C	5B16119	10	10	110	1	02/16/05	02/16/05	
Total Organic Carbon	EPA 415.1	5B18126	0.25	1.0	11	1	02/18/05	02/18/05	
Total Suspended Solids	EPA 160.2	5B17069	10	10	26	1	02/17/05	02/17/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5B12034	0.10	0.10	ND	1	02/12/05	02/12/05	

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Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B12055	0.040	1.0	38	1	02/12/05	02/12/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5B14107	2.2	5.0	ND	1	02/14/05	02/14/05	
Perchlorate	EPA 314.0	5B17053	0.80	4.0	ND	1	02/17/05	02/17/05	

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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B16120	1.0	1.0	130	1	02/16/05	02/16/05	

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Sampled: 02/11/05  
Received: 02/11/05

**1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (Outfall 011-grab - Water) - cont.</b>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5B1701	0.49	1.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-125%)					97 %				

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Sampled: 02/11/05  
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## SHORT HOLD TIME DETAIL REPORT

Sample ID	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011-grab (IOB1014-01) - Water</b>					
EPA 160.5	2	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 10:00	02/12/2005 15:45
EPA 180.1	2	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 12:00	02/12/2005 13:00
EPA 300.0	2	02/11/2005 12:20	02/11/2005 20:30	02/11/2005 23:00	02/12/2005 07:02
EPA 330.5	1	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 12:10	02/12/2005 15:00
EPA 405.1	2	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 12:23	02/17/2005 15:30
EPA 624	3	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 00:00	02/12/2005 19:58
SM5540-C	2	02/11/2005 12:20	02/11/2005 20:30	02/12/2005 13:09	02/12/2005 17:41
<b>Sample ID: Trip Blank (IOB1014-02) - Water</b>					
EPA 624	3	02/11/2005 17:00	02/11/2005 20:30	02/12/2005 00:00	02/12/2005 20:29

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Sampled: 02/11/05  
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## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B15078 Extracted: 02/15/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B15078-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 02/15/2005 (5B15078-BS1)</b>											
Total Recoverable Hydrocarbons	4.46	1.0	0.31	mg/l	5.00		89	65-120			M-NR1
<b>LCS Dup Analyzed: 02/15/2005 (5B15078-BSD1)</b>											
Total Recoverable Hydrocarbons	4.21	1.0	0.31	mg/l	5.00		84	65-120	6	20	

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**METHOD BLANK/QC DATA**

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14105 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B14105-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.169			mg/l	0.200		84	40-125			
<b>LCS Analyzed: 02/15/2005 (5B14105-BS1)</b>											
EFH (C13 - C40)	0.654	0.50	0.082	mg/l	0.775		84	40-120			M-NR1
Surrogate: n-Octacosane	0.169			mg/l	0.200		84	40-125			
<b>LCS Dup Analyzed: 02/15/2005 (5B14105-BSD1)</b>											
EFH (C13 - C40)	0.610	0.50	0.082	mg/l	0.775		79	40-120	7	25	
Surrogate: n-Octacosane	0.161			mg/l	0.200		80	40-125			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B22003 Extracted: 02/22/05</b>											
<b>Blank Analyzed: 02/22/2005 (5B22003-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00839			mg/l	0.0100		84	65-140			
<b>LCS Analyzed: 02/22/2005 (5B22003-BS1)</b>											
GRO (C4 - C12)	0.734	0.10	0.050	mg/l	0.800		92	70-140			
Surrogate: 4-BFB (FID)	0.0278			mg/l	0.0300		93	65-140			
<b>Matrix Spike Analyzed: 02/22/2005 (5B22003-MS1) Source: IOB1065-03</b>											
GRO (C4 - C12)	0.222	0.10	0.050	mg/l	0.220	ND	101	60-140			
Surrogate: 4-BFB (FID)	0.0111			mg/l	0.0100		111	65-140			
<b>Matrix Spike Dup Analyzed: 02/22/2005 (5B22003-MSD1) Source: IOB1065-03</b>											
GRO (C4 - C12)	0.200	0.10	0.050	mg/l	0.220	ND	91	60-140	10	20	
Surrogate: 4-BFB (FID)	0.0103			mg/l	0.0100		103	65-140			
<b>Batch: 5B23023 Extracted: 02/23/05</b>											
<b>Blank Analyzed: 02/23/2005 (5B23023-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00904			mg/l	0.0100		90	65-140			
<b>LCS Analyzed: 02/23/2005 (5B23023-BS1)</b>											
GRO (C4 - C12)	0.781	0.10	0.050	mg/l	0.800		98	70-140			
Surrogate: 4-BFB (FID)	0.0284			mg/l	0.0300		95	65-140			
<b>Matrix Spike Analyzed: 02/23/2005 (5B23023-MS1) Source: IOB1305-06</b>											
GRO (C4 - C12)	0.207	0.10	0.050	mg/l	0.220	ND	94	60-140			
Surrogate: 4-BFB (FID)	0.0110			mg/l	0.0100		110	65-140			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B23023 Extracted: 02/23/05</b>											
<b>Matrix Spike Dup Analyzed: 02/23/2005 (5B23023-MSD1)</b>						<b>Source: IOB1305-06</b>					
GRO (C4 - C12)	0.213	0.10	0.050	mg/l	0.220	ND	97	60-140	3	20	
Surrogate: 4-BFB (FID)	0.0106			mg/l	0.0100		106	65-140			

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 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD RPD	Data Qualifiers
<b>Batch: SB17014 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005 (SB17014-BLK1)</b>										
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120		
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120		
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120		
<b>Batch: SB24007 Extracted: 02/24/05</b>										
<b>Blank Analyzed: 02/24/2005 (SB24007-BLK1)</b>										
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	25.1			ug/l	25.0		100	80-120		
Surrogate: Toluene-d8	23.5			ug/l	25.0		94	80-120		
Surrogate: 4-Bromofluorobenzene	23.7			ug/l	25.0		95	80-120		

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: SB17014 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17014-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.48	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

 Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

 Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**
**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>										
<b>LCS Analyzed: 02/17/2005 (5B17014-BS1)</b>										
Benzene	24.9	1.0	0.28	ug/l	25.0		100 70-120			
Bromodichloromethane	25.7	2.0	0.30	ug/l	25.0		103 70-140			
Bromoform	24.2	5.0	0.32	ug/l	25.0		97 55-135			
Bromomethane	29.1	5.0	0.34	ug/l	25.0		116 60-140			
Carbon tetrachloride	26.2	0.50	0.28	ug/l	25.0		105 70-140			
Chlorobenzene	23.4	2.0	0.36	ug/l	25.0		94 80-125			
Chloroethane	27.4	5.0	0.33	ug/l	25.0		110 60-145			
Chloroform	26.2	2.0	0.33	ug/l	25.0		105 75-130			
Chloromethane	25.8	5.0	0.30	ug/l	25.0		103 40-145			
Dibromochloromethane	24.7	2.0	0.28	ug/l	25.0		99 65-145			
1,2-Dichlorobenzene	23.3	2.0	0.32	ug/l	25.0		93 80-120			
1,3-Dichlorobenzene	23.6	2.0	0.35	ug/l	25.0		94 80-120			
1,4-Dichlorobenzene	23.0	2.0	0.37	ug/l	25.0		92 80-120			
1,1-Dichloroethane	25.5	2.0	0.27	ug/l	25.0		102 70-135			
1,2-Dichloroethane	25.9	0.50	0.28	ug/l	25.0		104 60-150			
1,1-Dichloroethene	24.6	5.0	0.32	ug/l	25.0		98 75-135			
trans-1,2-Dichloroethene	25.4	2.0	0.27	ug/l	25.0		102 70-130			
1,2-Dichloropropane	24.8	2.0	0.35	ug/l	25.0		99 70-120			
cis-1,3-Dichloropropene	25.6	2.0	0.22	ug/l	25.0		102 75-130			
trans-1,3-Dichloropropene	25.7	2.0	0.24	ug/l	25.0		103 75-135			
Ethylbenzene	26.4	2.0	0.25	ug/l	25.0		106 80-120			
Methylene chloride	25.4	5.0	0.48	ug/l	25.0		102 60-135			
1,1,2,2-Tetrachloroethane	23.2	2.0	0.24	ug/l	25.0		93 60-135			
Tetrachloroethene	23.2	2.0	0.32	ug/l	25.0		93 75-125			
Toluene	24.6	2.0	0.36	ug/l	25.0		98 75-120			
1,1,1-Trichloroethane	27.1	2.0	0.30	ug/l	25.0		108 75-140			
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0		100 70-125			
Trichloroethene	23.4	2.0	0.26	ug/l	25.0		94 80-120			
Trichlorofluoromethane	28.0	5.0	0.34	ug/l	25.0		112 65-145			
Vinyl chloride	27.7	0.50	0.26	ug/l	25.0		111 50-130			
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106 80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101 80-120			
Surrogate: 4-Bromofluorobenzene	26.9			ug/l	25.0		108 80-120			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>Matrix Spike Analyzed: 02/17/2005 (5B17014-MS1)</b>						<b>Source: IOB1001-01</b>					
Benzene	25.2	1.0	0.28	ug/l	25.0	ND	101	70-120			
Bromodichloromethane	26.3	2.0	0.30	ug/l	25.0	ND	105	70-140			
Bromoform	23.7	5.0	0.32	ug/l	25.0	ND	95	55-140			
Bromomethane	28.7	5.0	0.34	ug/l	25.0	ND	115	50-145			
Carbon tetrachloride	26.8	0.50	0.28	ug/l	25.0	ND	107	70-145			
Chlorobenzene	23.0	2.0	0.36	ug/l	25.0	ND	92	80-125			
Chloroethane	26.4	5.0	0.33	ug/l	25.0	ND	106	50-145			
Chloroform	26.9	2.0	0.33	ug/l	25.0	ND	108	70-135			
Chloromethane	24.7	5.0	0.30	ug/l	25.0	ND	99	35-145			
Dibromochloromethane	24.8	2.0	0.28	ug/l	25.0	ND	99	65-145			
1,2-Dichlorobenzene	23.4	2.0	0.32	ug/l	25.0	ND	94	75-130			
1,3-Dichlorobenzene	23.4	2.0	0.35	ug/l	25.0	ND	94	75-130			
1,4-Dichlorobenzene	23.0	2.0	0.37	ug/l	25.0	ND	92	80-120			
1,1-Dichloroethane	26.4	2.0	0.27	ug/l	25.0	ND	106	65-135			
1,2-Dichloroethane	27.2	0.50	0.28	ug/l	25.0	ND	109	60-150			
1,1-Dichloroethene	25.2	5.0	0.32	ug/l	25.0	ND	101	65-140			
trans-1,2-Dichloroethene	25.9	2.0	0.27	ug/l	25.0	ND	104	65-135			
1,2-Dichloropropane	24.9	2.0	0.35	ug/l	25.0	ND	100	65-130			
cis-1,3-Dichloropropene	26.0	2.0	0.22	ug/l	25.0	ND	104	70-140			
trans-1,3-Dichloropropene	26.3	2.0	0.24	ug/l	25.0	ND	105	70-140			
Ethylbenzene	26.1	2.0	0.25	ug/l	25.0	ND	104	70-130			
Methylene chloride	26.0	5.0	0.48	ug/l	25.0	ND	104	60-135			
1,1,2,2-Tetrachloroethane	23.1	2.0	0.24	ug/l	25.0	ND	92	60-145			
Tetrachloroethene	22.7	2.0	0.32	ug/l	25.0	ND	91	70-130			
Toluene	25.2	2.0	0.36	ug/l	25.0	ND	101	70-120			
1,1,1-Trichloroethane	28.0	2.0	0.30	ug/l	25.0	ND	112	75-140			
1,1,2-Trichloroethane	25.1	2.0	0.30	ug/l	25.0	ND	100	60-135			
Trichloroethene	23.5	2.0	0.26	ug/l	25.0	ND	94	70-125			
Trichlorofluoromethane	28.7	5.0	0.34	ug/l	25.0	ND	115	55-145			
Vinyl chloride	26.3	0.50	0.26	ug/l	25.0	ND	105	40-135			
Surrogate: Dibromofluoromethane	27.5			ug/l	25.0		110	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	26.5			ug/l	25.0		106	80-120			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>Matrix Spike Dup Analyzed: 02/17/2005 (5B17014-MSD1)</b>						<b>Source: IOB1001-01</b>					
Benzene	25.1	1.0	0.28	ug/l	25.0	ND	100	70-120	0	20	
Bromodichloromethane	25.4	2.0	0.30	ug/l	25.0	ND	102	70-140	3	20	
Bromoform	21.6	5.0	0.32	ug/l	25.0	ND	86	55-140	9	25	
Bromomethane	31.0	5.0	0.34	ug/l	25.0	ND	124	50-145	8	25	
Carbon tetrachloride	26.5	0.50	0.28	ug/l	25.0	ND	106	70-145	1	25	
Chlorobenzene	23.9	2.0	0.36	ug/l	25.0	ND	96	80-125	4	20	
Chloroethane	29.6	5.0	0.33	ug/l	25.0	ND	118	50-145	11	25	
Chloroform	26.4	2.0	0.33	ug/l	25.0	ND	106	70-135	2	20	
Chloromethane	28.0	5.0	0.30	ug/l	25.0	ND	112	35-145	13	25	
Dibromochloromethane	23.4	2.0	0.28	ug/l	25.0	ND	94	65-145	6	25	
1,2-Dichlorobenzene	23.4	2.0	0.32	ug/l	25.0	ND	94	75-130	0	20	
1,3-Dichlorobenzene	24.0	2.0	0.35	ug/l	25.0	ND	96	75-130	3	20	
1,4-Dichlorobenzene	23.6	2.0	0.37	ug/l	25.0	ND	94	80-120	3	20	
1,1-Dichloroethane	26.1	2.0	0.27	ug/l	25.0	ND	104	65-135	1	20	
1,2-Dichloroethane	24.5	0.50	0.28	ug/l	25.0	ND	98	60-150	10	20	
1,1-Dichloroethene	24.9	5.0	0.32	ug/l	25.0	ND	100	65-140	1	20	
trans-1,2-Dichloroethene	25.9	2.0	0.27	ug/l	25.0	ND	104	65-135	0	20	
1,2-Dichloropropane	24.3	2.0	0.35	ug/l	25.0	ND	97	65-130	2	20	
cis-1,3-Dichloropropene	25.2	2.0	0.22	ug/l	25.0	ND	101	70-140	3	20	
trans-1,3-Dichloropropene	24.4	2.0	0.24	ug/l	25.0	ND	98	70-140	7	25	
Ethylbenzene	27.0	2.0	0.25	ug/l	25.0	ND	108	70-130	3	20	
Methylene chloride	25.4	5.0	0.48	ug/l	25.0	ND	102	60-135	2	20	
1,1,2,2-Tetrachloroethane	20.8	2.0	0.24	ug/l	25.0	ND	83	60-145	10	30	
Tetrachloroethene	23.9	2.0	0.32	ug/l	25.0	ND	96	70-130	5	20	
Toluene	24.9	2.0	0.36	ug/l	25.0	ND	100	70-120	1	20	
1,1,1-Trichloroethane	27.8	2.0	0.30	ug/l	25.0	ND	111	75-140	1	20	
1,1,2-Trichloroethane	22.8	2.0	0.30	ug/l	25.0	ND	91	60-135	10	25	
Trichloroethene	23.5	2.0	0.26	ug/l	25.0	ND	94	70-125	0	20	
Trichlorofluoromethane	28.5	5.0	0.34	ug/l	25.0	ND	114	55-145	1	25	
Vinyl chloride	30.0	0.50	0.26	ug/l	25.0	ND	120	40-135	13	30	
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			

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Project ID: 13267 (Study 1)  
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Sampled: 02/11/05  
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: SB12011 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12011-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	21.9			ug/l	25.0		88	80-120			
Surrogate: Toluene-d8	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.3			ug/l	25.0		97	80-120			
<b>LCS Analyzed: 02/12/2005 (5B12011-BS1)</b>											
2-Chloroethyl vinyl ether	26.8	5.0	1.3	ug/l	25.0		107	20-175			
Surrogate: Dibromofluoromethane	21.8			ug/l	25.0		87	80-120			
Surrogate: Toluene-d8	26.6			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			
<b>Matrix Spike Analyzed: 02/12/2005 (5B12011-MS1)</b>					<b>Source: IOB0980-01</b>						
2-Chloroethyl vinyl ether	27.2	5.0	1.3	ug/l	25.0	ND	109	20-175			
Surrogate: Dibromofluoromethane	22.6			ug/l	25.0		90	80-120			
Surrogate: Toluene-d8	26.3			ug/l	25.0		105	80-120			
Surrogate: 4-Bromofluorobenzene	25.1			ug/l	25.0		100	80-120			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12011-MSD1)</b>					<b>Source: IOB0980-01</b>						
2-Chloroethyl vinyl ether	27.5	5.0	1.3	ug/l	25.0	ND	110	20-175	1	25	
Surrogate: Dibromofluoromethane	22.7			ug/l	25.0		91	80-120			
Surrogate: Toluene-d8	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD RPD	Data Qualifiers
<b>Batch: SB17014 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005 (5B17014-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: SB14010 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/18/2005 (SB14010-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	ND	5.0	0.34	ug/l							
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	ND	2.0	0.26	ug/l							
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	0.200	1.0	0.12	ug/l							J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B14010-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	0.200	0.50	0.075	ug/l							J
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	8.70	1.0	0.13	ug/l							B
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	0.300	1.0	0.13	ug/l							J
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	0.120	0.50	0.071	ug/l							J
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	15.9			ug/l	20.0		80	35-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B14010-BLK1)</b>											
Surrogate: Phenol-d6	15.5			ug/l	20.0		78	45-120			
Surrogate: 2,4,6-Tribromophenol	14.0			ug/l	20.0		70	50-125			
Surrogate: Nitrobenzene-d5	7.44			ug/l	10.0		74	45-120			
Surrogate: 2-Fluorobiphenyl	7.50			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81	45-135			
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>											
Acenaphthene	7.94	0.50	0.10	ug/l	10.0		79	55-120			
Acenaphthylene	8.16	0.50	0.10	ug/l	10.0		82	55-120			
Aniline	8.24	10	2.9	ug/l	10.0		82	30-120			J
Anthracene	8.12	0.50	0.083	ug/l	10.0		81	60-120			
Benzidine	4.50	5.0	2.4	ug/l	10.0		45	20-180			J
Benzoic acid	4.86	20	3.7	ug/l	10.0		49	30-125			J
Benzo(a)anthracene	8.28	5.0	0.038	ug/l	10.0		83	65-120			
Benzo(a)pyrene	9.18	2.0	0.14	ug/l	10.0		92	55-125			
Benzo(b)fluoranthene	8.00	2.0	0.050	ug/l	10.0		80	50-125			
Benzo(g,h,i)perylene	8.04	5.0	0.059	ug/l	10.0		80	35-160			
Benzo(k)fluoranthene	8.44	0.50	0.053	ug/l	10.0		84	50-125			
Benzyl alcohol	7.34	5.0	0.21	ug/l	10.0		73	40-130			
Bis(2-chloroethoxy)methane	7.30	0.50	0.072	ug/l	10.0		73	55-120			
Bis(2-chloroethyl)ether	6.84	0.50	0.084	ug/l	10.0		68	50-120			
Bis(2-chloroisopropyl)ether	7.40	0.50	0.11	ug/l	10.0		74	50-120			
Bis(2-ethylhexyl)phthalate	7.70	5.0	1.1	ug/l	10.0		77	65-125			
4-Bromophenyl phenyl ether	7.56	1.0	0.12	ug/l	10.0		76	55-125			
Butyl benzyl phthalate	7.22	5.0	0.34	ug/l	10.0		72	60-125			
4-Chloroaniline	7.90	2.0	0.20	ug/l	10.0		79	55-120			
2-Chloronaphthalene	7.86	0.50	0.059	ug/l	10.0		79	60-120			
4-Chloro-3-methylphenol	7.90	2.0	0.34	ug/l	10.0		79	60-120			
4-Chlorophenyl phenyl ether	8.28	0.50	0.056	ug/l	10.0		83	55-120			
2-Chlorophenol	7.16	1.0	0.12	ug/l	10.0		72	45-120			
Chrysene	8.20	0.50	0.072	ug/l	10.0		82	65-120			
Dibenz(a,h)anthracene	7.62	0.50	0.083	ug/l	10.0		76	40-160			
Dibenzofuran	8.14	0.50	0.075	ug/l	10.0		81	60-120			
Di-n-butyl phthalate	7.96	2.0	0.26	ug/l	10.0		80	65-125			
1,2-Dichlorobenzene	6.54	0.50	0.11	ug/l	10.0		65	40-120			
1,3-Dichlorobenzene	6.38	0.50	0.13	ug/l	10.0		64	40-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>											<b>M-NR1</b>
1,4-Dichlorobenzene	6.22	0.50	0.050	ug/l	10.0		62	40-120			
3,3-Dichlorobenzidine	7.52	5.0	0.93	ug/l	10.0		75	50-170			
2,4-Dichlorophenol	7.64	2.0	0.21	ug/l	10.0		76	55-120			
Diethyl phthalate	7.58	1.0	0.12	ug/l	10.0		76	60-120			
2,4-Dimethylphenol	5.34	2.0	0.31	ug/l	10.0		53	35-120			
Dimethyl phthalate	7.42	0.50	0.081	ug/l	10.0		74	60-120			
4,6-Dinitro-2-methylphenol	6.64	5.0	0.38	ug/l	10.0		66	55-120			
2,4-Dinitrophenol	6.02	5.0	2.7	ug/l	10.0		60	40-140			
2,4-Dinitrotoluene	6.68	5.0	0.23	ug/l	10.0		67	60-140			
2,6-Dinitrotoluene	7.44	5.0	0.24	ug/l	10.0		74	65-125			
Di-n-octyl phthalate	6.72	5.0	0.17	ug/l	10.0		67	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.52	1.0	0.087	ug/l	10.0		85	60-120			
Fluoranthene	9.34	0.50	0.089	ug/l	10.0		93	55-125			
Fluorene	8.32	0.50	0.075	ug/l	10.0		83	60-120			
Hexachlorobenzene	7.70	1.0	0.13	ug/l	10.0		77	50-120			
Hexachlorobutadiene	6.44	2.0	0.38	ug/l	10.0		64	45-120			
Hexachlorocyclopentadiene	7.70	5.0	1.8	ug/l	10.0		77	10-130			
Hexachloroethane	6.90	3.0	0.51	ug/l	10.0		69	40-120			
Indeno(1,2,3-cd)pyrene	7.40	2.0	0.19	ug/l	10.0		74	35-150			
Isophorone	6.42	1.0	0.059	ug/l	10.0		64	55-120			
2-Methylnaphthalene	8.02	1.0	0.13	ug/l	10.0		80	50-120			
2-Methylphenol	7.06	2.0	0.28	ug/l	10.0		71	45-120			
4-Methylphenol	7.38	5.0	0.20	ug/l	10.0		74	45-120			
Naphthalene	7.88	1.0	0.13	ug/l	10.0		79	50-120			
2-Nitroaniline	7.54	5.0	0.18	ug/l	10.0		75	60-130			
3-Nitroaniline	7.72	5.0	0.35	ug/l	10.0		77	50-140			
4-Nitroaniline	7.48	5.0	0.49	ug/l	10.0		75	45-160			
Nitrobenzene	7.26	1.0	0.10	ug/l	10.0		73	50-120			
2-Nitrophenol	8.06	2.0	0.23	ug/l	10.0		81	55-120			
4-Nitrophenol	6.82	5.0	0.73	ug/l	10.0		68	50-135			
N-Nitrosodimethylamine	5.44	2.0	0.22	ug/l	10.0		54	40-120			
N-Nitroso-di-n-propylamine	6.94	2.0	0.18	ug/l	10.0		69	50-120			
N-Nitrosodiphenylamine	7.04	1.0	0.077	ug/l	10.0		70	60-120			
Pentachlorophenol	7.14	2.0	0.78	ug/l	10.0		71	50-125			
Phenanthrene	7.92	0.50	0.071	ug/l	10.0		79	55-120			

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 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>											<b>M-NRI</b>
Phenol	7.54	1.0	0.14	ug/l	10.0		75	45-120			
Pyrene	7.86	0.50	0.059	ug/l	10.0		79	50-120			
1,2,4-Trichlorobenzene	6.84	1.0	0.10	ug/l	10.0		68	50-120			
2,4,5-Trichlorophenol	8.44	2.0	0.075	ug/l	10.0		84	60-120			
2,4,6-Trichlorophenol	7.90	1.0	0.10	ug/l	10.0		79	60-120			
Surrogate: 2-Fluorophenol	13.9			ug/l	20.0		70	35-120			
Surrogate: Phenol-d6	14.3			ug/l	20.0		72	45-120			
Surrogate: 2,4,6-Tribromophenol	14.7			ug/l	20.0		74	50-125			
Surrogate: Nitrobenzene-d5	7.24			ug/l	10.0		72	45-120			
Surrogate: 2-Fluorobiphenyl	7.38			ug/l	10.0		74	45-120			
Surrogate: Terphenyl-d14	6.90			ug/l	10.0		69	45-135			
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>											
Acenaphthene	7.88	0.50	0.10	ug/l	10.0		79	55-120	1	20	
Acenaphthylene	8.12	0.50	0.10	ug/l	10.0		81	55-120	1	20	
Aniline	8.62	10	2.9	ug/l	10.0		86	30-120	5	25	J
Anthracene	8.18	0.50	0.083	ug/l	10.0		82	60-120	1	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-180		35	L2
Benzoic acid	4.38	20	3.7	ug/l	10.0		44	30-125	10	30	J
Benzo(a)anthracene	8.50	5.0	0.038	ug/l	10.0		85	65-120	3	20	
Benzo(a)pyrene	9.16	2.0	0.14	ug/l	10.0		92	55-125	0	25	
Benzo(b)fluoranthene	8.60	2.0	0.050	ug/l	10.0		86	50-125	7	25	
Benzo(g,h,i)perylene	7.20	5.0	0.059	ug/l	10.0		72	35-160	11	25	
Benzo(k)fluoranthene	8.40	0.50	0.053	ug/l	10.0		84	50-125	1	20	
Benzyl alcohol	8.70	5.0	0.21	ug/l	10.0		87	40-130	17	20	
Bis(2-chloroethoxy)methane	7.60	0.50	0.072	ug/l	10.0		76	55-120	4	20	
Bis(2-chloroethyl)ether	7.02	0.50	0.084	ug/l	10.0		70	50-120	3	20	
Bis(2-chloroisopropyl)ether	7.66	0.50	0.11	ug/l	10.0		77	50-120	3	20	
Bis(2-ethylhexyl)phthalate	7.78	5.0	1.1	ug/l	10.0		78	65-125	1	20	
4-Bromophenyl phenyl ether	7.50	1.0	0.12	ug/l	10.0		75	55-125	1	25	
Butyl benzyl phthalate	7.26	5.0	0.34	ug/l	10.0		73	60-125	1	20	
4-Chloroaniline	8.46	2.0	0.20	ug/l	10.0		85	55-120	7	25	
2-Chloronaphthalene	7.72	0.50	0.059	ug/l	10.0		77	60-120	2	20	
4-Chloro-3-methylphenol	8.48	2.0	0.34	ug/l	10.0		85	60-120	7	25	
4-Chlorophenyl phenyl ether	7.90	0.50	0.056	ug/l	10.0		79	55-120	5	20	
2-Chlorophenol	7.54	1.0	0.12	ug/l	10.0		75	45-120	5	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>											
Chrysene	8.04	0.50	0.072	ug/l	10.0		80	65-120	2	20	
Dibenz(a,h)anthracene	7.18	0.50	0.083	ug/l	10.0		72	40-160	6	25	
Dibenzofuran	8.06	0.50	0.075	ug/l	10.0		81	60-120	1	20	
Di-n-butyl phthalate	8.06	2.0	0.26	ug/l	10.0		81	65-125	1	20	
1,2-Dichlorobenzene	6.78	0.50	0.11	ug/l	10.0		68	40-120	4	25	
1,3-Dichlorobenzene	6.54	0.50	0.13	ug/l	10.0		65	40-120	2	25	
1,4-Dichlorobenzene	6.60	0.50	0.050	ug/l	10.0		66	40-120	6	25	
3,3-Dichlorobenzidine	7.96	5.0	0.93	ug/l	10.0		80	50-170	6	25	
2,4-Dichlorophenol	8.34	2.0	0.21	ug/l	10.0		83	55-120	9	20	
Diethyl phthalate	7.90	1.0	0.12	ug/l	10.0		79	60-120	4	20	
2,4-Dimethylphenol	6.10	2.0	0.31	ug/l	10.0		61	35-120	13	25	
Dimethyl phthalate	7.50	0.50	0.081	ug/l	10.0		75	60-120	1	20	
4,6-Dinitro-2-methylphenol	7.64	5.0	0.38	ug/l	10.0		76	55-120	14	25	
2,4-Dinitrophenol	6.88	5.0	2.7	ug/l	10.0		69	40-140	13	25	
2,4-Dinitrotoluene	7.20	5.0	0.23	ug/l	10.0		72	60-140	7	20	
2,6-Dinitrotoluene	7.78	5.0	0.24	ug/l	10.0		78	65-125	4	20	
Di-n-octyl phthalate	7.08	5.0	0.17	ug/l	10.0		71	60-130	5	20	
1,2-Diphenylhydrazine/Azobenzene	8.36	1.0	0.087	ug/l	10.0		84	60-120	2	25	
Fluoranthene	9.12	0.50	0.089	ug/l	10.0		91	55-125	2	20	
Fluorene	8.50	0.50	0.075	ug/l	10.0		85	60-120	2	20	
Hexachlorobenzene	7.62	1.0	0.13	ug/l	10.0		76	50-120	1	20	
Hexachlorobutadiene	6.72	2.0	0.38	ug/l	10.0		67	45-120	4	25	
Hexachlorocyclopentadiene	7.88	5.0	1.8	ug/l	10.0		79	10-130	2	30	
Hexachloroethane	6.98	3.0	0.51	ug/l	10.0		70	40-120	1	25	
Indeno(1,2,3-cd)pyrene	7.64	2.0	0.19	ug/l	10.0		76	35-150	3	25	
Isophorone	7.28	1.0	0.059	ug/l	10.0		73	55-120	13	20	
2-Methylnaphthalene	8.84	1.0	0.13	ug/l	10.0		88	50-120	10	20	
2-Methylphenol	8.02	2.0	0.28	ug/l	10.0		80	45-120	13	20	
4-Methylphenol	8.32	5.0	0.20	ug/l	10.0		83	45-120	12	20	
Naphthalene	7.78	1.0	0.13	ug/l	10.0		78	50-120	1	20	
2-Nitroaniline	7.58	5.0	0.18	ug/l	10.0		76	60-130	1	20	
3-Nitroaniline	7.74	5.0	0.35	ug/l	10.0		77	50-140	0	25	
4-Nitroaniline	8.56	5.0	0.49	ug/l	10.0		86	45-160	13	20	
Nitrobenzene	7.48	1.0	0.10	ug/l	10.0		75	50-120	3	25	
2-Nitrophenol	8.62	2.0	0.23	ug/l	10.0		86	55-120	7	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>											
4-Nitrophenol	7.58	5.0	0.73	ug/l	10.0		76	50-135	11	25	
N-Nitrosodimethylamine	8.36	2.0	0.22	ug/l	10.0		84	40-120	42	20	R-7
N-Nitroso-di-n-propylamine	7.70	2.0	0.18	ug/l	10.0		77	50-120	10	20	
N-Nitrosodiphenylamine	7.34	1.0	0.077	ug/l	10.0		73	60-120	4	20	
Pentachlorophenol	7.76	2.0	0.78	ug/l	10.0		78	50-125	8	25	
Phenanthrene	8.06	0.50	0.071	ug/l	10.0		81	55-120	2	20	
Phenol	7.90	1.0	0.14	ug/l	10.0		79	45-120	5	25	
Pyrene	8.10	0.50	0.059	ug/l	10.0		81	50-120	3	25	
1,2,4-Trichlorobenzene	6.66	1.0	0.10	ug/l	10.0		67	50-120	3	20	
2,4,5-Trichlorophenol	8.32	2.0	0.075	ug/l	10.0		83	60-120	1	20	
2,4,6-Trichlorophenol	8.22	1.0	0.10	ug/l	10.0		82	60-120	4	20	
Surrogate: 2-Fluorophenol	14.0			ug/l	20.0		70	35-120			
Surrogate: Phenol-d6	15.1			ug/l	20.0		76	45-120			
Surrogate: 2,4,6-Tribromophenol	15.1			ug/l	20.0		76	50-125			
Surrogate: Nitrobenzene-d5	7.54			ug/l	10.0		75	45-120			
Surrogate: 2-Fluorobiphenyl	7.30			ug/l	10.0		73	45-120			
Surrogate: Terphenyl-d14	7.24			ug/l	10.0		72	45-135			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
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**Batch: 5B17042 Extracted: 02/17/05**

**Blank Analyzed: 02/17/2005-02/18/2005 (5B17042-BLK1)**

Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.015	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.015	ug/l						
4,4'-DDE	ND	0.10	0.020	ug/l						
4,4'-DDT	ND	0.10	0.030	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.015	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.264			ug/l	0.500		53	35-120		
Surrogate: Decachlorobiphenyl	0.339			ug/l	0.500		68	45-120		

**LCS Analyzed: 02/18/2005 (5B17042-BS1)**

**M-NR1**

Aldrin	0.364	0.10	0.030	ug/l	0.500		73	45-115		
alpha-BHC	0.374	0.10	0.015	ug/l	0.500		75	45-115		
beta-BHC	0.373	0.10	0.015	ug/l	0.500		75	50-115		
delta-BHC	0.391	0.20	0.020	ug/l	0.500		78	55-120		
gamma-BHC (Lindane)	0.385	0.10	0.015	ug/l	0.500		77	45-115		
4,4'-DDD	0.415	0.10	0.015	ug/l	0.500		83	60-120		
4,4'-DDE	0.412	0.10	0.020	ug/l	0.500		82	55-120		
4,4'-DDT	0.424	0.10	0.030	ug/l	0.500		85	60-130		
Dieldrin	0.403	0.10	0.015	ug/l	0.500		81	55-120		
Endosulfan I	0.384	0.10	0.015	ug/l	0.500		77	50-115		
Endosulfan II	0.397	0.10	0.040	ug/l	0.500		79	60-125		
Endosulfan sulfate	0.425	0.20	0.015	ug/l	0.500		85	60-120		

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17042 Extracted: 02/17/05</b>										
<b>LCS Analyzed: 02/18/2005 (5B17042-BS1)</b>										
Endrin	0.446	0.10	0.015	ug/l	0.500		89 55-125			M-NR1
Endrin aldehyde	0.374	0.10	0.045	ug/l	0.500		75 55-115			
Endrin ketone	0.423	0.10	0.020	ug/l	0.500		85 60-120			
Heptachlor	0.404	0.10	0.030	ug/l	0.500		81 45-115			
Heptachlor epoxide	0.383	0.10	0.020	ug/l	0.500		77 50-120			
Methoxychlor	0.486	0.10	0.035	ug/l	0.500		97 60-135			
Surrogate: Tetrachloro-m-xylene	0.304			ug/l	0.500		61 35-120			
Surrogate: Decachlorobiphenyl	0.398			ug/l	0.500		80 45-120			
<b>LCS Dup Analyzed: 02/18/2005 (5B17042-BSD1)</b>										
Aldrin	0.354	0.10	0.030	ug/l	0.500		71 45-115	3	30	
alpha-BHC	0.353	0.10	0.015	ug/l	0.500		71 45-115	6	30	
beta-BHC	0.372	0.10	0.015	ug/l	0.500		74 50-115	0	30	
delta-BHC	0.380	0.20	0.020	ug/l	0.500		76 55-120	3	30	
gamma-BHC (Lindane)	0.371	0.10	0.015	ug/l	0.500		74 45-115	4	30	
4,4'-DDD	0.402	0.10	0.015	ug/l	0.500		80 60-120	3	30	
4,4'-DDE	0.407	0.10	0.020	ug/l	0.500		81 55-120	1	30	
4,4'-DDT	0.409	0.10	0.030	ug/l	0.500		82 60-130	4	30	
Dieldrin	0.396	0.10	0.015	ug/l	0.500		79 55-120	2	30	
Endosulfan I	0.379	0.10	0.015	ug/l	0.500		76 50-115	1	30	
Endosulfan II	0.386	0.10	0.040	ug/l	0.500		77 60-125	3	30	
Endosulfan sulfate	0.398	0.20	0.015	ug/l	0.500		80 60-120	7	30	
Endrin	0.433	0.10	0.015	ug/l	0.500		87 55-125	3	30	
Endrin aldehyde	0.366	0.10	0.045	ug/l	0.500		73 55-115	2	30	
Endrin ketone	0.392	0.10	0.020	ug/l	0.500		78 60-120	8	30	
Heptachlor	0.382	0.10	0.030	ug/l	0.500		76 45-115	6	30	
Heptachlor epoxide	0.378	0.10	0.020	ug/l	0.500		76 50-120	1	30	
Methoxychlor	0.446	0.10	0.035	ug/l	0.500		89 60-135	9	30	
Surrogate: Tetrachloro-m-xylene	0.277			ug/l	0.500		55 35-120			
Surrogate: Decachlorobiphenyl	0.364			ug/l	0.500		73 45-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
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**METHOD BLANK/QC DATA**

**TOTAL PCBS (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17042 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005-02/18/2005 (5B17042-BLK1)</b>										
Aroclor 1016	ND	1.0	0.20	ug/l						
Aroclor 1221	ND	1.0	0.10	ug/l						
Aroclor 1232	ND	1.0	0.15	ug/l						
Aroclor 1242	ND	1.0	0.15	ug/l						
Aroclor 1248	ND	1.0	0.25	ug/l						
Aroclor 1254	ND	1.0	0.25	ug/l						
Aroclor 1260	ND	1.0	0.40	ug/l						
Surrogate: Decachlorobiphenyl	0.451			ug/l	0.500		90 45-120			
<b>LCS Analyzed: 02/18/2005 (5B17042-BS2)</b>										
Aroclor 1016	2.54	1.0	0.20	ug/l	4.00		64 50-115			M-NR1
Aroclor 1260	2.69	1.0	0.40	ug/l	4.00		67 60-115			
Surrogate: Decachlorobiphenyl	0.378			ug/l	0.500		76 45-120			
<b>LCS Dup Analyzed: 02/18/2005 (5B17042-BSD2)</b>										
Aroclor 1016	3.09	1.0	0.20	ug/l	4.00		77 50-115	20	30	
Aroclor 1260	2.98	1.0	0.40	ug/l	4.00		74 60-115	10	25	
Surrogate: Decachlorobiphenyl	0.404			ug/l	0.500		81 45-120			

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Project ID: 13267 (Study 1)  
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 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B12033 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12033-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 02/12/2005 (5B12033-BS1)</b>											
Mercury	7.92	0.20	0.063	ug/l	8.00		99	85-115			
<b>Matrix Spike Analyzed: 02/12/2005 (5B12033-MS1) Source: IOB0983-01</b>											
Mercury	8.00	0.20	0.063	ug/l	8.00	ND	100	70-130			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12033-MSD1) Source: IOB0983-01</b>											
Mercury	7.77	0.20	0.063	ug/l	8.00	ND	97	70-130	3	20	
<b>Batch: 5B12041 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/14/2005-02/15/2005 (5B12041-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	ND	1.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	ND	0.010	0.0032	mg/l							
Lead	ND	1.0	0.13	ug/l							
Manganese	0.444	1.0	0.44	ug/l							J
Nickel	ND	1.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	1.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5B12041 Extracted: 02/12/05</b>										
<b>LCS Analyzed: 02/14/2005-02/15/2005 (5B12041-BS1)</b>										
Antimony	87.7	2.0	0.18	ug/l	80.0		110	85-115		
Arsenic	87.1	1.0	0.49	ug/l	80.0		109	85-115		
Barium	0.0817	0.0010	0.00014	mg/l	0.0800		102	85-115		
Beryllium	80.1	0.50	0.037	ug/l	80.0		100	85-115		
Cadmium	79.7	1.0	0.015	ug/l	80.0		100	85-115		
Chromium	82.5	1.0	0.26	ug/l	80.0		103	85-115		
Cobalt	82.1	1.0	0.10	ug/l	80.0		103	85-115		
Copper	81.5	2.0	0.49	ug/l	80.0		102	85-115		
Iron	0.811	0.010	0.0032	mg/l	0.800		101	85-115		
Lead	83.2	1.0	0.13	ug/l	80.0		104	85-115		
Manganese	83.6	1.0	0.44	ug/l	80.0		104	85-115		
Nickel	82.7	1.0	0.15	ug/l	80.0		103	85-115		
Selenium	84.2	2.0	0.36	ug/l	80.0		105	85-115		
Silver	79.8	1.0	0.089	ug/l	80.0		100	85-115		
Thallium	81.7	1.0	0.075	ug/l	80.0		102	85-115		
Vanadium	82.2	1.0	0.86	ug/l	80.0		103	85-115		
Zinc	81.8	20	3.1	ug/l	80.0		102	85-115		

**Matrix Spike Analyzed: 02/14/2005-02/15/2005 (5B12041-MS1)**

**Source: IOB0878-01**

Antimony	93.0	2.0	0.18	ug/l	80.0	ND	116	70-130		
Arsenic	88.0	1.0	0.49	ug/l	80.0	ND	110	70-130		
Barium	0.250	0.0010	0.00014	mg/l	0.0800	0.17	100	70-130		
Beryllium	90.3	0.50	0.037	ug/l	80.0	ND	113	70-130		
Cadmium	82.9	1.0	0.015	ug/l	80.0	ND	104	70-130		
Chromium	83.6	1.0	0.26	ug/l	80.0	2.2	102	70-130		
Cobalt	84.1	1.0	0.10	ug/l	80.0	ND	105	70-130		
Copper	81.6	2.0	0.49	ug/l	80.0	ND	102	70-130		
Iron	0.804	0.010	0.0032	mg/l	0.800	0.096	88	70-130		
Lead	85.4	1.0	0.13	ug/l	80.0	ND	107	70-130		
Manganese	88.1	1.0	0.44	ug/l	80.0	1.3	108	70-130		
Nickel	82.1	1.0	0.15	ug/l	80.0	ND	103	70-130		
Selenium	84.3	2.0	0.36	ug/l	80.0	ND	105	70-130		
Silver	80.3	1.0	0.089	ug/l	80.0	ND	100	70-130		
Thallium	87.9	1.0	0.075	ug/l	80.0	0.17	110	70-130		
Vanadium	89.2	1.0	0.86	ug/l	80.0	4.9	105	70-130		
Zinc	79.9	20	3.1	ug/l	80.0	ND	100	70-130		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
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**Batch: 5B12041 Extracted: 02/12/05**

**Matrix Spike Analyzed: 02/14/2005-02/15/2005 (5B12041-MS2)**

**Source: IOB0573-02**

Antimony	88.7	2.0	0.18	ug/l	80.0	ND	111	70-130			
Arsenic	94.7	1.0	0.49	ug/l	80.0	9.2	107	70-130			
Barium	0.246	0.0010	0.00014	mg/l	0.0800	0.17	95	70-130			
Beryllium	75.9	0.50	0.037	ug/l	80.0	ND	95	70-130			
Cadmium	75.6	1.0	0.015	ug/l	80.0	0.065	94	70-130			
Chromium	80.0	1.0	0.26	ug/l	80.0	1.0	99	70-130			
Cobalt	80.5	1.0	0.10	ug/l	80.0	0.18	100	70-130			
Copper	90.6	2.0	0.49	ug/l	80.0	14	96	70-130			
Iron	0.685	0.010	0.0032	mg/l	0.800	ND	86	70-130			
Lead	81.3	1.0	0.13	ug/l	80.0	0.28	101	70-130			
Manganese	83.7	1.0	0.44	ug/l	80.0	ND	105	70-130			
Nickel	78.5	1.0	0.15	ug/l	80.0	ND	98	70-130			
Selenium	80.4	2.0	0.36	ug/l	80.0	2.0	98	70-130			
Silver	72.9	1.0	0.089	ug/l	80.0	ND	91	70-130			
Thallium	87.1	1.0	0.075	ug/l	80.0	0.16	109	70-130			
Vanadium	87.6	1.0	0.86	ug/l	80.0	4.9	103	70-130			
Zinc	80.7	20	3.1	ug/l	80.0	10	88	70-130			

**Matrix Spike Dup Analyzed: 02/14/2005-02/15/2005 (5B12041-MSD1)**

**Source: IOB0878-01**

Antimony	93.1	2.0	0.18	ug/l	80.0	ND	116	70-130	0	20	
Arsenic	86.2	1.0	0.49	ug/l	80.0	ND	108	70-130	2	20	
Barium	0.258	0.0010	0.00014	mg/l	0.0800	0.17	110	70-130	3	20	
Beryllium	90.6	0.50	0.037	ug/l	80.0	ND	113	70-130	0	20	
Cadmium	82.9	1.0	0.015	ug/l	80.0	ND	104	70-130	0	20	
Chromium	83.1	1.0	0.26	ug/l	80.0	2.2	101	70-130	1	20	
Cobalt	83.7	1.0	0.10	ug/l	80.0	ND	105	70-130	1	20	
Copper	79.9	2.0	0.49	ug/l	80.0	ND	100	70-130	2	20	
Iron	0.781	0.010	0.0032	mg/l	0.800	0.096	86	70-130	3	20	
Lead	83.8	1.0	0.13	ug/l	80.0	ND	105	70-130	2	20	
Manganese	87.4	1.0	0.44	ug/l	80.0	1.3	108	70-130	1	20	
Nickel	81.1	1.0	0.15	ug/l	80.0	ND	101	70-130	1	20	
Selenium	82.8	2.0	0.36	ug/l	80.0	ND	104	70-130	2	20	
Silver	79.7	1.0	0.089	ug/l	80.0	ND	100	70-130	1	20	
Thallium	88.0	1.0	0.075	ug/l	80.0	0.17	110	70-130	0	20	
Vanadium	88.4	1.0	0.86	ug/l	80.0	4.9	104	70-130	1	20	
Zinc	77.2	20	3.1	ug/l	80.0	ND	96	70-130	3	20	

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B12044 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12044-BLK1)</b>											
Boron	0.00980	0.050	0.0074	mg/l							J
<b>LCS Analyzed: 02/12/2005 (5B12044-BS1)</b>											
Boron	0.496	0.050	0.0074	mg/l	0.500		99	85-115			
<b>Matrix Spike Analyzed: 02/12/2005 (5B12044-MS1)</b>											
						<b>Source: IOB0991-02</b>					
Boron	0.502	0.050	0.0074	mg/l	0.500	0.012	98	70-130			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12044-MSD1)</b>											
						<b>Source: IOB0991-02</b>					
Boron	0.503	0.050	0.0074	mg/l	0.500	0.012	98	70-130	0	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5B11120 Extracted: 02/11/05</b>											
<b>Blank Analyzed: 02/11/2005 (5B11120-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.10	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 02/11/2005 (5B11120-BS1)</b>											
Chloride	4.84	0.50	0.26	mg/l	5.00		97	90-110			
Fluoride	4.87	0.50	0.10	mg/l	5.00		97	90-110			
Sulfate	10.0	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 02/12/2005 (5B11120-MS1) Source: IOB0980-01</b>											
Chloride	15.6	0.50	0.26	mg/l	5.00	11	92	80-120			
Fluoride	5.03	0.50	0.10	mg/l	5.00	0.29	95	80-120			
Sulfate	38.7	0.50	0.18	mg/l	10.0	29	97	80-120			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B11120-MSD1) Source: IOB0980-01</b>											
Chloride	15.8	0.50	0.26	mg/l	5.00	11	96	80-120	1	20	
Fluoride	5.10	0.50	0.10	mg/l	5.00	0.29	96	80-120	1	20	
Sulfate	39.3	0.50	0.18	mg/l	10.0	29	103	80-120	2	20	
<b>Batch: 5B12035 Extracted: 02/12/05</b>											
<b>Duplicate Analyzed: 02/12/2005 (5B12035-DUP1) Source: IOB1014-01</b>											
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5B12037 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B12037-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B12037 Extracted: 02/12/05</b>											
<b>LCS Analyzed: 02/17/2005 (5B12037-BS1)</b>											
Biochemical Oxygen Demand	211	100	30	mg/l	198		107	85-115			
<b>LCS Dup Analyzed: 02/17/2005 (5B12037-BSD1)</b>											
Biochemical Oxygen Demand	212	100	30	mg/l	198		107	85-115	1	20	
<b>Batch: 5B12050 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12050-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 02/12/2005 (5B12050-BS1)</b>											
Surfactants (MBAS)	0.247	0.10	0.044	mg/l	0.250		99	90-110			
<b>Matrix Spike Analyzed: 02/12/2005 (5B12050-MS1)</b>											
Surfactants (MBAS)	0.315	0.10	0.044	mg/l	0.250	0.084	92	50-125			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12050-MSD1)</b>											
Surfactants (MBAS)	0.284	0.10	0.044	mg/l	0.250	0.084	80	50-125	10	20	
<b>Batch: 5B12055 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12055-BLK1)</b>											
Turbidity	0.0400	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 02/12/2005 (5B12055-DUP1)</b>											
Turbidity	48.8	2.0	0.080	NTU					2	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14044 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/14/2005 (5B14044-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 02/14/2005 (5B14044-BS1)</b>											
Oil & Grease	19.8	5.0	0.94	mg/l	20.0		99	65-120			M-NR1
<b>LCS Dup Analyzed: 02/14/2005 (5B14044-BSD1)</b>											
Oil & Grease	19.3	5.0	0.94	mg/l	20.0		96	65-120	3	20	
<b>Batch: 5B14107 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/14/2005 (5B14107-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 02/14/2005 (5B14107-BS1)</b>											
Total Cyanide	200	5.0	2.2	ug/l	200		100	90-110			
<b>Matrix Spike Analyzed: 02/14/2005 (5B14107-MS1)</b>											
Total Cyanide	167	5.0	2.2	ug/l	200	Source: IOB0888-01 ND	84	70-115			
<b>Matrix Spike Dup Analyzed: 02/14/2005 (5B14107-MSD1)</b>											
Total Cyanide	190	5.0	2.2	ug/l	200	Source: IOB0888-01 ND	95	70-115	13	15	
<b>Batch: 5B15110 Extracted: 02/15/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B15110-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B15110 Extracted: 02/15/05</b>											
<b>LCS Analyzed: 02/15/2005 (5B15110-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0		98	80-115			
<b>Matrix Spike Analyzed: 02/15/2005 (5B15110-MS1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	ND	101	70-120			
<b>Matrix Spike Dup Analyzed: 02/15/2005 (5B15110-MSD1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	ND	95	70-120	6	15	
<b>Batch: 5B16119 Extracted: 02/16/05</b>											
<b>Blank Analyzed: 02/16/2005 (5B16119-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/16/2005 (5B16119-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 02/16/2005 (5B16119-DUP1)</b>											
Total Dissolved Solids	1280	10	10	mg/l		1300			2	10	
<b>Batch: 5B16120 Extracted: 02/16/05</b>											
<b>Duplicate Analyzed: 02/16/2005 (5B16120-DUP1)</b>											
Specific Conductance	95.3	1.0	1.0	umhos/cm		95			0	5	
<b>Batch: 5B17053 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17053-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17053 Extracted: 02/17/05</b>											
<b>LCS Analyzed: 02/17/2005 (5B17053-BS1)</b>											
Perchlorate	52.2	4.0	0.80	ug/l	50.0		104	85-115			
<b>Matrix Spike Analyzed: 02/17/2005 (5B17053-MS1)</b>											
Perchlorate	49.3	4.0	0.80	ug/l	50.0	ND	99	80-120			
<b>Matrix Spike Dup Analyzed: 02/17/2005 (5B17053-MSD1)</b>											
Perchlorate	49.7	4.0	0.80	ug/l	50.0	ND	99	80-120	1	20	
<b>Batch: 5B17069 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17069-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/17/2005 (5B17069-BS1)</b>											
Total Suspended Solids	977	10	10	mg/l	1000		98	85-115			
<b>Duplicate Analyzed: 02/17/2005 (5B17069-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l		ND				10	
<b>Batch: 5B18126 Extracted: 02/18/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B18126-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 02/18/2005 (5B18126-BS1)</b>											
Total Organic Carbon	10.6	1.0	0.25	mg/l	10.0		106	90-110			

Del Mar Analytical, Irvine  
 Michele Harper  
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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B18126 Extracted: 02/18/05</b>											
<b>Matrix Spike Analyzed: 02/18/2005 (5B18126-MS1)</b>						<b>Source: IOB1090-02</b>					
Total Organic Carbon	10.9	1.0	0.25	mg/l	5.00	5.8	102	80-120			
<b>Matrix Spike Dup Analyzed: 02/18/2005 (5B18126-MSD1)</b>						<b>Source: IOB1090-02</b>					
Total Organic Carbon	10.8	1.0	0.25	mg/l	5.00	5.8	100	80-120	1	20	

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## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: P5B1701 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (P5B1701-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	0.930			ug/l	1.00		93	80-125			
<b>LCS Analyzed: 02/17/2005 (P5B1701-BS1)</b>											
1,4-Dioxane	10.9	1.0	0.49	ug/l	10.0		109	70-130			
Surrogate: Dibromofluoromethane	0.920			ug/l	1.00		92	80-125			
<b>LCS Dup Analyzed: 02/17/2005 (P5B1701-BSD1)</b>											
1,4-Dioxane	12.3	1.0	0.49	ug/l	10.0		123	70-130	12	20	
Surrogate: Dibromofluoromethane	0.950			ug/l	1.00		95	80-125			
<b>Matrix Spike Analyzed: 02/17/2005 (P5B1701-MS1) Source: IOB1014-01</b>											
1,4-Dioxane	11.1	1.0	0.49	ug/l	10.0	ND	111	70-150			
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Dup Analyzed: 02/17/2005 (P5B1701-MSD1) Source: IOB1014-01</b>											
1,4-Dioxane	11.0	1.0	0.49	ug/l	10.0	ND	110	70-150	1	25	
Surrogate: Dibromofluoromethane	1.00			ug/l	1.00		100	80-125			

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- C** Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
- C5** Calibration Verification recovery was below the method control limit for this analyte. An additional check standard was analyzed at the reporting limit to ensure instrument sensitivity at the reporting limit. Samples ND.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical Perspectives

2714 Exchange Drive - Wilmington, NC 28405

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOB1014-01

Analysis Performed: EDD + Level 4  
 Samples: IOB1014-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chnric  
 Samples: IOB1014-01

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 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

### **Aquatic Testing Laboratories-SUB** *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003  
 Analysis Performed: Bioassay-Acute 96hr  
 Samples: IOB1014-01

### **Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044  
 Method Performed: EPA 8260B  
 Samples: IOB1014-01

### **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804  
 Analysis Performed: Gross Alpha  
 Samples: IOB1014-01  
 Analysis Performed: Gross Beta  
 Samples: IOB1014-01  
 Analysis Performed: Level 3 Data Package  
 Samples: IOB1014-01  
 Analysis Performed: Radium, Combined  
 Samples: IOB1014-01  
 Analysis Performed: Strontium 90  
 Samples: IOB1014-01  
 Analysis Performed: Tritium  
 Samples: IOB1014-01

### **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804  
 Analysis Performed: EDD + Level 4  
 Samples: IOB1014-03  
 Analysis Performed: Gamma Scan  
 Samples: IOB1014-04  
 Analysis Performed: Gross Alpha  
 Samples: IOB1014-03  
 Analysis Performed: Gross Beta  
 Samples: IOB1014-03  
 Analysis Performed: Radium, Combined  
 Samples: IOB1014-03  
 Analysis Performed: Strontium 90  
 Samples: IOB1014-03  
 Analysis Performed: Tritium  
 Samples: IOB1014-03

### **Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680  
 Analysis Performed: Hydrazine  
 Samples: IOB1014-01  
 Analysis Performed: Level 4 Data Package  
 Samples: IOB1014-01

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Attention: Bronwyn Kelly

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CHAIN OF CUSTODY FORM

Del Mar Analytical Version 5.8/12/04

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:	
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly		Boeing-SSFL NPDES Annual Outfall 011 + 13267 Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Alpha BHC (608) + PP Ammonia-N Conductivity Turbidity, TDS, TSS, Perchlorate Cl-, SO4, NO3+NO2-N, F, Surfactants (MBAS) BOD5(20 degrees C) Cyanide (total recoverable) Oil & Grease (EPA 413.1) TCDD (and all congeners) Freon 113, Freon 123A, Cyclohexane VOCs 624 + xylenes + Settleable Solids		Temp = 58.3 pH = 6.8 Comments 24 TAT 24 TAT 24 TAT 24 TAT	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Boil#	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Tl, Mn, Ag, Tl, Zn, Co, V
Outfall 011	W	Poly-1L	1	2/18/05 12:20	HNO3	1A	X
Outfall 0011-Dup	W	Poly-1L	1	2/11/05 12:20	HNO3	1B	X
Outfall 011	W	Poly-1L	1		None	2	X
Outfall 011	W	VOAs	5		HCl	3A,3B,3C, 3D,3E	X
Outfall 011	W	1L Amber	2		None	4A,4B	X
Outfall 011	W	1L Amber	2		HCL	5A, 5B	X
Outfall 011	W	Poly-500 ml	1		NaOH	6	X
Outfall 011	W	Poly-1L	1		None	7	X
Outfall 011	W	Poly-500 ml	2		None	8A,8B	X
Outfall 011	W	Poly-500 ml	2		None	9A,9B	X
Outfall 011	W	Poly-500 ml	2		None	10A, 10B	X
Outfall 011	W	Poly-500 ml	1		H2SO4	11	X
Outfall 011	W	1L Amber	2		None	12A, 12B	X
Outfall 011	W	1L Amber	2		None	13A, 13B	X
Trip Blank	W	VOAs	3		HCL	14A, 14B, 14C	X
Relinquished By	Date/Time:		Received By	Date/Time:		Turn around Time: (check)	
Linda Abays	2/11/05 17:00		[Signature]	2/18/05 17:00		24 Hours _____ 48 Hours _____ 72 Hours _____ Normal _____	
Relinquished By	Date/Time:		Received By	Date/Time:		Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) _____ Intact _____	
[Signature]	2/11/05 21:00		[Signature]	2/11/05 20:30		31	

**CHAIN OF CUSTODY FORM**

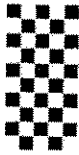
Del Mar Analytical Version 5.8/12/04

Client Name/Address:		Project:		ANALYSIS REQUIRED:		Comments
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler:		Boeing-SSFL NPDES Annual Outfall 011 +13267 Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		VOCs 624+A+A+2CVE Acute and Chronic toxicity Monomethylhydrazine TPH = all fuels, gas, diesel, and jet fuel; modified 80156 and 418.1 PCBs Radium 226 & Radium 228 Tritium (906.0), Sr-90 Gross Alpha, Gross Beta, and 418.1 Total Residual Chlorine Total Organic Carbon 1,4 Dioxane		
Sample Description	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	
Outfall 011	VOAs	3	2/11/05 12:20	HCl	15A, 15B, 15C	(WHITELINED) Gross Alpha Gross Beta RA-226 & RA-228 TRITIUM (906.0) Substrate
Outfall 011	VOAs	2		HCl	16A, 16B	
Outfall 011	Poly-150 ml	1		None	17	
Outfall 011	Poly-1Gal VOAs	2		None	18A, 18C	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L
Outfall 011	1L Amber	2		None	19A, 19B	
Outfall 011	VOAs	3		HCl	20A, 20B, 20C, 20D, 20E, 20F, 20G	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L
Outfall 011	1L Amber	2		None	21A, 21B	
Outfall 011	1L Amber	2		None	22A, 22B	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L
Outfall 011	1 Gal	2		None	23A, 23B, 23C	
Outfall 011	VOAs	3		None	24A, 24B, 24C	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L
Trip Blank	VOAs	3		None	24A, 24B, 24C	
Outfall 011	W	4	2/11/05 12:20	None	13267	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L
Outfall 011	W	2	2/11/05 12:20	None	13267	

Relinquished By:	Date/Time:	Received By:	Date/Time:
<i>[Signature]</i>	2/11/05 17:00	<i>[Signature]</i>	2/11/05 17:00
Relinquished By:	Date/Time:	Received By:	Date/Time:
<i>[Signature]</i>	2/11/05 20:30	<i>[Signature]</i>	2/11/05 20:30
Relinquished By:	Date/Time:	Received By:	Date/Time:
		<i>[Signature]</i>	2/11/05 20:30

\*ANALYZE FOR RA-226-228 ONLY IF GROSS ALPHA > 15pCi/L TOTAL COMBINED  
 ANALYZE SUBSTRATE BY RADIOSPECTROSCOPY FOR CESIUM 137

**F A X****MWH**300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 02/17/05

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
Pati Meeks / AMEC 303-935-6575  
Krissi McIlvenna / MWH 925-975-3412

From: Bronwyn K. Kelly

sign: 

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 2  
(including cover)

**Per Request:**

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOB0988	Outfall 003	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity, Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1002	Outfall 004	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity, Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB0990	Outfall 005	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity, Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.

IOB0992	Outfall 006	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1008	Outfall 018	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1014	Outfall 011	02/11/04	Chromium IV	
IOA0131	Outfall 011 -- Composite	01/04/05		Ammonia, BOD, Chloride, Nitrate/Nitrite as N, Oil and Grease, Sulfate, MBAS, TDS, TSS, TOC, Sculeable Solids, Turbidity, Cr, Cyanide, perchlorate, Conductivity, Cu, Hg, TCDD
IOA0121	Outfall 011 -- Grab	01/04/05		Total Recoverable Hydrocarbons, Extractable Fuel Hydrocarbons, GRO, Fluoride, Residual Chlorine, TOC, Cr VI, 1,4-Dioxane, Monomethyl Hydrazine, Bioassays, SVOC (625)-PP list, Pcs/PCB-PP list (608), Total Recoverable Metals, Cyclohexane & Freon 123a & A+A+2CVE (624), Radchem

The reason for these changes:

*Incorrectly marked on COC form*

*Lack of sample volume*

*MWH office personnel require this change*

*Other: Containers mislabeled*

\_\_\_\_\_ x  
 \_\_\_\_\_ x  
 \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you





2852 Altan Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1338  
 1014 E. Croley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (658) 505-8596 FAX (658) 505-9689  
 9830 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

April 6, 2005

MWH-Pasadena/ Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study1)/Outfall 011  
 Sampled: 02/11/05  
 Del Mar Analytical Number: IOB1014


Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), Eberline Services tested gross alpha/gross beta (EPA 900.0), tritium (H-3, EPA 906.0), and strontium-90 (Sr-90, EPA 905.0) and Alta Analytical Perspectives performed Method 1613 Dioxin, and Truesdail Laboratories performed the Hydrazines by EPA 8315 analysis for the project referenced above. Please use the following cross-reference table when reviewing your results.

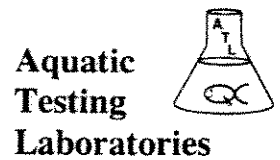
MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	ALTA ID	TRUESDAIL ID
Outfall 011-grab	IOB1014-01	A-05021210-001/002	R502135-8264	P5072 2989 005	939705-1

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022 at extension 215.

Sincerely yours,  
 DEL MAR ANALYTICAL

  
 Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

**Date:** February 19, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Laboratory No.:** A-05021210-001/002  
**Sample I.D.:** IOB1014-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 02/11/05  
Date Received: 02/12/05  
Date Tested: 02/12/05 to 02/18/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director



# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05021210-001  
 Client/ID: Del Mar IOB1014-01

Start Date: 02/12/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 13 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050208.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.2	8.1	7.8	0	0	LW 1200
	100%	20.7	9.3	6.7	0	0	
24 Hr	Control	20.3	6.9	7.7	0	0	R 1100
	100%	20.3	6.4	7.0	0	0	
48 Hr	Control	20.4	7.4	7.5	0	0	R 1200
	100%	20.5	7.2	7.0	0	0	
Renewal	Control	20.4	8.0	7.7	0	0	LW 1200
	100%	20.3	8.8	6.9	0	0	
72 Hr	Control	19.8	7.8	7.4	0	0	LW 1100
	100%	19.6	7.8	7.0	0	0	
96 Hr	Control	20.7	7.8	7.4	0	0	LW 1100
	100%	20.6	7.7	6.9	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 6.7; Conductivity: 113 umho; Temp: 4°C;  
 DO: 9.3 mg/l; Alkalinity: 31 mg/l; Hardness: 46 mg/l; NH<sub>3</sub>-N: 0.3 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No  
 Control: Alkalinity: 54 mg/l; Hardness: 87 mg/l; Conductivity: 295 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes /  No  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In:	Control: <u>100</u> %	100% Sample: <u>100</u> %
----------------------	-----------------------	---------------------------

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05021210  
Client/ID: Del Mar IOB1014-01

Date Tested: 02/12/05 to 02/18/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050204.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	27.6
6.25%	100%	27.3
12.5%	100%	26.2
25%	100%	27.7
50%	100%	28.9
100%	100%	24.6

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (27.6 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 13.6%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight response at conc. tested)



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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1014

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Aquatic Testing Laboratories-SUB  
 4350 Transport Street, Unit 107  
 Ventura, CA 93003  
 Phone : (805) 650-0546  
 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1014-01 Water</b>	<b>Sampled: 02/11/05 12:20</b>	
Bioassay-7 dy Chrmic	02/13/05 00:20	ceriodaphnia, 13267
Bioassay-Acute 96hr	02/13/05 00:20	fathead minnow, 13267

**Containers Supplied:**  
 1 gal Poly (IOB1014-01AT)  
 1 gal Poly (IOB1014-01AU)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 4°C

Released By: [Signature] Date: 2/10/05 Time: 0700      Received By: [Signature] Date: 2/10/05 Time: 0700  
 Released By: [Signature] Date: 2/10/05 Time: 0900      Received By: [Signature] Date: 2/20/05 Time: 0900



# EBERLINE SERVICES

March 8, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1014  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502135-8264

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 15, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MM*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1014-01	8264-001	02/11/05	03/01/05	GrossAlpha	0.895 ± 0.76	pCi/L	1.05
			03/01/05	Gross Beta	2.50 ± 1.3	pCi/L	1.90
			03/02/05	H3	97.4 ± 140	pCi/L	237
			02/25/05	Sr90	-0.216 ± 0.23	pCi/L	0.519

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/08/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS02135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>


Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8261-002	GrossAlpha	8.92 ± 1.1	pCi/Smpl	11.2	0.403	80% recovery
		Gross Beta	10.6 ± 0.77	pCi/Smpl	12.1	0.556	88% recovery
		H3	281 ± 24	pCi/Smpl	259	23.4	108% recovery
		Sr90	12.0 ± 0.59	pCi/Smpl	11.1	0.238	108% recovery
<u>BLANK</u>							
	8261-003	GrossAlpha	-0.032 ± 0.15	pCi/Smpl	NA	0.374	<MDA
		Gross Beta	-0.073 ± 0.30	pCi/Smpl	NA	0.554	<MDA
		H3	13.6 ± 15	pCi/Smpl	NA	23.9	<MDA
		Sr90	-0.091 ± 0.10	pCi/Smpl	NA	0.234	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-004	GrossAlpha	3.40 ± 1.4	0.926
	Gross Beta	6.02 ± 1.4	1.80
	H3	393 ± 160	242
	Sr90	-0.186 ± 0.19	0.431

<u>ORIGINALS</u>						
Sample ID	Nuclide	Results ± 2σ	MDA	3σ	RPD (Tot)	Eval
8261-001	GrossAlpha	1.64 ± 1.0	0.936	70	112	satis.
	Gross Beta	5.18 ± 1.3	1.80	15	60	satis.
	H3	71.9 ± 150	246	138	144	satis.
	Sr90	-0.077 ± 0.25	0.499	-	0	satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-005	GrossAlpha	81.8 ± 5.3	1.04
	Gross Beta	82.0 ± 3.7	1.81
	H3	17800 ± 520	243

<u>ORIGINAL SAMPLE</u>					
Sample ID	Nuclide	Results ± 2σ	MDA	Added	%Recv
8261-001	GrossAlpha	1.64 ± 1.0	0.936	76.6	105
	Gross Beta	5.18 ± 1.3	1.80	73.9	104
	H3	71.9 ± 150	246	18900	94

Certified by 
Report Date <u>03/08/05</u>
Page 2



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 2520 E. Sunseri Rd., Suite #5, Las Vegas, NV 89120 Ph (702) 798-3020 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IOB1014

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1014-01 Water      Sampled: 02/11/05 12:20</b>		
Gross Alpha-O	02/11/06 12:20	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 12:20	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Level 3 Data Package - Out	03/11/05 12:20	**LEVEL IV QC, ACCESS 7 EDD**
Radium, Combined-O	02/11/06 12:20	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 12:20	905.0
Tritium-O	02/11/06 12:20	906

**Containers Supplied:**

1 gal Poly (IOB1014-01AF) *w/ HNO<sub>3</sub>*  
 40 ml Voa Vial (IOB1014-01AG)  
 40 ml Voa Vial (IOB1014-01AH)

*Labels on bottles switched.*

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: \_\_\_\_\_ Date: *2-14-05* Time: *1700*      Received By: *Z/L* Date: *2/15/05* Time: *10:00*

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_      Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar City Irvine State CA  
 Date/Time received 2/15/05 10:00 CoC No. IOB1014  
 Sample IOB1014-01AF  
 Container I.D. No. Blue Cooler AP-5100 Requested TAT (Days) 21 P.O. Received Yes  No

INSPECTION

1. Custody seals on shipping container intact? Yes  No  N/A   
 2. Custody seals on shipping container dated & signed? Yes  No  N/A   
 3. Custody seals on sample containers intact? Yes  No  N/A   
 4. Custody seals on sample containers dated & signed? Yes  No  N/A   
 5. Packing material is: Wet  Dry   
 6. Number of samples in shipping container: 1 Sample Matrix Water  
 7. Number of containers per sample: 3 (Or see CoC \_\_\_\_\_)  
 8. Samples are in correct container Yes  No   
 9. Paperwork agrees with samples? Yes  No   
 10. Samples have: Tape  Hazard labels  Rad labels  Appropriate sample labels   
 11. Samples are: In good condition  Leaking  Broken Container  Missing   
 12. Samples are: Preserved  Not preserved  pH <2 Preservative HNO3  
 13. Describe any anomalies: Labels on samples IOB1014-01 AF and IOB1014-01AH are switched. 1 gallon pdy bottle shows IOB1014-01AH and 40ml vial shows IOB1014-01AF  
 14. Was P.M. notified of any anomalies? Yes  No  Date 2/15/05  
 15. Inspected by Z/kg Date: 2/15/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_




**ALTA ANALYTICAL PERSPECTIVES**

3 March 2005

Scott Unze  
 Pace Analytical Services  
 1700 Elm Street  
 Minneapolis, MN 55414

Ph.: 612-607-1700  
 Fax: 612-607-6444

Subject: Certificate of Results

Dear Scott;

Attached to this narrative are the analytical results you requested on the samples submitted for the determination of polychlorinated dibenzo-*p*-dioxins and dibenzofurans. The insert below summarizes the relevant information pertaining to your project. In particular, the QC annotations bring to your attention specific analytical observations and assessments made during the sample handling and data interpretation phases. A brief description of the report's components is provided on the next page.

Project Information Summary	When applicable, see QC Annotations for details
Client Project No. AAP Project No. Analytical Protocol	P5072 Method 1613B
No. Samples Submitted	13
No. Samples Analyzed	13
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
No. Outstanding Samples	0
Date Received	1-Mar-2005
Condition Received	good
Temperature upon Receipt (C)	1-3
Extraction within Holding Time	yes
Analysis within Holding Time	yes
Data meet QA/QC Requirements	yes
Exceptions	none
Analytical Difficulties	none

2714 EXCHANGE DRIVE  
 WILMINGTON  
 NORTH CAROLINA 28405  
 TEL: 910-794-1613 FAX 910-794-3919

**QC Annotations:**

1. A "J" data qualifier is used for analytes with a concentration below the reporting limit.

Alta Analytical Perspectives remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please, do not hesitate to contact us. We wanted to thank you for choosing Alta Analytical Perspectives as part of your analytical support team.


Sincerely,



Amy J. Boehm  
Project Manager

Sample ID: IOB1014-01

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072	Date Received:	01 Mar 05
Project ID:	General Analytical HRMS	Weight/Volume:	1.02 L	Sample ID:	P5072_2989_005	Date Extracted:	01 Mar 05
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989	Date Analyzed:	03 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries		
					ES	CS	
2,3,7,8-TCDD	ND	1.71			72.2	83.4	
1,2,3,7,8-PeCDD	ND	1.73			71.9	88.3	
1,2,3,4,7,8-HxCDD	ND	3.89			72.2	87.2	
1,2,3,6,7,8-HxCDD	ND	3.8			81.1	87.2	
1,2,3,7,8,9-HxCDD	ND	4.66			73.6	87.2	
1,2,3,4,6,7,8-HpCDD	12.2	10.1		J	59	71	
OCDD	157	9.39			44.9	71	
2,3,7,8-TCDF	ND	2.08			74.1	83.4	
1,2,3,7,8-PeCDF	ND	1.84			76.1	85.5	
2,3,4,7,8-PeCDF	ND	1.89			69.3	85.5	
1,2,3,4,7,8-HxCDF	ND	1.36			63.6	87.2	
1,2,3,6,7,8-HxCDF	ND	1.31			70.6	87.2	
2,3,4,6,7,8-HxCDF	ND	1.65			67.1	87.2	
1,2,3,7,8,9-HxCDF	ND	2.41			62.6	87.2	
1,2,3,4,6,7,8-HpCDF	4.04	1.47		J	52.8	71	
1,2,3,4,7,8,9-HpCDF	ND	2.53			49.4	71	
OCDF	ND	9.53			43.5	71	
<b>Totals &amp; TEQs</b>							
TCDDs	ND	1.71			 <b>ALTA ANALYTICAL PERSPECTIVES</b> 2714 Exchange Drive Wilmington North Carolina 28405 USA Tel: 910 794-1613 Fax: 910 794-3919 e-mail: yt@ultratrace.com web: www.ultratrace.com		
PeCDDs	ND	1.73					
HxCDDs	ND	4.12					
HpCDDs	29.6	10.1					
TCDFs	ND	2.08					
PeCDFs	0.76	1.86					
HxCDFs	ND	1.64					
HpCDFs	10.2	1.94					
<b>Total PCDD/Fs</b>	<b>197</b>		<b>197</b>				


Checkcode: 5527

AAP 2005 Rev. B

Reviewer *[Signature]*  
Date 03 Mar 05

Sample ID: 0\_2989\_MB001

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072	Date Received:	n/a
Project ID:	General Analytical HRMS	Weight/Volume:	1.00 L	Sample ID:	0_2989_MB001	Date Extracted:	01 Mar 05
Date Collected:	n/a	pH	6	QC Batch No.:	2989	Date Analyzed:	02 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries		
					ES	CS	
2,3,7,8-TCDD	ND	1.65			75.2	80.6	
1,2,3,7,8-PeCDD	ND	1.55			70.5	83.7	
1,2,3,4,7,8-HxCDD	ND	2.57			80	86.4	
1,2,3,6,7,8-HxCDD	ND	2.4			91.5	86.4	
1,2,3,7,8,9-HxCDD	ND	2.8			86	86.4	
1,2,3,4,6,7,8-HpCDD	ND	1.98			74.9	69.8	
OCDD	ND	4.78			67.4	69.8	
2,3,7,8-TCDF	ND	1.04			81.1	80.6	
1,2,3,7,8-PeCDF	ND	1.91			85.1	82.9	
2,3,4,7,8-PeCDF	ND	1.98			76.6	82.9	
1,2,3,4,7,8-HxCDF	ND	0.812			79.4	86.4	
1,2,3,6,7,8-HxCDF	ND	0.764			86.7	86.4	
2,3,4,6,7,8-HxCDF	ND	1.01			77.8	86.4	
1,2,3,7,8,9-HxCDF	ND	1.42			75.6	86.4	
1,2,3,4,6,7,8-HpCDF	ND	1.78			64.7	69.8	
1,2,3,4,7,8,9-HpCDF	ND	2.67			65.1	69.8	
OCDF	ND	11.1			67.2	69.8	
<b>Totals &amp; TEQs</b>							
TCDDs	ND	1.65			 <b>ALTA ANALYTICAL PERSPECTIVES</b> 2714 Exchange Drive Wilmington North Carolina 28405 USA Tel: 910 794-1613 Fax: 910 794-3919 e-mail: yt@ultratrace.com web: www.ultratrace.com		
PeCDDs	ND	1.55					
HxCDDs	ND	2.59					
HpCDDs	ND	1.98					
TCDFs	ND	1.04					
PeCDFs	ND	1.94					
HxCDFs	ND	0.974					
HpCDFs	ND	2.19					
<b>Total PCDD/Fs</b>	<b>0</b>		<b>0</b>				

Checkcode: 3385

AAP 2005 Rev. B

Reviewer *[Signature]*  
 Date 02 Mar 05

P5072 - TEQ  
 Project ID: General Analytical HRMS

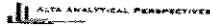
Sample Summary Part 1		Method 1613												
Analyte	0_2988_MB 001	IOB1001-01	IOB0993-01	IOB0996-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0980-01	IOB1006-01	IOB1002-01	IOB0992-01	IOB1004-01	IOB0998-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
1,2,3,7,8-TCDF	(1.65)	(2.20)	(2.06)	(2.02)	(1.34)	(1.71)	(2.29)	(2.58)	(1.61)	(1.44)	(2.87)	(1.79)	(3.24)	(3.01)
1,2,3,7,8-PeCDD	(1.85)	(1.85)	(1.79)	(2.89)	(2.11)	(1.73)	(3.2)	(1.89)	(1.82)	(2.04)	(3.14)	(2.92)	(2.18)	(5.38)
1,2,3,6,7,8-HxCDD	(2.37)	(3.45)	(2.55)	(2.71)	(2.48)	(3.89)	(4.19)	(2.42)	3.57	(2.74)	(5.91)	(12.2)	(4.91)	(4.94)
1,2,3,7,8,9-HxCDD	(2.4)	(3.21)	(2.37)	(2.7)	(2.34)	(3.8)	(4.11)	(2.41)	8.47	(2.88)	(5.98)	(12)	(4.84)	(4.7)
1,2,3,7,8,9-HxCDF	(2.6)	(3.83)	(3.13)	(3.33)	(2.62)	(4.66)	(4.95)	(2.68)	5.27	(2.13)	(7.12)	(13.8)	(5.54)	(5.81)
1,2,3,4,6,7,8-HxCDD	(1.98)	75.4	31.5	10	(9.38)	12.2	(5.34)	49.8	207	12.1	(10.8)	20.8	(3.19)	(6.5)
OCDD	(4.78)	883	297	134	70.4	157	88.1	471	2120	183	70.2	213	50.3	30
2,3,7,8-TCDF	(1.04)	(1.24)	(1.64)	(1.85)	(0.995)	(2.08)	(1.37)	(1.84)	(1.48)	(1.03)	(2.55)	(2.71)	(2.39)	(2.81)
1,2,3,7,8-PeCDF	(1.91)	(1.79)	(2.75)	(1.44)	(2.33)	(1.84)	(3.71)	(1.98)	(2.35)	(2.11)	(4.02)	(2.52)	(2.98)	(2.46)
1,2,3,4,7,8-HxCDF	(1.98)	(1.88)	(2.8)	(1.48)	(2.42)	(1.89)	(3.89)	(2.03)	(2.31)	(1.95)	(3.97)	(2.53)	(3)	(2.49)
1,2,3,6,7,8-HxCDF	(0.512)	(0.867)	(0.9)	(0.785)	(0.943)	(1.36)	(1.38)	(1.47)	(0.97)	(0.615)	(1.58)	(6.68)	(1.62)	(1.13)
2,3,4,6,7,8-HxCDF	(0.754)	(0.843)	(0.827)	(0.706)	(0.871)	(1.31)	(1.3)	(1.51)	(0.898)	(0.78)	(1.42)	(8.24)	(1.53)	(1.19)
1,2,3,7,8,9-HxCDF	(1.21)	(1.12)	(1.04)	(0.933)	(1.12)	(1.68)	(1.73)	(1.9)	(1.1)	(0.99)	(1.91)	(8.23)	(2.03)	(1.48)
1,2,3,4,6,7,8-HxCDF	(1.42)	(1.67)	(1.58)	(1.47)	(1.73)	(2.41)	(2.59)	(2.85)	(1.7)	(1.51)	(2.81)	(12.4)	(2.74)	(2.05)
1,2,3,4,7,8,9-HxCDF	(1.75)	16.8	(1.89)	(4.57)	(1.9)	4.04	(3.26)	10.8	27.2	(1.89)	(4.35)	(3.42)	(2.05)	(3.28)
OCDF	(2.97)	(3.48)	(2.95)	(7.47)	(3.25)	(2.53)	(4.58)	(2.58)	(4.43)	(2.89)	(7.3)	(5.49)	(3.04)	(4.88)
	(11.1)	155	(11)	(22.4)	(12.4)	(9.53)	(14.9)	34.9	87.1	(10.1)	(7.69)	(20.8)	(13.1)	(8.89)
Checkcode	3385	4361	4681	4965	5239	5527	5797	0067	0335	0612	3829	4355	4622	4900

( ) = DL  
 [ ] = EMPC

Reviewer: *[Signature]*  
 Date: 1/22/05

**P5072 - Totals**  
Project ID: General Analytical HRMS

**Sample Summary**  
Part 2



**Method 1613**

Analyte	0_2989_MB001	IOB1001-01	IOB0993-01	IOB0996-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0980-01	IOB1008-01	IOB1002-01	IOB0992-01	IOB1004-01	IOB0988-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
<b>Totals</b>														
TCDDs	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
PeCDDs	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
HxCDDs	0	7.38	4.44	0	0	0	0	0	39.8	0	0	0	0	0
HpCDDs	0	153	65.1	25.2	9.48	29.6	0	101	415	12.1	0	43.1	12.2	0
OCDD	0	883	267	134	70.4	157	56.1	471	2120	183	70.2	213	50.3	50
TCDFs	0	0	0	0	0	0	0	0	6.53	0	0	0	0	0
PeCDFs	0	0	0.858	0	0	0.76	0.256	0	2.57	0	0.456	0	0	0
HxCDFs	0	2.68	0	0	0	0	0	4.13	32.8	0	0	0	0	0
HpCDFs	0	92.9	0	0	0	10.2	0	36.6	98.7	5.96	0	0	0	0
OCDF	0	155	0	0	0	0	0	34.9	67.1	0	0	0	0	0
<b>Total PCDD/Fs (ND=0; EMPC=0)</b>	<b>0.00</b>	<b>1,290</b>	<b>338</b>	<b>159</b>	<b>79.9</b>	<b>197</b>	<b>56.4</b>	<b>648</b>	<b>2,800</b>	<b>182</b>	<b>70.7</b>	<b>256</b>	<b>62.6</b>	<b>50</b>
<b>Total PCDD/Fs (ND=0; EMPC=EMPC)</b>	<b>0.00</b>	<b>1,300</b>	<b>342</b>	<b>160</b>	<b>79.9</b>	<b>197</b>	<b>56.4</b>	<b>663</b>	<b>2,830</b>	<b>193</b>	<b>70.7</b>	<b>256</b>	<b>62.6</b>	<b>50</b>
<b>Total PCDD/Fs (2376-K; ND=DL; EMPC=EMPC)</b>	<b>42.2</b>	<b>1,330</b>	<b>381</b>	<b>215</b>	<b>128</b>	<b>238</b>	<b>119</b>	<b>691</b>	<b>2,840</b>	<b>229</b>	<b>144</b>	<b>370</b>	<b>121</b>	<b>114</b>
<b>Total 2378s (ND=0; EMPC=0)</b>	<b>0.00</b>	<b>1,130</b>	<b>299</b>	<b>144</b>	<b>70.4</b>	<b>173</b>	<b>56.1</b>	<b>567</b>	<b>2,440</b>	<b>176</b>	<b>70.2</b>	<b>234</b>	<b>50.3</b>	<b>50</b>
<b>Total 2378s (ND=0.5; EMPC=0)</b>	<b>21.1</b>	<b>1,140</b>	<b>319</b>	<b>172</b>	<b>94.6</b>	<b>193</b>	<b>87.5</b>	<b>581</b>	<b>2,450</b>	<b>193</b>	<b>107</b>	<b>291</b>	<b>79.5</b>	<b>82</b>
<b>Total 2378s (ND=1; EMPC=0)</b>	<b>42.2</b>	<b>1,160</b>	<b>338</b>	<b>200</b>	<b>119</b>	<b>214</b>	<b>119</b>	<b>595</b>	<b>2,450</b>	<b>211</b>	<b>144</b>	<b>348</b>	<b>109</b>	<b>114</b>
<b>Total 2378s (ND=0; EMPC=1)</b>	<b>0.00</b>	<b>1,130</b>	<b>299</b>	<b>144</b>	<b>70.4</b>	<b>173</b>	<b>56.1</b>	<b>567</b>	<b>2,440</b>	<b>176</b>	<b>70.2</b>	<b>234</b>	<b>50.3</b>	<b>50</b>
<b>Total 2378s (ND=0.5; EMPC=1)</b>	<b>21.1</b>	<b>1,140</b>	<b>319</b>	<b>172</b>	<b>94.6</b>	<b>193</b>	<b>87.5</b>	<b>581</b>	<b>2,450</b>	<b>193</b>	<b>107</b>	<b>291</b>	<b>79.5</b>	<b>82</b>
<b>Total 2378s (ND=1; EMPC=1)</b>	<b>42.2</b>	<b>1,160</b>	<b>338</b>	<b>200</b>	<b>119</b>	<b>214</b>	<b>119</b>	<b>595</b>	<b>2,450</b>	<b>211</b>	<b>144</b>	<b>348</b>	<b>109</b>	<b>114</b>
<b>Checkouts</b>	<b>3385</b>	<b>4361</b>	<b>4681</b>	<b>4965</b>	<b>5239</b>	<b>5527</b>	<b>5797</b>	<b>0067</b>	<b>0335</b>	<b>0612</b>	<b>3929</b>	<b>4355</b>	<b>4622</b>	<b>4900</b>

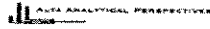
Total 2378s = Sum of 17 2376-substituted PCDD/PCDF congeners (SARA 313)

{ } = DL  
[ ] = EMPC

Reviewer: *AS*  
Date: *05/20/03*

P5072 - Others  
 Project ID: General Analytical HRMS

Sample Summary  
 Part 3



Method 1613

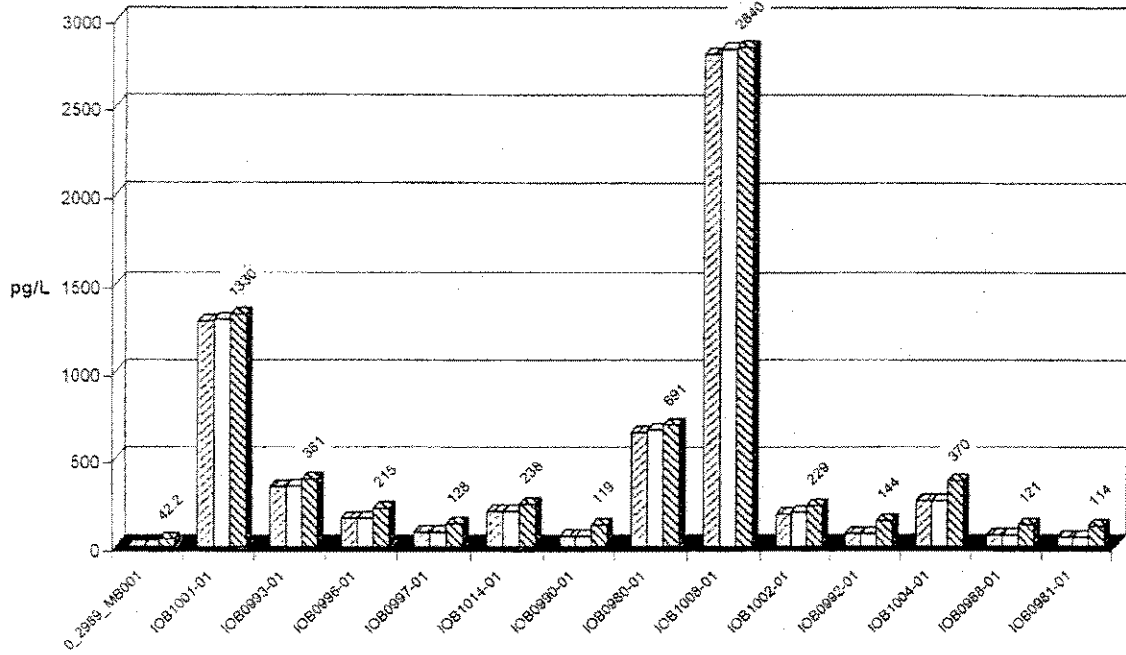
Analyte	0_2889_MB001	IOB1001-01	IOB0993-01	IOB0996-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0990-01	IOB1008-01	IOB1002-01	IOB0992-01	IOB1004-01	IOB0998-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Other PCDD/Fs (ND=0, EMPC=0)														
Other TCDD	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
Other PeCDD	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
Other HxCDD	0	7.38	4.44	0	0	0	0	0	22.5	0	0	0	0	0
Other HpCDD	0	77.2	33.6	15.2	9.46	17.4	0	51.5	208	0	0	22.3	12.2	0
Other TCDF	0	0	0	0	0	0	0	0	6.53	0	0	0	0	0
Other PeCDF	0	0	0.858	0	0	0.76	0.256	0	2.57	0	0.458	0	0	0
Other HxCDF	0	2.88	0	0	0	0	0	4.13	32.8	0	0	0	0	0
Other HpCDF	0	76.1	0	0	0	6.16	0	25.7	71.8	5.96	0	0	0	0
Other PCDD/Fs (ND=0, EMPC=EMPC)														
Other TCDD	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
Other PeCDD	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
Other HxCDD	0	7.38	8.57	0	0	0	0	8.86	47.7	0	0	0	0	0
Other HpCDD	0	77.2	33.6	15.2	9.46	17.4	0	51.5	208	11.3	0	22.3	12.2	0
Other TCDF	0	0	0	0	0	0	0	2.21	6.53	0	0	0	0	0
Other PeCDF	0	0	0.858	0.213	0	0.76	0.256	0.368	2.57	0	0.458	0	0	0
Other HxCDF	0	9.88	0	0	0	0	0	7.22	32.8	0	0	0	0	0
Other HpCDF	0	76.1	0	0	0	6.16	0	25.7	71.8	5.96	0	0	0	0
Checksum	3385	4361	4681	4986	5239	5527	5797	0067	0335	0612	3929	4355	4622	4900

() = DL  
 ( ) = EMPC

Reviewer: *OSMAK*  
 Date: *03/24/03*

**Totals**  
 Project ID: General Analytical HRMS  
 P5072

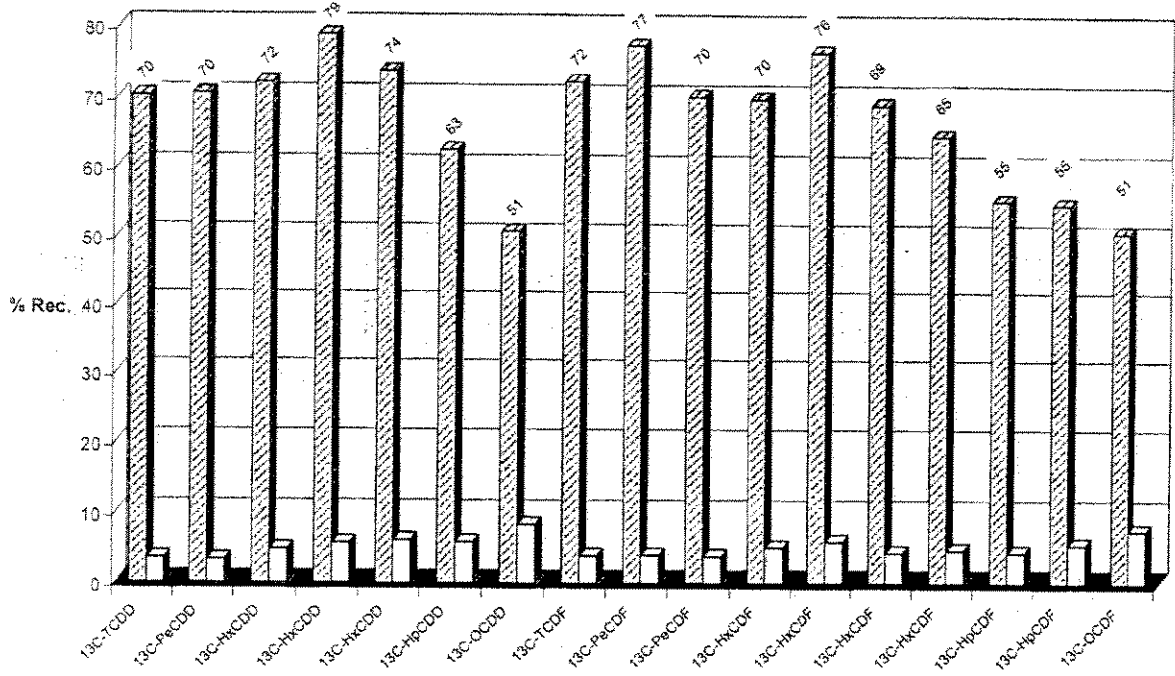
▨ Total PCDD/Fs (ND=0; EMPC=0)  
 □ Total PCDD/Fs (ND=0; EMPC=EMPC)  
 ▩ Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)





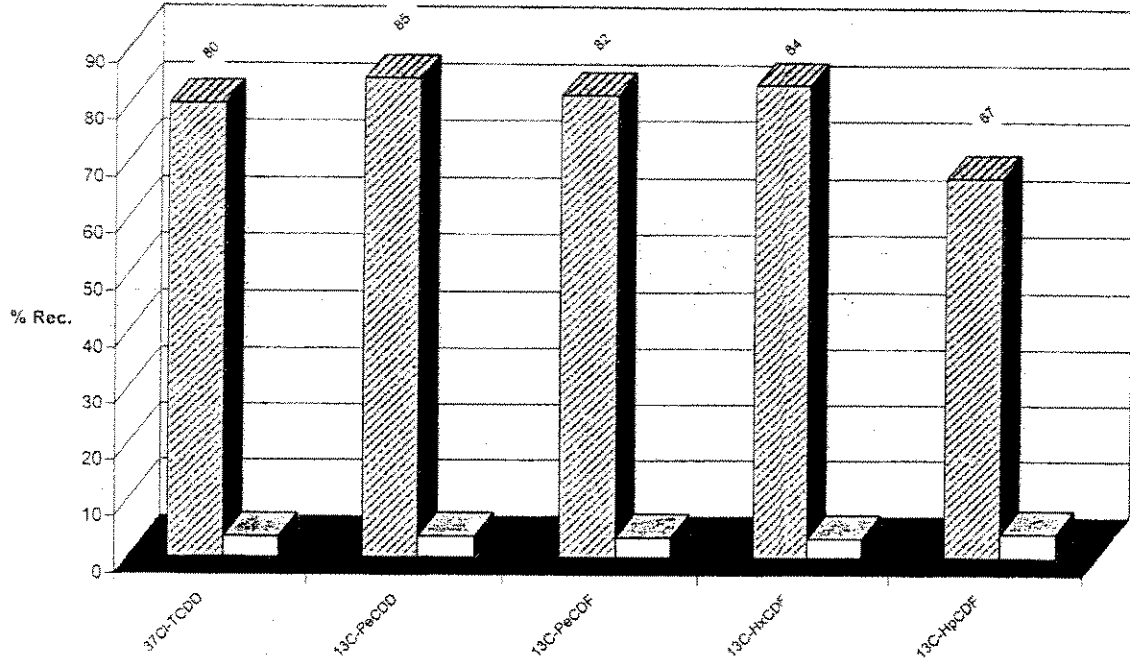
Mean Recoveries of Extraction Standards (N=14)  
Project ID: General Analytical HRMS  
P5072

Mean    Std. Dev.



Mean Recoveries of Clean-Up Standards (N=14)  
Project ID: General Analytical HRMS  
P5072

Mean    Std. Dev.





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IOB1014

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Pace Analytical, MN- SUB 1700 Elm Street, Ste 200 Minneapolis, MN 55414 Phone: (612) 607-1700 Fax: (612) 607-6444 <div style="text-align: right; font-size: 1.5em; font-family: cursive;">107694</div>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1014-01 Water      Sampled: 02/11/05 12:20</b>		
1613-Dioxin-HR	02/18/05 12:20	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	03/11/05 12:20	Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		001
1 L Amber (IOB1014-01I)		
1 L Amber (IOB1014-01J)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
				Samples Received On Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
				Samples Received at (temp):	<u>3</u>

	2-14-05	1700	Bright Future	2-15-05	9:00
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



www.pacelabs.com

## Section B

Required Client Information:

Report To: **SCOTT UNZE**  
 Copy To: **SCOTT UNZE**  
 Invoice To: **↓**  
 P.O. **↓**  
 Project Name: **Mpls., MN 55414**  
 Project Number: **55414**

## Section A

Required Client Information:

Company: **PACE**  
 Address: **1700 Elm St.**  
 Suite: **200**  
 Phone: **Mpls., MN 55414**  
 Fax: **55414**

## Section C

Quote Reference: **814593**

To Be Completed by Pace Analytical and Client  
 Project Manager: **SCOTT UNZE**  
 Project #: **SCOTT UNZE**  
 Profile #: **SCOTT UNZE**  
 Requested Analytes: **1613: PDD/DF**  
**15" Floor Leads**

Client Information (Check quota/contract):

Requested Due Date: **3 Day**  
 \* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.  
 Turn Around Time (TAT) in calendar days.

## Section D

Required Client Information:

**SAMPLE ID**  
 One character per box.  
 (A-Z, 0-9, /, -)  
 Sample IDs MUST BE UNIQUE

Valid Matrix Codes  
 MATRIX CODE  
 WATER WT  
 SOIL SL  
 OIL OL  
 WIPE WP  
 AIR AR  
 TISSUE TS  
 OTHER OT

## Preservatives

Unpreserved  
 H<sub>2</sub>SO<sub>4</sub>  
 HNO<sub>3</sub>  
 HCl  
 NaOH  
 Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>  
 Methanol  
 Other

Containers  
 # Containers Collected  
 TIME Collected  
 DATE Collected  
 mm / dd / yy  
 hr: mm a/p

ITEM #	SAMPLE ID	MATRIX CODE	DATE COLLECTED	TIME COLLECTED	Containers	Preservatives	Remarks / Lab ID
1	I0B1001-01	WT	02/10/05	15:30	1X		
2	I0B0993-01			10:50			
3	I0B0996-01			12:15			
4	I0B0997-01			15:16			
5	I0B1014-01			12:20			
6	I0B0990-01			08:55			
7	I0B0980-01			10:56			
8	I0B1008-01			13:32			
9	I0B1002-01			14:25			
10	I0B0992-01			10:15			
11	I0B1004-01			16:00			
12	I0B0988-01			11:44	4X		

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
<i>Scott Unze / Pace</i>	2/10/05	15:20	<i>Barbara...</i>	2-1-05	10:55

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER:  
 SIGNATURE of SAMPLER:  
 DATE Signed: (MM / DD / YY)

Sample 10B1002-01 & 10B0988-01 are both dated 02/10/05

Scott.Unze@pacelabs.com

Email to:

SAMPLE NOTES

Temp in °C: **3,1**

Received on Ice: **Y/N**

Sealed Cooler: **Y/N**

Samples Intact: **Y/N**

Additional Comments:

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: **2** of **2**  
814592  
Section C

Section B  
Required Client Information:  
Report To: Scott Unze  
Copy To:

Section A  
Required Client Information:  
Company: Pace  
Address: 1700 Elm Street  
Suite 200  
Appls. 7 NW 554147  
Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_

To Be Completed by Pace Analytical and Client  
Queue Reference:  
Project Manager: SCOTT UNZE  
Project #: \_\_\_\_\_  
Profile #: \_\_\_\_\_  
Requested Analysis:

Client Information (Check quote/contract):  
Requested Due Date: \_\_\_\_\_  
TAT: 3 Day  
\* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.  
Turn Around Time (TAT) in calendar days.

Requested Analysis:  
LEAD, PCDD/DF  
(7' WAS LEAD)  
(7' WAS AIR TEL)

DATE COLLECTED: mm/dd/yy  
09/21/05  
TIME COLLECTED: hr:mn:ap  
11X  
# Containers: \_\_\_\_\_  
Preservatives: \_\_\_\_\_  
 Unpreserved  
 HCl  
 HNO<sub>3</sub>  
 H<sub>2</sub>SO<sub>4</sub>  
 NaOH  
 NaNO<sub>2</sub>  
 Methanol  
 Other

Section D  
Required Client Information:  
Valid Matrix Codes:  WATER  SOIL  AIR  TISSUE  OTHER  
Matrix Code: \_\_\_\_\_  
Valid Matrix Codes:  WT  SL  OL  WP  AR  TS  OT  
SAMPLE ID  
One character per box.  
(A-Z, 0-9 / -)  
Sample IDs MUST BE UNIQUE  
1 10 B 0 9 8 1 - 0 1

ITEM #	DATE COLLECTED	TIME COLLECTED	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	REMARKS / Lab ID
1	09/21/05	11:00	Scott Unze / Pace	09/21/05	11:00	Scott Unze / Pace	09/21/05	11:00	LEAD, PCDD/DF
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

SITE LOCATION  
 NC  SC  GA  
 Other

REGULATORY AGENCY  
 NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  Other

SAMPLE NOTES  
Email to:  
Scott.Unze@pacelabs.com

SAMPLER NAME AND SIGNATURE  
PRINT Name of SAMPLER:  
SIGNATURE OF SAMPLER:  
DATE Signed: (MM/DD/YY)

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

February 22, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
*Attention:* Michele Harper


*Project Name:* IOB1014  
*Date Received:* 02/14/05

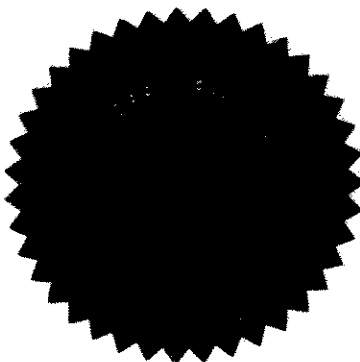
*Truesdail Project:* 939705

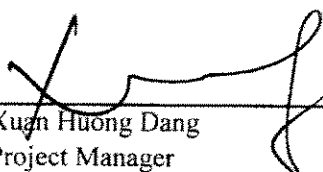
## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
939705-1	IOB1014-01	Water	02/11/05	12:20	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer



  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOB1014  
**Date Received:** 02/14/05

**Truesdail Project:** 939705

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.


**Analysis** The analysis was performed as requested on the chain-of-custody.

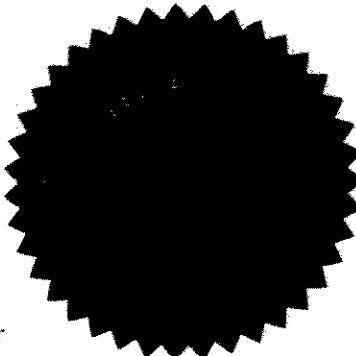
**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer



  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB1014  
**P.O. Number:** IOB1014  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 939705  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl	
		Hydrazine	ND	Hydrazine	ND
704765-MB	Method Blank	ND	ND	ND	ND
939705	IOB1014-01	ND	ND	ND	ND
MDL		1.2	0.27	0.39	
PQL		5.0	5.0	1.0	

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



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 (714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical  
 17461 Derian Ave.  
 Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOB1014  
**P.O. Number:** IOB1014  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2968; Analysis: 365  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704765  
**Project Lab. No.:** 939705  
**Spiked Sample ID:** 939702  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	24.5	98.1	85-115	PASS
u-Dimethyl Hydrazine	25.0	25.4	102	85-115	PASS
Hydrazine	5.0	4.87	97.4	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	50.0	49.9	100	85-115	PASS
u-Dimethyl Hydrazine	50.0	46.8	93.5	85-115	PASS
Hydrazine	10.0	10.9	109	85-115	PASS

### Quality Control/Quality Assurance Spikes Report MS/MSD

Parameter	Recovered Concentration			Percent Recovery (%)			Control Limits			
	ug/L	LCS	LCSD	MB	LCS	LCSD	%D	LCS	LCSD	%D
Monomethyl Hydrazine	50.0	51.2	50.8	0.0	102	102	0.68%	PASS	20	70-130
u-Dimethyl Hydrazine	50.0	47.3	47.3	0.0	94.6	94.6	0.01%	PASS	20	70-130
Hydrazine	10.0	11.5	11.6	0.0	115	116	1.07%	PASS	20	70-130

Parameter	Spiked Conc.			Recovered Concentration			Percent Recovery (%)			MS/MSD			Accuracy							
	ug/L	MS	MSD	MS	MSD	MSD	MS	MSD	%D	MS	MSD	%D	MSD	%D	% Rec.					
Monomethyl Hydrazine	50.0	37.4	35.3	0.0	74.8	70.6	5.67%	PASS	20	0-150	50.0	74.8	35.3	0.0	70.6	5.67%	PASS	20	0-150	
u-Dimethyl Hydrazine	50.0	44.3	44.7	0.0	88.6	89.3	0.82%	PASS	20	0-150	50.0	44.3	44.7	0.0	88.6	89.3	0.82%	PASS	20	0-150
Hydrazine	10.0	7.61	7.27	0.0	76.1	72.7	4.52%	PASS	20	0-150	10.0	7.61	7.27	0.0	72.7	4.52%	PASS	20	0-150	

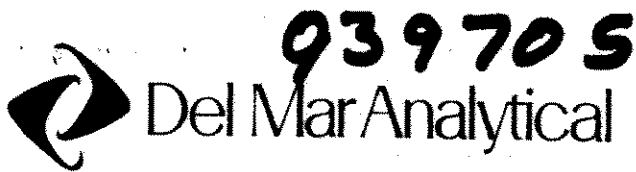
ICV: Initial Calibration Verification  
 QCS: Quality Control Standard  
 LCS: Laboratory Control Spike  
 MS: Matrix Spike  
 %D: Percent Difference  
 Flag: "Pass" if within Control Limits, otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
 Environmental Services

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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 5484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

**SUBCONTRACT ORDER - PROJECT # IOB1014**

<p><b>SENDING LABORATORY:</b>          Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Harper</p>	<p><b>RECEIVING LABORATORY:</b>          Truesdail Laboratories-SUB          14201 Franklin Avenue          Tustin, CA 92680          Phone: (714) 730-6239          Fax: (714) 730-6462</p> <p style="text-align: right;"> <i>LS 2/</i>  <i>14</i>  <i>Rec'd 02/14/05</i>  <i>s23c 939705</i> </p>
--	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOB1014-01 Water	Sampled: 02/11/05 12:20	
Hydrazine-OUT	02/14/05 12:20	Sub Truesdail for Monomethylhydrazine, 13267
Level 4 Data Package	03/11/05 12:20	
<b>Containers Supplied:</b>		
1 L Amber (IOB1014-01AR)		
1 L Amber (IOB1014-01AS)		

**ALERT!!**

**Level IV QC**

**For Sample Conditions  
See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Property: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By	Date	Time	Received By	Date	Time
<i>[Signature]</i>	2/14/05	7:20	<i>[Signature]</i>	2/14/05	7:21
Released By	Date	Time	Received By	Date	Time



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 939705

Date Delivered: 02/14/05 Time: 07:21 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  Yes  No  N/A  
Temperature (if yes)? 4°C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc...)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  Yes  No  N/A  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  Yes  No  N/A  
If not, notify the Project Manager.
14. Have Project due dates been checked and accepted?  Yes  No  N/A  
Turn Around Time (TAT):  RUSH  Std
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other \_\_\_\_\_
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: S. Strabur

ALERT!!  
Level III QC

# Internal Chain of Custody Logbook

Number: 939705  
 Name: Del Mar

Storage Temperature: 4°C

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				2/14/05	9:45		L. Stoburke	<i>[Signature]</i>
	Hydrazine	2/14/05	10:30 AM	2/14/05	11 AM	100ml	J. P. Fennell	<i>[Signature]</i>

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials





LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 02/11/05  
Received: 02/11/05  
Issued: 04/07/05 18:09

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 9 pages, are included and are an integral part of this report. This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOB1014-01	Outfall 011-grab	Water
IOB1014-02	Trip Blank	Water
IOB1014-03	Outfall 011-grab/filtered	Water
IOB1014-04	Outfall 011-grab/Substrate	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

17467Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical Perspectives

2714 Exchange Drive - Wilmington, NC 28405

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOB1014-01

Analysis Performed: EDD + Level 4  
 Samples: IOB1014-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chronic  
 Samples: IOB1014-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*





# Del Mar Analytical

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1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

### **Aquatic Testing Laboratories-SUB** *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003  
Analysis Performed: Bioassay-Acute 96hr  
Samples: IOB1014-01

### **Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044  
Method Performed: EPA 8260B  
Samples: IOB1014-01

### **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804  
Analysis Performed: Gross Alpha  
Samples: IOB1014-01  
Analysis Performed: Gross Beta  
Samples: IOB1014-01  
Analysis Performed: Level 3 Data Package  
Samples: IOB1014-01  
Analysis Performed: Radium, Combined  
Samples: IOB1014-01  
Analysis Performed: Strontium 90  
Samples: IOB1014-01  
Analysis Performed: Tritium  
Samples: IOB1014-01

### **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804  
Analysis Performed: EDD + Level 4  
Samples: IOB1014-03  
Analysis Performed: Gamma Scan  
Samples: IOB1014-04  
Analysis Performed: Gross Alpha  
Samples: IOB1014-03  
Analysis Performed: Gross Beta  
Samples: IOB1014-03  
Analysis Performed: Radium, Combined  
Samples: IOB1014-03  
Analysis Performed: Strontium 90  
Samples: IOB1014-03  
Analysis Performed: Tritium  
Samples: IOB1014-03

### **Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680  
Analysis Performed: Hydrazine  
Samples: IOB1014-01  
Analysis Performed: Level 4 Data Package  
Samples: IOB1014-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

CHAIN OF CUSTODY FORM

Version 5.8/12/04

Del Mar Analytical

Client Name/Address: MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES Annual Outfall 011 + 13267		Field readings: Temp = 58.3 pH = 6.8															
Project Manager: Bronwyn Kelly		Phone Number: (626) 568-6691		Comments															
Sampler: LINDA HAYS		Fax Number: (626) 568-6515		24 TAT															
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Fe, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V	Settleable Solids	VOCS 624 + xylenes + Freon 113, Freon 123A, Cyclohexane	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	CF, SO4, NO3+NO2-N, F, Perchlorate	Turbidity, TDS, TSS, Conductivity	Ammonia-N	Alpha BHC (608) + PP	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP
Outfall 011	W	Poly-1L	1	2/11/05 1220	HNO3	1A	X												
Outfall 0011-Dup	W	Poly-1L	1	2/11/05 1220	HNO3	1B	X												
Outfall 011	W	Poly-1L	1		None	2		X											
Outfall 011	W	VOAS	5		HCl	3A, 3B, 3C, 3D, 3E		X											
Outfall 011	W	1L Amber	2		None	4A, 4B			X										
Outfall 011	W	1L Amber	2		HCl	5A, 5B			X										
Outfall 011	W	Poly-500 ml	1		NaOH	6						X							
Outfall 011	W	Poly-1L	1		None	7							X						
Outfall 011	W	Poly-500 ml	2		None	8A, 8B								X					
Outfall 011	W	Poly-500 ml	2		None	9A, 9B													
Outfall 011	W	Poly-500 ml	2		None	10A, 10B													
Outfall 011	W	Poly-500 ml	1		H2SO4	11													
Outfall 011	W	1L Amber	2		None	12A, 12B													
Outfall 011	W	1L Amber	2		None	13A, 13B													
Outfall 011	W	1L Amber	2		None	14A, 14B, 14C													
Trip Blank	W	VOAS	3		HCl	14C			X										
Relinquished By Linda Hays	W			2/11/05 1700															
Relinquished By Linda Hays	W			2/11/05 1700															
Relinquished By Linda Hays	W			2/11/05 1700															
Relinquished By Linda Hays	W			2/11/05 1700															

Turn around Time (check)  
24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
Perchlorate Only 72 Hours \_\_\_\_\_  
Metals Only 72 Hours \_\_\_\_\_  
Sample Integrity: (Check) On Ice: \_\_\_\_\_  
Intact \_\_\_\_\_ 31

Received By: [Signature] Date/Time: 2/11/05 1700  
Received By: [Signature] Date/Time: 2/11/05 1700  
Received By: [Signature] Date/Time: 2/11/05 1700  
Received By: [Signature] Date/Time: 2/11/05 1700

10B1014  
Page 2 of 2

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 5.81/204

Client Name/Address:		Project:		ANALYSIS REQUIRED										Comments								
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Annual Outfall 011 +13267		Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	1,4 Dioxane	Total Organic Carbon	Total Residual Chlorine	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228	PCBs	TPH = all fuels, gas, diesel, and jet fuel; modified 80156 and 418.1	Monomethylhydrazine	Acute and Chronic toxicity	VOCs 624 +A+A+2CVE	(UNFILTERED) GROSS ALPHA (GROSS BETA) SR-90 Total Combined RA 226+228 TRITIUM (906.0)	Analyze for Total Combined RA-226&228 only if Gross Alpha > 15pCi/L	
Outfall 011	W	VOAS	3	2/11/05 12:20	HCl	15A, 15B, 15C	X															
Outfall 011	W	VOAS	2		HCl	16A, 16B					X											
Outfall 011	W	Poly-150 ml	1		None	17						X										
Outfall 011	W	Poly-1Gal VOAS	1		None	18A, 18C							X									
Outfall 011	W	1L Amber	2		None	19A, 19B							X									
Outfall 011	W	VOAS	3		HCl	20A, 20B, 20C, 20D, 20E, 20F, 20G								X								
Outfall 011	W	1L Amber	2		None	21A, 21B									X							
Outfall 011	W	1L Amber	2		None	22A, 22B																
Outfall 011	W	1 Gal	2		None	23A, 23B, 23C																
Outfall 011	W	VOAS	3		None	24A, 24B, 24C																
Trip Blank	W	VOAS	3		None	13267																
Outfall 011	W	VOAS	2	2/11/05 12:20	None	13267																
Outfall 011	W	VOAS	2	2/11/05 12:20	None	13267																

Turn around time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check) \_\_\_\_\_  
 Intact \_\_\_\_\_ On Ice: \_\_\_\_\_

Received By: [Signature] Date/Time: 2/11/05 17:00  
 Received By: [Signature] Date/Time: 2/11/05 20:30  
 Received By: [Signature] Date/Time: 2/11/05 20:30

\* ANALYZE FOR RA 226-228 ONLY IF GROSS ALPHA > 15pCi/L  
 TOTAL COMBINED  
 ANALYZE SUBSTRATE BY RADIOSPECTROSCOPY FOR CESIUM 137



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/ Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
  
Project: 13267 (Study1)/Outfall 011  
Sampled: 02/11/05  
Del Mar Analytical Number: IOB1014

Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), Eberline Services tested Gross alpha/Gross beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium-226 (Ra-226, EPA 903.1), Radium-228 (Ra-228, EPA 904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1), Alta Analytical Perspectives performed Method 1613 Dioxin, and Truesdail Laboratories performed the Hydrazines by EPA 8315 analysis for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	ALTA ID	TRUESDAIL ID
Outfall 011-grab	IOB1014-01	A-05021210-001/002	R502135-8264	P5072 2989 005	939705-1
Outfall 011-grab/filtered	IOB1014-03	NA	R503157-8347	NA	NA
Outfall 011-grab/substrate	IOB1014-04	NA	R503158-8348	NA	NA

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022 at extension 215.

Sincerely yours,  
DEL MAR ANALYTICAL

Michele Harper  
Project Manager



# EBERLINE

SERVICES

March 8, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1014  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502135-8264

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 15, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0); results for those analyses were reported on March 8. This report contains the analytical results for Ra-226 (EPA903.1) and Ra-228 (EPA904.0). The Ra-226 QC samples are 8368-005, 006, and 007, and the Ra-228 QC samples are 8263-002, 003, and 004. The QC LCS, blank analyses, and sample duplicates for both the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MK'Mnjv*

*Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice*

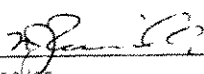
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS02135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1014-01	8264-001	02/11/05	03/01/05	GrossAlpha	0.895 ± 0.76	pCi/L	1.05
			03/01/05	Gross Beta	2.50 ± 1.3	pCi/L	1.90
			04/22/05	Ra228	0.375 ± 0.24	pCi/L	0.612
			03/02/05	H3	97.4 ± 140	pCi/L	237
			05/04/05	Ra226	0.034 ± 0.022	pCi/L	0.034
			02/25/05	Sr90	-0.216 ± 0.23	pCi/L	0.519

Certified by   
Report Date 05/10/05  
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8261-002	GrossAlpha	8.92 ± 1.1	pCi/Smpl	11.2	0.403	80% recovery
		Gross Beta	10.6 ± 0.77	pCi/Smpl	12.1	0.556	88% recovery
		H3	281 ± 24	pCi/Smpl	259	23.4	108% recovery
		Sr90	12.0 ± 0.59	pCi/Smpl	11.1	0.238	108% recovery
<u>BLANK</u>							
	8261-003	GrossAlpha	-0.032 ± 0.15	pCi/Smpl	NA	0.374	<MDA
		Gross Beta	-0.073 ± 0.30	pCi/Smpl	NA	0.554	<MDA
		H3	13.6 ± 15	pCi/Smpl	NA	23.9	<MDA
		Sr90	-0.091 ± 0.10	pCi/Smpl	NA	0.234	<MDA
<u>LCS</u>							
	8263-002	Ra228	12.7 ± 0.80	pCi/Smpl	10.2	1.07	125% recovery
<u>BLANK</u>							
	8263-003	Ra228	-0.465 ± 0.43	pCi/Smpl	NA	1.19	<MDA
<u>LCS</u>							
	8368-005	GrossAlpha	13.0 ± 1.4	pCi/Smpl	11.2	0.420	116% recovery
		Gross Beta	12.4 ± 0.85	pCi/Smpl	12.1	0.581	102% recovery
		Ra226	5.45 ± 0.18	pCi/Smpl	5.59	0.056	97% recovery
<u>BLANK</u>							
	8368-006	GrossAlpha	-0.051 ± 0.14	pCi/Smpl	NA	0.355	<MDA
		Gross Beta	-0.190 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		Ra226	-0.014 ± 0.011	pCi/Smpl	NA	0.021	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-004	GrossAlpha	3.40 ± 1.4	0.926
	Gross Beta	6.02 ± 1.4	1.80
	H3	393 ± 160	242
	Sr90	-0.186 ± 0.19	0.431
8263-004	Ra228	0.245 ± 0.27	0.716
8368-007	GrossAlpha	5.26 ± 5.8	0.58
	Gross Beta	11.2 ± 7.5	11.8

<u>ORIGINALS</u>						
Sample ID	Nuclide	Results ± 2σ	MDA	RPD (Tot)	3σ	Eval
8261-001	GrossAlpha	1.64 ± 1.0	0.936	70	112	satis.
	Gross Beta	5.18 ± 1.3	1.80	15	60	satis.
	H3	71.9 ± 150	246	138	144	satis.
	Sr90	-0.077 ± 0.25	0.499	-	0	satis.
8263-001	Ra228	0.143 ± 0.31	0.787	-	0	satis.
8368-001	GrossAlpha	8.78 ± 6.2	7.52	50	187	satis.
	Gross Beta	16.6 ± 7.3	10.8	39	118	satis.

Certified by *[Signature]*  
 Report Date 05/10/05  
 Page 2

Eberline Services

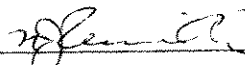
QC RESULTS

SDG <u>R254</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

DUPLICATES				ORIGINALS				
Sample ID	Nuclide	Results + 2 $\sigma$	MDA	Sample ID	Results + 2 $\sigma$	MDA	RPD (Tot)	Eval
							3 $\sigma$	
							0 satis.	

SPIKED SAMPLE				ORIGINAL SAMPLE				
Sample ID	Nuclide	Results + 2 $\sigma$	MDA	Sample ID	Results + 2 $\sigma$	MDA	Added	%Recv
8261-005	GrossAlpha	81.8 ± 5.3	1.04	8261-001	1.64 ± 1.0	0.936	76.6	105
	Gross Beta	82.0 ± 3.7	1.81		5.18 ± 1.3	1.80	73.9	104
	H3	17800 ± 520	243		71.9 ± 150	246	18900	94
8368-008	GrossAlpha	1560 ± 120	21.4	8368-002	26.5 ± 18	22.4	1530	100
	Gross Beta	1490 ± 72	35.5		50.6 ± 24	36.5	1480	97

Certified by   
 Report Date 05/10/05  
 Page 3





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IOB1014

**SENDING LABORATORY:**

Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**

Eberline Services  
 2030 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1014-01 Water      Sampled: 02/11/05 12:20</b>		
Gross Alpha-O	02/11/06 12:20	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 12:20	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Level 3 Data Package - Out	03/11/05 12:20	**LEVEL IV QC, ACCESS 7 EDD**
Radium, Combined-O	02/11/06 12:20	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 12:20	905.0
Tritium-O	02/11/06 12:20	906

**Containers Supplied:**

1 gal Poly (IOB1014-01AF) *w/ HNO<sub>3</sub>*  
 40 ml Voa Vial (IOB1014-01AG)  
 40 ml Voa Vial (IOB1014-01AH)

*Labels on bottles switched.*

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

*[Signature]*
*2-14-05*
*1700*
*Z/L*
*2/15/05*
*10:00*

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar City: Irvine State: CA

Date/Time received: 2/15/05 10:00 CoC No. I0B1014

Sample: I0B1014-01AF

Container I.D. No. Blue Cooley AP-5100 Requested TAT (Days): 2/ P.D. Received Yes  No

**INSPECTION**

1. Custody seals on shipping container intact? Yes  No  N/A

2. Custody seals on shipping container dated & signed? Yes  No  N/A

3. Custody seals on sample containers intact? Yes  No  N/A

4. Custody seals on sample containers dated & signed? Yes  No  N/A

5. Packing material is: Wet  Dry

6. Number of samples in shipping container: 1 Sample Matrix: Water

7. Number of containers per sample: 3 (Or see CoC 1)

8. Samples are in correct container Yes  No

9. Paperwork agrees with samples? Yes  No

10. Samples have: Tape  Hazard labels  Rad labels  Appropriate sample labels

11. Samples are: in good condition  Leaking  Broken Container  Missing

12. Samples are: Preserved  Not preserved  pH < 2 Preservative HNO3

13. Describe any anomalies: Labels on samples I0B1014-01 AF and I0B1014-01AH are switched. 1 gallon poly bottle shows I0B1014-01AH and 40ml vial shows I0B1014-01AF

14. Was P.M. notified of any anomalies? Yes  No  Date: 2/15/05

15. Inspected by: Z/ks Date: 2/15/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



# EBERLINE

SERVICES

June 21, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1014  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R505129-8347

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 22, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0); results for those analyses were reported on May 4. This report contains the analytical results for Ra-226 (EPA903.1) and Ra-228 (EPA904.0). The QC LCS, blank analyses, duplicates analysis (ra-226 only) result for both the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. The Ra-226 matrix spike analysis recovery was 57%. Analyses that involve the yielding of an analytical tracer or carrier, such Ra-228, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/mjv

Enclosure: Report  
Invoice

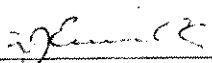
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8347</u> Work Order <u>R503157-01</u> Received Date <u>03/22/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB1014</u> Matrix <u>WATER</u>
--	---

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1014-03	8347-001	02/11/05	04/02/05	GrossAlpha	0.681 ± 0.61	pCi/L	0.811
			04/02/05	Gross Beta	1.33 ± 1.1	pCi/L	1.75
			06/08/05	Ra-228	0.368 ± 0.18	pCi/L	0.423
			04/07/05	Tritium	-80.6 ± 97	pCi/L	169
			06/09/05	Ra-226	-0.133 ± 0.31	pCi/L	0.675
			04/05/05	Sr-90	0.004 ± 0.24	pCi/L	0.474

Certified by <u></u> Report Date <u>06/21/05</u> Page 1
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Eberline Services

QC RESULTS

SDG <u>8347</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503157-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8347-002	Ra-228	11.2 ± 0.63	pCi/Smpl	10.0	0.783	112% recovery
		Ra-226	5.95 ± 0.25	pCi/Smpl	5.58	0.078	107% recovery
<u>BLANK</u>							
	8347-003	Ra-228	0.017 ± 0.30	pCi/Smpl	NA	0.796	<MDA
		Ra-226	0.014 ± 0.039	pCi/Smpl	NA	0.069	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results + 2σ	MDA
8347-004	Ra-226	0.081 ± 0.44	0.814

<u>ORIGINALS</u>					
Sample ID	Results + 2σ	MDA	RPD (Tot)	3σ	Eval
8347-001	-0.133 ± 0.31	0.675	-	0	satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results + 2σ	MDA
8347-005	Ra-226	69.6 ± 2.8	0.755

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results + 2σ	MDA	Added	%Recv	
8347-001	-0.133 ± 0.31	0.675	123	57	

Certified by [Signature]  
 Report Date 06/23/05  
 Page 2



# EBERLINE

SERVICES

July 6, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/06)

Dear Ms. Harper:

Enclosed are revised gamma Cs-137 reports for various projects, the project numbers and Eberline Services report numbers are given below. The results were previously reported in the units of pCi/sample; the enclosed reports present the results in the recalculated units of pCi/g.

<u>Del Mar Project</u>	<u>Eberline Services Report</u>
IOB1069-03	R502140-8269
IOB1576-03	R502216-8295
IOB2065-04	R503156-8346
IOB1014-04	R503158-8348
IOC1523-04	R503160-8350
IOC1562-03	R503162-8352
IOC2063-04	R503231-8382
IOD2061-03	R505003-8443

Please call me if you have any questions concerning the enclosed reports.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/mjv*

Enclosure: Reports  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8348</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503158-01</u>	Contract <u>PROJECT# 10B1014</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
10B1014-04	8348-001	02/11/05	04/11/05	Cs137 (G)	U	pCi/G	29.3

Certified by <u><i>[Signature]</i></u>
Report Date <u>07/06/05</u>
Page 1

Eberline Services

QC RESULTS

SDG <u>8348</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503158-01</u>	Contract <u>PROJECT# 10B1014</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>	8346-002	Cs137 (G)	265 ± 27	pCi/Smpl	267	21.5	99% recovery
<u>BLANK</u>	8346-003	Cs137 (G)	U	pCi/Smpl	NA	11.0	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results ± 2σ</u>	<u>MDA</u>	<u>RPD (Tot) Eval</u>
8346-004	Cs137 (G)	U	28.4	8346-001	U	27.5	- 0 satis.

Certified by *[Signature]*  
 Report Date 07/06/05  
 Page 2





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9494 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-6596 Fax (619) 505-8689  
 3630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3520 Fax (702) 798-3521

**SUBCONTRACT ORDER - PROJECT # IOB1014**

<p align="center"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine        17461 Derian Avenue, Suite 100        Irvine, CA 92614        Phone: (949) 261-1022        Fax: (949) 261-1228        Project Manager: Michele Harper</p>	<p align="center"><b>RECEIVING LABORATORY:</b></p> <p>Eberline Services - SUB        2030 Wright Avenue        Richmond, CA 94804        Phone: (510) 235-2633        Fax: (510) 235-0438</p>
---	---

Standard TAT is requested unless specific due date is requested => Due Date: 3 Weeks Initials: VB

Analysis	Expiration	Comments
Sample ID: IOB1014-03 Water	Sampled: 02/11/05 12:20	Filter w/preweighed .45 um & preserve (except H3)
EDD + Level 4-OUT	03/11/05 12:20	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	02/11/06 12:20	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 12:20	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/11/06 12:20	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 12:20	905.0
Tritium-O	02/11/06 12:20	906
Containers Supplied:		
1 L Amber (IOB1014-03A)		
1 L Amber (IOB1014-03B)		
1 L Amber (IOB1014-03C)		
1 L Amber (IOB1014-03D)		
Sample ID: IOB1014-04 Water	Sampled: 02/11/05 12:20	Analyze substrate on filter from #5 IOB1014-03
Gamma Scan-O	02/11/06 12:20	Cesium 137, EPA 901.1, 20 pci/sample RL

*MH 3/21/05*

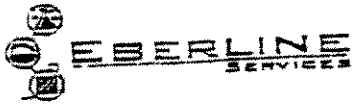
**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: Va Bawle Date: 3-21-05 Time: 1700 Received By: SON THAI Date: 03/22/05 Time: 10:00 AM

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

RICHMOND, CA LABORATORY



SAMPLE RECEIPT CHECKLIST

Client DEL MAR City IRVINE State CA  
 Date/Time received 03/22/05 CoC No. IOB 1014-03  
10:00 AM  
 Container I.D. No. FRAGILE Requested TAT (Days) 3 Weeks P.O. Received Yes [ ] No [ ]  
**INSPECTION**  
 1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]  
 2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]  
 3. Custody seals on sample containers intact? Yes [ ] No [✓] N/A [ ]  
 4. Custody seals on sample containers dated & signed? Yes [ ] No [✓] N/A [ ]  
 5. Packing material is: Wet [✓] Dry [ ]  
 6. Number of samples in shipping container: 1 Sample Matrix water  
 7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)  
 8. Samples are in correct container Yes [✓] No [ ]  
 9. Paperwork agrees with samples? Yes [✓] No [ ]  
 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]  
 11. Samples are: in good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]  
 12. Samples are: Preserved [ ] Not preserved [✓] pH 7 Preservative \_\_\_\_\_  
 13. Describe any anomalies: \_\_\_\_\_  
 14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
 15. Inspected by TS Date: 03/22/05 Time: 10:00 AM

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 28**

Outfall 011, February 11, 2005

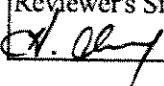
MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF30  
 Task Order 313150010  
 SDG No. Multi  
 No. of Analyses 13

Laboratory Alta Analytical Perspective  
 Reviewer H. Chang  
 Analysis/Method Dioxin&Furans/1613

Date: March 18, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Detects below the calibration range were qualified "J." False negative and false positives noted. Several transcription errors were noted.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple SDGs  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: March 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta AP)	Matrix	COC Method
Outfall 001	IOB0980-01	P5072_2989_007	water	1613B
Outfall 002	IOB0981-01	P5072_2989_013	water	1613B
Outfall 003	IOB0988-01	P5072_2989_012	water	1613B
Outfall 004	IOB1002-01	P5072_2989_009	water	1613B
Outfall 005	IOB0990-01	P5072_2989_006	water	1613B
Outfall 006	IOB0992-01	P5072_2989_010	water	1613B
Outfall 007	IOB0993-01	P5072_2989_002	water	1613B
Outfall 008	IOB0997-01	P5072_2989_004	water	1613B
Outfall 009	IOB0996-01	P5072_2989_003	water	1613B
Outfall 010	IOB1001-01	P5072_2989_001	water	1613B
Outfall 011 Composite	IOB1004-01	P5072_2989_011	water	1613B
Outfall 011	IOB1014-01	P5072_2989_005	water	1613B
Outfall 018	IOB1008-01	P5072_2989_008	water	1613B

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All of the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  except sample Outfall 009 which was at  $8^{\circ}\text{C}$ . Due to non-volatile nature of the analytes, no qualifications were necessary for the elevated cooler temperature. The samples were received at Pace Analytical with cooler temperatures of  $1.6^{\circ}\text{C}$ ,  $2.3^{\circ}\text{C}$ , and  $3^{\circ}\text{C}$ . The samples were received at Alta Analytical Perspectives with cooler temperatures of  $1^{\circ}\text{C}$  and  $3^{\circ}\text{C}$ . According to the laboratory login sheets, all samples were received intact and in good condition at Del Mar and Alta AP. No sample conditions were available for review for the sample receipt at Pace. No qualifications were required.

#### 2.1.2 Chain of Custody

It appears that the samples were initially sent from Del Mar Analytical to Pace Analytical then subsequently shipped to Alta Analytical Perspectives. The COCs from the field to Del Mar, Del Mar to Pace, and Pace to Alta were available for review. The COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. The custody seals were not present on the coolers upon receipt at either Del Mar or Alta. No custody seal information was available for Pace. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Column Performance Check Standard (CPSM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to initial calibration analysis. A separate CPSM was not analyzed for daily analytical sequence; instead, CPSM compounds were added to OPR analysis. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibrations, analyzed 08/12/04. The calibrations each consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the native compounds and  $\leq 35\%$  for the labeled compounds. The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

One method blank (0\_2989\_MB001) was extracted and analyzed with the samples in these SDGs. There were no detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_2989\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data. The laboratory reported total PeCDFs detects in samples Outfall 005, Outfall 006, Outfall 007, and Outfall 011. The reviewer deemed the signals used to be below the signal-to-noise ratio of 2.5 and the results were changed to nondetects. A false negative for total HxCDD was noted in sample Outfall 001 and was changed to a detect. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." The laboratory did not flag OCDD in samples Outfall 002 and Outfall 003 although the reported concentrations were below the lower MCL. OCDD in these samples was qualified as estimated, "J." In addition, Alta analyzed an additional calibration standard at concentrations below the level specified in the method. Not all results below the lower MCLs were flagged as estimated by the laboratory. These results were qualified as estimated, "J," by the reviewer. The laboratory also did not flag detects below the lower MCL for totals as estimated. These totals were qualified as estimated, "J." The "DNQ" qualification code was applied only if all components of the totals were below the lower MCL. Total HpCDF in samples Outfall 001 and Outfall 010 had one of the components below the lower MCL but one within the MCL. Total HpCDF in these samples were qualified as estimated, "J."

The laboratory indicated that one of the non-2,3,7,8 substituted HxCDD detect, present in majority of the samples, was due to recovery standard (13C-1,2,3,4,6,7-HxCDD) contribution. This compound was also present in the method blank. This compound was not included in the total HxCDD concentration. Several total HxCDD results could not be reproduced from the raw data by the reviewer and were hand-corrected on the Form I. No further qualifications were required.

# Sample ID: IOB0990-01

Cidfall 005

# Method 1613

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.02 L	Sample ID:	P5072_2989_006
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Recoveries	
	pg/L	pg/L	pg/L	ES	CS
2,3,7,8-TCDD	ND	2.29		68.7	73.8
1,2,3,7,8-PeCDD	ND	3.2		69.4	78.6
1,2,3,4,7,8-HxCDD	ND	4.19		74.5	83.5
1,2,3,6,7,8-HxCDD	ND	4.11		83.2	83.5
1,2,3,7,8,9-HxCDD	ND	4.95		78.1	83.5
1,2,3,4,6,7,8-HpCDD	ND	5.34		67.8	61.4
OCDD	56.1	19.6		53.6	61.4
2,3,7,8-TCDF	ND	1.37		69.9	73.8
1,2,3,7,8-PeCDF	ND	3.71		76.6	76.4
2,3,4,7,8-PeCDF	ND	3.89		67.9	76.4
1,2,3,4,7,8-HxCDF	ND	1.39		76.1	83.5
1,2,3,6,7,8-HxCDF	ND	1.3		81.5	83.5
2,3,4,6,7,8-HxCDF	ND	1.73		71.4	83.5
1,2,3,7,8,9-HxCDF	ND	2.59		67.5	83.5
1,2,3,4,6,7,8-HpCDF	ND	3.26		55.4	61.4
1,2,3,4,7,8,9-HpCDF	ND	4.59		59.7	61.4
OCDF	ND	14.9		52.2	61.4
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.29			
PeCDDs	ND	3.2			
HxCDDs	ND	4.43			
HpCDDs	ND	5.34			
TCDFs	ND	1.37			
PeCDFs	0-256-ND	3.8			
HxCDFs	ND	1.69			
HpCDFs	ND	3.9			
<b>Total PCDD/Fs</b>	<b>56.4-56.1</b>		<b>56.4-56.1</b>		

ALTA ANALYTICAL PERSPECTIVES  
 2714 Exchange Drive  
 Wilmington  
 North Carolina 28405  
 USA  
 Tel: 910 794-1613  
 Fax: 910 794-3919  
 e-mail: y@ultratrace.com  
 web: www.ultratrace.com

Check code: 5797

# AMEC VALIDATED LEVEL IV

AAP 2005 Rev. B

Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

Rev Qual Code

✓

✓

✓

✓

+

⊕

**Sample ID: IOB0992-01** *Dartfall 006* **Method 1613**

Client Data		Sample Data		Laboratory Data							
Name: Pace Inc. General Analytical HRMS	Matrix: Aqueous	Project No.: P5072	Date Received: 01 Mar 05	QC Batch No.: 2989	Date Analyzed: 03 Mar 05						
Date Collected: 11 Feb 05	Weight/Volume: 1.02 L	Sample ID: P5072_2989_010	Date Extracted: 01 Mar 05	QC Batch No.: 2989	Date Analyzed: 03 Mar 05						
Analyte	Conc. pg/L	pH	EMPC pg/L	DL pg/L	Qualifier						
Rev Qual Code	ES	CS	Recoveries	ES	CS						
2,3,7,8-TCDD	ND	2.87		2.87			67.7	78.6			
1,2,3,7,8-PeCDD	ND	3.14		3.14			66.7	83.9			
1,2,3,4,7,8-HxCDD	ND	5.91		5.91			70.2	85.8			
1,2,3,6,7,8-HxCDD	ND	5.98		5.98			72.5	85.8			
1,2,3,7,8,9-HxCDD	ND	7.12		7.12			69.9	85.8			
1,2,3,4,6,7,8-HpCDD	ND	10.8		10.8			60	70			
OCDD	70.2	11.6		11.6			45.8	70			
2,3,7,8-TCDF	ND	2.58		2.58			67.5	78.6			
1,2,3,7,8-PeCDF	ND	4.02		4.02			73.9	81.3			
2,3,4,7,8-PeCDF	ND	3.97		3.97			68.3	81.3			
1,2,3,4,7,8-HxCDF	ND	1.55		1.55			70.8	85.8			
1,2,3,6,7,8-HxCDF	ND	1.42		1.42			79.5	85.8			
2,3,4,6,7,8-HxCDF	ND	1.91		1.91			69.9	85.8			
1,2,3,7,8,9-HpCDF	ND	2.81		2.81			64.2	85.8			
1,2,3,4,6,7,8-HpCDF	ND	4.35		4.35			57	70			
1,2,3,4,7,8,9-HpCDF	ND	7.3		7.3			55.4	70			
OCDF	ND	7.69		7.69			48.7	70			
<b>Totals &amp; TEQs</b>											
TCDDs	ND	2.87		2.87							
PeCDDs	ND	3.14		3.14							
HxCDDs	ND	6.35		6.35							
HpCDDs	ND	10.8		10.8							
TCDFs	ND	2.58		2.58							
PeCDFs	<del>0.456</del> ND	3.99		3.99							
HxCDFs	ND	1.85		1.85							
HpCDFs	ND	5.69		5.69							
<b>Total PCDD/Fs</b>	<del>70.7</del> 70.2										

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Checkcode: 3929 **AMEC VALIDATED** AAP 2005 Rev. B

Reviewer Date

**Sample ID: IOB0980-01**

Outfall C01

**Method 1613**

Client Data		Sample Data		Laboratory Data	
Name: Pace Inc.	Matrix:	Aqueous	Project No.:	Date Received:	01 Mar 05
Project ID: General Analytical HRMS	Weight/Volume:	1.00 L	Sample ID: P5072_2989_007	Date Extracted:	01 Mar 05
Date Collected: 11 Feb 05	pH	6	QC Batch No.: 2989	Date Analyzed:	03 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries
					ES CS
2,3,7,8-TCDD	ND	2.55			79.1
1,2,3,7,8-PeCDD	ND	1.89			89.4
1,2,3,4,7,8-HxCDD	ND	2.42			74.8
1,2,3,6,7,8-HxCDD	ND	2.41			83.1
1,2,3,7,8,9-HxCDD	ND	2.88			83.1
1,2,3,4,6,7,8-HpCDD	49.8	7.48			83.1
OCDD	471	6.38			62.4
2,3,7,8-TCDF	ND	1.64			62.4
1,2,3,7,8-PeCDF	ND	1.98			79.1
2,3,4,7,8-PeCDF	ND	2.03			83.9
1,2,3,4,7,8-HxCDF	ND	1.47			83.9
1,2,3,6,7,8-HxCDF	ND	1.51			83.1
2,3,4,6,7,8-HxCDF	ND	1.9			83.1
1,2,3,7,8,9-HxCDF	ND	2.85			83.1
1,2,3,4,6,7,8-HpCDF	10.8	1.71		J	83.1
1,2,3,4,7,8,9-HpCDF	ND	2.58			62.4
OCDF	34.9	12		J	62.4
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.55			
PeCDDs	ND	1.89			
HxCDDs	<del>ND</del> 5.96	2.58			
HpCDDs	101	7.48			
TCDFs	ND	1.64			
PeCDFs	ND	2.01			
HxCDFs	4.13	1.87			
HpCDFs	36.5	2.12			
<b>Total PCDD/Fs</b>	<del>648</del> 653				

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**Sample ID: IOB0981-01** *Cutfall 002* **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.04 L	Sample ID:	P5072_2989_013
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	3.01			74.3
1,2,3,7,8-PeCDD	ND	5.36			78.4
1,2,3,4,7,8-HxCDD	ND	4.94			75.8
1,2,3,6,7,8-HxCDD	ND	4.7			75.8
1,2,3,7,8,9-HxCDD	ND	5.81			75.8
1,2,3,4,6,7,8-HpCDD	ND	9.6			63.7
OCDD	50	10.3			63.7
2,3,7,8-TCDF	ND	2.61			74.3
1,2,3,7,8-PeCDF	ND	2.46			78.7
2,3,4,7,8-PeCDF	ND	2.49			78.7
1,2,3,4,7,8-HxCDF	ND	1.13			75.8
1,2,3,6,7,8-HxCDF	ND	1.19			75.8
2,3,4,6,7,8-HxCDF	ND	1.46			75.8
1,2,3,7,8,9-HxCDF	ND	2.05			75.8
1,2,3,4,6,7,8-HpCDF	ND	3.28			63.7
1,2,3,4,7,8,9-HpCDF	ND	4.88			63.7
OCDF	ND	8.89			63.7
<b>Totals &amp; TEQs</b>					
TCDDs	ND	3.01			
PeCDDs	ND	5.36			
HxCDDs	ND	5.15			
HpCDDs	ND	9.6			
TCDFs	ND	2.61			
PeCDFs	ND	2.47			
HxCDFs	ND	1.42			
HpCDFs	ND	4.02			
<b>Total PCDD/Fs</b>	50		50		

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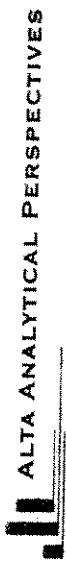
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**Sample ID: IOB0988-01** *Outfall 003* **Method 1613**

Client Data		Sample Data		Laboratory Data		Recoveries	
Name:	Pace Inc. General Analytical HRMS	Matrix:	Aqueous	Project No.:	P5072	Date Received:	01 Mar 05
Project ID:	10 Feb 05	Weight/Volume:	1.04 L	Sample ID:	P5072_2989_012	Date Extracted:	01 Mar 05
Date Collected:	10 Feb 05	pH	6	QC Batch No.:	2989	Date Analyzed:	03 Mar 05
Analyte	Conc.	DL	EMPC	Qualifier	ES	CS	
	pg/L	pg/L	pg/L				
2,3,7,8-TCDD	ND	3.24			68	84.7	
1,2,3,7,8-PeCDD	ND	2.18			72.8	85.5	
1,2,3,4,7,8-HxCDD	ND	4.91			68.3	88.4	
1,2,3,6,7,8-HxCDD	ND	4.84			73	88.4	
1,2,3,7,8,9-HxCDD	ND	5.54			67.5	88.4	
1,2,3,4,6,7,8-HpCDD	ND	3.19			55.7	76	
OCDD	50.3	10.1			37.9	76	
2,3,7,8-TCDF	ND	2.39			70.5	84.7	
1,2,3,7,8-PeCDF	ND	2.98			77.2	84.1	
2,3,4,7,8-PeCDF	ND	3			68.6	84.1	
1,2,3,4,7,8-HxCDF	ND	1.62			66.5	88.4	
1,2,3,6,7,8-HxCDF	ND	1.53			68.5	88.4	
2,3,4,6,7,8-HxCDF	ND	2.03			64	88.4	
1,2,3,7,8,9-HxCDF	ND	2.74			61.4	88.4	
1,2,3,4,6,7,8-HpCDF	ND	2.05			50.8	76	
1,2,3,4,7,8,9-HpCDF	ND	3.04			50.2	76	
OCDF	ND	13.1			40.7	76	
<b>Totals &amp; TEQs</b>							
TCDDs	ND	3.24					
PeCDDs	ND	2.18					
HxCDDs	ND	5.11					
HpCDDs	12.2	3.19					
TCDFs	ND	2.39					
PeCDFs	ND	2.99					
HxCDFs	ND	1.93					
HpCDFs	ND	2.5					
<b>Total PCDD/Fs</b>	<b>62.6</b>		<b>62.6</b>				



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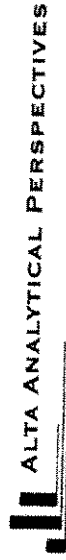
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**Sample ID: IOB1002-01**

*Cutfall 004*

**Method 1613**

Client Data		Sample Data		Laboratory Data	
Name: Pace Inc. General Analytical HRMS Date Collected: 10 Feb 05	Matrix: Aqueous Weight/Volume: 1.05 L pH: 6	Project No.: P5072 Sample ID: P5072_2989_009 QC Batch No.: 2989	Date Received: 01 Mar 05 Date Extracted: 01 Mar 05 Date Analyzed: 03 Mar 05	ES	CS
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries
2,3,7,8-TCDD	ND	1.44			78.2
1,2,3,7,8-PeCDD	ND	2.04			84.9
1,2,3,4,7,8-HxCDD	ND	2.74			79.7
1,2,3,6,7,8-HxCDD	ND	2.88			79.7
1,2,3,7,8,9-HxCDD	ND	3.13			79.7
1,2,3,4,6,7,8-HpCDD	12.1	5.97			63
OCDD	163	11.8		J	63
2,3,7,8-TCDF	ND	1.03			78.2
1,2,3,7,8-PeCDF	ND	2.11			77.7
2,3,4,7,8-PeCDF	ND	1.95			77.7
1,2,3,4,7,8-HxCDF	ND	0.815			79.7
1,2,3,6,7,8-HxCDF	ND	0.78			79.7
2,3,4,6,7,8-HxCDF	ND	0.99			79.7
1,2,3,7,8,9-HxCDF	ND	1.51			79.7
1,2,3,4,6,7,8-HpCDF	ND	1.69			79.7
1,2,3,4,7,8,9-HpCDF	ND	2.59			63
OCDF	ND	10.1			63
<b>Totals &amp; TEQs</b>					
TCDDs	ND	1.44			
PeCDDs	ND	2.04			
HxCDDs	ND	2.92			
HpCDDs	12.1	5.97	23.4		
TCDFs	ND	1.03			
PeCDFs	ND	2.03			
HxCDFs	ND	0.989			
HpCDFs	5.96	2.1			
<b>Total PCDD/Fs</b>	<b>182</b>		<b>193</b>		



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*0612*

**Sample ID: IOB1004-01** *Outfall Oil Composite* **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	0.99 L	Sample ID:	P5072_2989_011
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	1.79			72.2
1,2,3,7,8-PeCDD	ND	2.92			72.5
1,2,3,4,7,8-HxCDD	ND	12.2			68.3
1,2,3,6,7,8-HxCDD	ND	12			77.6
1,2,3,7,8,9-HxCDD	ND	13.8			71.1
1,2,3,4,6,7,8-HpCDD	20.8	9.88		J	61.1
OCDD	213	31.3			43.9
2,3,7,8-TCDF	ND	2.71			69.7
1,2,3,7,8-PeCDF	ND	2.52			73.4
2,3,4,7,8-PeCDF	ND	2.53			70.3
1,2,3,4,7,8-HxCDF	ND	6.66			71.2
1,2,3,6,7,8-HxCDF	ND	6.24			78
2,3,4,6,7,8-HxCDF	ND	8.23			69.5
1,2,3,7,8,9-HxCDF	ND	12.4			83.2
1,2,3,4,6,7,8-HpCDF	ND	3.42			64.6
1,2,3,4,7,8,9-HpCDF	ND	5.49			57.2
OCDF	ND	20.8			55.1
<b>Totals &amp; TEQs</b>					<b>72.2</b>
TCDDs	ND	1.79			
PeCDDs	ND	2.92			
HxCDDs	ND	12.7			
HpCDDs	43.1	9.88			
TCDFs	ND	2.71			
PeCDFs	ND	2.52			
HxCDFs	ND	8.1			
HpCDFs	ND	4.35			
<b>Total PCDD/Fs</b>	<b>256</b>		<b>256</b>		

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**Sample ID: IOB1008-01**

*Outfall 018*

**Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.03 L	Sample ID:	P5072_2989_008
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	1.61			72
1,2,3,7,8-PeCDD	ND	1.62			71.7
1,2,3,4,7,8-HxCDD	3.57	3.44			80.8
1,2,3,6,7,8-HxCDD	8.47	3.3		J	85.5
1,2,3,7,8,9-HxCDD	5.27	4.06		J	81.4
1,2,3,4,6,7,8-HpCDD	207	13.7			68.6
OCDD	2,120	5.72			69
2,3,7,8-TCDF	ND	1.49			69
1,2,3,7,8-PeCDF	ND	2.35			74.2
2,3,4,7,8-PeCDF	ND	2.31			78.4
1,2,3,4,7,8-HxCDF	ND	0.97			72.3
1,2,3,6,7,8-HxCDF	ND	0.898			74.1
2,3,4,6,7,8-HxCDF	ND	1.1			85.5
1,2,3,7,8,9-HxCDF	ND	1.7			75.4
1,2,3,4,6,7,8-HpCDF	27.2	2.79			70.7
1,2,3,4,7,8,9-HpCDF	ND	4.43			63.2
OCDF	67.1	12.5			60.4
<b>Totals &amp; TEQs</b>					60.2
TCDDs	4.77	1.61			
PeCDDs	15.5	1.62			
HxCDDs	<del>39.8</del> 44.1	3.61	65.1		
HpCDDs	415	13.7			
TCDFs	6.53	1.49			
PeCDFs	2.57	2.33			
HxCDFs	32.8	1.13			
HpCDFs	98.7	3.53			
<b>Total PCDD/FS</b>	<del>2,800.25</del> 10		2,830		

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**Sample ID: IOB1014-01**

Outfall 011

**Method 1613**

**Client Data**

Name: Pace Inc.  
 Project ID: General Analytical HRMS  
 Date Collected: 11 Feb 05

**Sample Data**

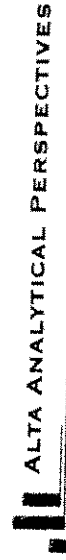
Matrix: Aqueous  
 Weight/Volume: 1.02 L  
 pH: 6

**Laboratory Data**

Project No.: P5072  
 Sample ID: P5072\_2989\_005  
 QC Batch No.: 2989  
 Date Received: 01 Mar 05  
 Date Extracted: 01 Mar 05  
 Date Analyzed: 03 Mar 05

Rev Qual  
 Qual Code

Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries	
					ES	CS
2,3,7,8-TCDD	ND	1.71			72.2	83.4
1,2,3,7,8-PeCDD	ND	1.73			71.9	88.3
1,2,3,4,7,8-HxCDD	ND	3.89			72.2	87.2
1,2,3,6,7,8-HxCDD	ND	3.8			81.1	87.2
1,2,3,7,8,9-HxCDD	ND	4.66			73.6	87.2
1,2,3,4,6,7,8-HpCDD	12.2	10.1		J	59	71
OCDD	157	9.39			44.9	71
2,3,7,8-TCDF	ND	2.08			74.1	83.4
1,2,3,7,8-PeCDF	ND	1.84			76.1	85.5
2,3,4,7,8-PeCDF	ND	1.89			69.3	85.5
1,2,3,4,7,8-HxCDF	ND	1.36			63.6	87.2
1,2,3,6,7,8-HxCDF	ND	1.31			70.6	87.2
2,3,4,6,7,8-HxCDF	ND	1.65			67.1	87.2
1,2,3,7,8,9-HxCDF	ND	2.41			62.6	87.2
1,2,3,4,6,7,8-HpCDF	4.04	1.47		J	52.8	71
1,2,3,4,7,8,9-HpCDF	ND	2.53			49.4	71
OCDF	ND	9.53			43.5	71
<b>Totals &amp; TEQs</b>						
TCDDs	ND	1.71				
PeCDDs	ND	1.73				
HxCDDs	ND	4.12				
HpCDDs	29.6	10.1				
TCDFs	ND	2.08				
PeCDFs	0.76	1.86				
HxCDFs	ND	1.64				
HpCDFs	10.2	1.94				
<b>Total PCDD/Fs</b>	<b>197</b>		<b>197</b>			



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**Sample ID: IOB0996-01** *Outfall 009* **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc. General Analytical HRMS	Matrix:	Aqueous	Project No.:	P5072
Date Collected:	11 Feb 05	Weight/Volume:	1.04 L	Sample ID:	P5072_2989_003
Analyte	Conc. pg/L	pH	6	QC Batch No.:	2989
		DL pg/L	EMPC pg/L	Qualifier	Recoveries
				ES	CS
2,3,7,8-TCDD	ND	2.02		64.7	78.7
1,2,3,7,8-PeCDD	ND	2.09		66	84.4
1,2,3,4,7,8-HxCDD	ND	2.71		68.1	84.8
1,2,3,6,7,8-HxCDD	ND	2.7		75.8	84.8
1,2,3,7,8,9-HxCDD	ND	3.33		68.5	84.8
1,2,3,4,6,7,8-HpCDD	10	6.63		54.6	67.6
OCDD	134	11.1		42.2	67.6
2,3,7,8-TCDF	ND	1.85		67	78.7
1,2,3,7,8-PeCDF	ND	1.44		75.4	85.4
2,3,4,7,8-PeCDF	ND	1.48		67.3	85.4
1,2,3,4,7,8-HxCDF	ND	0.785		62.8	84.8
1,2,3,6,7,8-HxCDF	ND	0.706		71.7	84.8
2,3,4,6,7,8-HxCDF	ND	0.933		63.9	84.8
1,2,3,7,8,9-HxCDF	ND	1.47		58.3	84.8
1,2,3,4,6,7,8-HpCDF	ND	4.57		47.6	67.6
1,2,3,4,7,8,9-HpCDF	ND	7.47		43.9	67.6
OCDF	ND	22.4		41.6	67.6
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.02			
PeCDDs	ND	2.09			
HxCDDs	ND	2.92			
HpCDDs	25.2	6.63			
TCDFs	ND	1.85			
PeCDFs	ND	1.46			
HxCDFs	ND	0.935	0.213		
HpCDFs	ND	5.85			
<b>Total PCDD/Fs</b>	<b>159</b>		<b>160</b>		

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AMEC VALIDATED

Checkcode: 4965

AAP 2005 Rev. B

Reviewer \_\_\_\_\_ Date \_\_\_\_\_



Sample ID: IOB0997-01 Outfall 008

Method 1613

Client Data		Sample Data		Laboratory Data	
Name: Pace Inc. General Analytical HRMS	Matrix: Aqueous	Project No.: P5072	Date Received: 01 Mar 05	Project No.: P5072	Date Received: 01 Mar 05
Date Collected: 11 Feb 05	Weight/Volume: 1.05 L	Sample ID: P5072_2989_004	Date Extracted: 01 Mar 05	Sample ID: P5072_2989_004	Date Extracted: 01 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	QC Batch No.: 2989	Date Analyzed: 03 Mar 05
				Qualifier	Recoveries
				ES	CS
2,3,7,8-TCDD	ND	1.34		65.8	77.1
1,2,3,7,8-PeCDD	ND	2.11		62.8	79.6
1,2,3,4,7,8-HxCDD	ND	2.48		66.4	79.4
1,2,3,6,7,8-HxCDD	ND	2.34		71.2	79.4
1,2,3,7,8,9-HxCDD	ND	2.82		67.2	79.4
1,2,3,4,6,7,8-HpCDD	ND	9.38		55.3	65
OCDD	70.4	6.96		48.1	65
2,3,7,8-TCDF	ND	0.995		68.3	77.1
1,2,3,7,8-PeCDF	ND	2.33		70.6	77.3
2,3,4,7,8-PeCDF	ND	2.42		62.6	77.3
1,2,3,4,7,8-HxCDF	ND	0.943		62.6	79.4
1,2,3,6,7,8-HxCDF	ND	0.871		68.5	79.4
2,3,4,6,7,8-HxCDF	ND	1.12		61.8	79.4
1,2,3,7,8,9-HxCDF	ND	1.73		57.8	79.4
1,2,3,4,6,7,8-HpCDF	ND	1.9		53.5	65
1,2,3,4,7,8,9-HpCDF	ND	3.25		49.3	65
OCDF	ND	12.4		47.2	65
<b>Totals &amp; TEQs</b>					
TCDDs	ND	1.34			
PeCDDs	ND	2.11			
HxCDDs	ND	2.55			
HpCDDs	9.46	9.38			
TCDFs	ND	0.995			
PeCDFs	ND	2.37			
HxCDFs	ND	1.13			
HpCDFs	ND	2.5			
<b>Total PCDD/Fs</b>	79.9		79.9		



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AMEC VALIDATED

Checkcode: 5239

AAP 2005 Rev. B

LEVEL IV

Reviewer  
Date

Rev Qual Code

U

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**Sample ID: IOB1001-01**     *Outfall 010*     **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.00 L	Sample ID:	P5072_2989_001
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES     CS
2,3,7,8-TCDD	ND	2.29			69
1,2,3,7,8-PeCDD	ND	1.65			70.8
1,2,3,4,7,8-HxCDD	ND	3.45			74.1
1,2,3,6,7,8-HxCDD	ND	3.21			80.2
1,2,3,7,8,9-HxCDD	ND	3.83			77.1
1,2,3,4,6,7,8-HpCDD	75.4	6.41			65
OCDD	883	11			58.7
2,3,7,8-TCDF	ND	1.24			82.8
1,2,3,7,8-PeCDF	ND	1.79			84.3
2,3,4,7,8-PeCDF	ND	1.86			84.3
1,2,3,4,7,8-HxCDF	ND	0.867			83.8
1,2,3,6,7,8-HxCDF	ND	0.843			83.8
2,3,4,6,7,8-HxCDF	ND	1.12			83.8
1,2,3,7,8,9-HxCDF	ND	1.67			83.8
1,2,3,4,6,7,8-HpCDF	16.8	2.36		J	83.8
1,2,3,4,7,8,9-HpCDF	ND	3.46			64.9
OCDF	155	10.2			64.9
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.29			
PeCDDs	ND	1.65			
HxCDDs	<del>7.38</del> 5.16	3.5			
HpCDDs	153	6.41			
TCDFs	ND	1.24			
PeCDFs	ND	1.82			
HxCDFs	2.68	1.09			
HpCDFs	92.9	2.87			
<b>Total PCDD/Fs</b>	<b>1,290</b>				

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ10  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 1

Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazines

Date: 04/01/05  
 Reviewer's Signature  
P. Meeks

**ACTION ITEMS<sup>a</sup>**

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS<sup>b</sup>**      Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: April 01, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011	IOB1014-01	939705	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for this SDG noted that the sample was received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar was signed and dated by field and laboratory personnel, and the transfer COC from Del Mar to Truesdail Laboratories was signed and dated by personnel from both laboratories. Both the original COC and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the sample was transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 ID on the Form I; therefore, the reviewer hand-corrected the Form I to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The sample was extraction within the three-day holding time; and was analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 02/14/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analysis had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with this SDG. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with this SDG. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MSD/MSD analyses were performed on Outfall 011; therefore, no assessment was made with respect to this criterion. Method accuracy and precision were evaluated based on LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The sample was analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.



# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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## REPORT

**Client:** Del Mar Analytical  
17481 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB1014  
**P.O. Number:** IOB1014  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 939705  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

### Analytical Results

Page 1 of 1

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qual Code	Rw	Qual Code	Rw	Qual Code	Rw
704765-MB	Method Blank		*		*		*
939705	Outfall Oil IOB1014-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

\* Analysis Not Validated

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

AMEC VALIDATED

Xian Dang, Project Manager  
Environmental Services

LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT67  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 1

Laboratory Del Mar Analytical

Date: 4/05/05

Reviewer K. Okonczak

Reviewer's Signature  


Analysis/Method Metals

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations  Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: Analytes detected below the reporting limit were qualified as estimated, "J." Reporting limit check standard recoveries found outside of control limits. Detects and negative results for the associated method blank and CCBs. The antimony detect at 0.44 µg/L in the sample was qualified as estimated, "UJ," at a raised MDL of 0.9 µg/L due to bracketing CCB detects at approximately 0.9 µg/L.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive - reported compound was not present. Not applicable.	
-	False negative - compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOB1014

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. Mellvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Okonzak-Lowry  
Date of Review: April 5, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project:NPDES  
SDG No.: IOB1014  
Analysis:MET

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-grab	Outfall 011-grab	IOB1014-01	water	Total Recoverable Metals



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel and accounted for the analyses presented in the data package. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analysis recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses. The %RSDs for the tune were all within the 5% control limit. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

**2.3 CALIBRATION**

The ICV and CCV results showed acceptable recoveries, 90-110% for the ICP/MS and ICP metals and 80-120% for mercury. The applicable reporting limit check standards were recovered within the AMEC control limits of 70-130%, with the following exceptions: arsenic was recovered at 47.9% in the 1.0 µg/L standard, nickel was recovered at 8.6% and 60.5%, respectively, in the 1.0 and 2.0 µg/L standards, and copper was recovered at 67% in the 2.0 µg/L standard. Therefore, the arsenic, nickel and copper detects for sample Outfall 011-grab were qualified as estimated, "J." No further qualifications were required.

**2.4 BLANKS**

There were detects and negative results reported in the associated method blank and calibration blank (CCB) analyses. The sample results were qualified for the blanks results as follows:

Findings	Associated Samples	Qualification of Data
Boron was detected in the bracketing CCBs at 0.025 and 0.021 mg/L, respectively.	Outfall 011-grab	Boron detected in the sample was qualified, "UJ."
Chromium was detected in method blank 5B12041-BLK1 at 0.846 µg/L. The validator chose to report this original chromium MB result as opposed to the rerun MB result that the laboratory had reported for chromium, due to the fact that the original MB analysis was performed along with the site sample chromium analysis and is more indicative of the instrument conditions applicable to the chromium analysis.	Outfall 011-grab	Chromium detected in the sample was qualified, "UJ."
Nickel and vanadium were reported in method blank 5B12041-BLK1 at -0.77 and -0.98 µg/L, respectively.	Outfall 011-grab	Nickel and vanadium detected in the sample were qualified, "J."
Antimony was detected in the bracketing CCBs at 0.89 and 0.81 µg/L, respectively	Outfall 011-grab	The antimony detected in the sample was qualified, "UJ," at a raised MDL of 0.9 µg/L.

**2.5 ICP and ICP/MS INTERFERENCE CHECK SAMPLE (ICS A/AB)**

The results for the ICSA/ICSAB analyses reported in the raw data for the ICP analysis were within established control limits. No qualifications were required. There were no ICSA/AB analyses associated with the ICP/MS sample analyses; therefore, the ICP/MS results were not assessed for this criterion.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5B12041-BS1, and the ICP LCS sample was identified as 5B12044-BS1. The mercury LCS sample was identified as 5B12033-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD analyses were associated with the site sample in this SDG; therefore, the sample was not assessed for this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were associated with the site sample in this SDG; therefore, the sample was not assessed for this criterion. Method accuracy was assessed based on the LCS results.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS SERIAL DILUTION

No serial dilution analysis was performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries associated with the site sample and associated QC sample analyses, were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit in sample Outfall 011-grab were qualified as estimated, "J." For the ICP/MS run, the antimony detects in the associated CCBs were found at approximately 2× the level of the 0.44 µg/L detect for antimony in sample Outfall 011-grab. Therefore, the antimony detected in sample Outfall 011-grab was qualified as estimated, "UJ," at a raised MDL of 0.9 µg/L. No qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site sample.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Data Qualifiers			
									Rev Qual	Qual Code		
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.												
Reporting Units: ug/l												
Antimony	EPA 200.8	5B12041	0.18	0.9	2.0	0.45	0.9	1	02/12/05	02/14/05	U J J	B, #
Arsenic	EPA 200.8	5B12041	0.49	1.0	1.0	1.0	1	02/12/05	02/14/05	J	#3	
Beryllium	EPA 200.8	5B12041	0.037	0.50	0.052	1	02/12/05	02/14/05	J J	DNQ		
Cadmium	EPA 200.8	5B12041	0.015	1.0	0.11	1	02/12/05	02/14/05	J J	DNQ		
Chromium	EPA 200.8	5B12041	0.26	1.0	1.8	1	02/12/05	02/14/05	U J	B		
Cobalt	EPA 200.8	5B12041	0.10	1.0	0.60	1	02/12/05	02/14/05	J J	DNQ		
Copper	EPA 200.8	5B12041	0.49	2.0	3.4	1	02/12/05	02/14/05	J	#3		
Lead	EPA 200.8	5B12041	0.13	1.0	1.3	1	02/12/05	02/14/05				
Manganese	EPA 200.8	5B12041	0.44	1.0	36	1	02/12/05	02/14/05				
Mercury	EPA 245.1	5B12033	0.063	0.20	0.14	1	02/12/05	02/12/05	J J	DNQ		
Nickel	EPA 200.8	5B12041	0.15	1.0	1.4	1	02/12/05	02/14/05	F	B, #		
Selenium	EPA 200.8	5B12041	0.36	2.0	ND	1	02/12/05	02/14/05	U			
Silver	EPA 200.8	5B12041	0.089	1.0	ND	1	02/12/05	02/14/05	U			
Thallium	EPA 200.8	5B12041	0.075	1.0	ND	1	02/12/05	02/14/05	U			
Vanadium	EPA 200.8	5B12041	0.86	1.0	3.7	1	02/12/05	02/14/05	J	B		
Zinc	EPA 200.8	5B12041	3.1	20	16	1	02/12/05	02/15/05	J J	DNQ		

*Handwritten:* KCR  
 4/6/05/05

## AMEC VALIDATED

*Handwritten:* Level IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5B12041	0.00014	0.0010	0.020	1	02/12/05	02/14/05	Rev Qual   Qual Code
Boron	EPA 200.7	5B12044	0.0074	0.050	0.063	1	02/12/05	02/12/05	4J B   B
Iron	EPA 200.8	5B12041	0.0032	0.010	1.6	1	02/12/05	02/15/05	

## AMEC VALIDATED

### Level IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP28  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 1

Laboratory Del Mar Analytical

Date: April 6, 2005

Reviewer L. Calvin

Reviewer's Signature  


Analysis/Method Pesticides/PCBs by Method 608

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications assigned for continuing calibration %D outliers.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011-Grab	Outfall 011-Grab	IOB1014-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 02/17/05 associated with the pesticide analysis of the sample, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 02/11/05 associated with the PCB analysis of the sample which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing the pesticide analysis of the sample, all %Ds were  $\leq 15\%$  with the exception of %Ds for 4,4'-DDT, endrin aldehyde, methoxychlor, and endrin ketone in one or more of the calibrations. Nondetect results for the aforementioned compounds were qualified as estimated, "UI," in sample Outfall 011-Grab. Of the continuing calibrations associated with the PCB analysis of the sample, all %Ds were  $\leq 15\%$  for Aroclor 1016 and Aroclor 1260. A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5B17042-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5B17042-BS1/BSD1 for pesticides and -BS2/-BSD2 for PCBs) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$  for pesticides, and  $\leq 30\%$  and  $\leq 25\%$  for Aroclors 1016 and 1260, respectively. A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-*m*-xylene. Surrogate recoveries for the pesticide and PCB analyses of the samples were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG; however, as there were no detects reported in the sample, quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard

DATA VALIDATION REPORT

Project: NPDES  
SDG: IOB1014  
Analysis: Pest/PCB

of the initial calibrations and the laboratory MDL studies. The water reporting limits were not adjusted for sample amount on the result summaries; however, the dilution factor listed on the summaries reflected the sample volume extracted. Results were reported in ug/L (ppb). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont. Reporting Units: ug/l									
Aldrin	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	u
alpha-BHC	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
beta-BHC	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
delta-BHC	EPA 608	5B17042	0.020	0.20	ND	0.952	02/17/05	02/17/05	u
gamma-BHC (Lindane)	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
Chlordane	EPA 608	5B17042	0.20	1.0	ND	0.952	02/17/05	02/17/05	u
4,4'-DDD	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
4,4'-DDE	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	u
4,4'-DDT	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	u
Dieldrin	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
Endosulfan I	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
Endosulfan II	EPA 608	5B17042	0.040	0.10	ND	0.952	02/17/05	02/17/05	u
Endosulfan sulfate	EPA 608	5B17042	0.015	0.20	ND	0.952	02/17/05	02/17/05	u
Endrin	EPA 608	5B17042	0.015	0.10	ND	0.952	02/17/05	02/17/05	u
Endrin aldehyde	EPA 608	5B17042	0.045	0.10	ND	0.952	02/17/05	02/17/05	u
Endrin ketone	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	u
Heptachlor	EPA 608	5B17042	0.030	0.10	ND	0.952	02/17/05	02/17/05	u
Heptachlor epoxide	EPA 608	5B17042	0.020	0.10	ND	0.952	02/17/05	02/17/05	u
Methoxychlor	EPA 608	5B17042	0.035	0.10	ND	0.952	02/17/05	02/17/05	u
Toxaphene	EPA 608	5B17042	1.5	5.0	ND	0.952	02/17/05	02/17/05	u
Surrogate: Tetrachloro-m-xylene (35-120%)					45 %				
Surrogate: Decachlorobiphenyl (45-120%)					72 %				

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 - 'u' written vertically next to the arrow.  
 - 'u' written at the top right.  
 - 'u' written at the bottom right.  
 - 'u' written at the bottom right.  
 - 'u' written at the bottom right.

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0831  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont. Reporting Units: ug/l									
Aroclor 1016	EPA 608	5B17042	0.20	1.0	ND	0.952	02/17/05	02/18/05	u
Aroclor 1221	EPA 608	5B17042	0.10	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1232	EPA 608	5B17042	0.15	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1242	EPA 608	5B17042	0.15	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1248	EPA 608	5B17042	0.25	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1254	EPA 608	5B17042	0.25	1.0	ND	0.952	02/17/05	02/18/05	
Aroclor 1260	EPA 608	5B17042	0.40	1.0	ND	0.952	02/17/05	02/18/05	
Surrogate: Decachlorobiphenyl (45-120%)					70 %				

see anal qual code  
 ↓

**AMEC VALIDATED**

LI

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



# CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711RA4  
Task Order 313150010  
SDG No. Multiple  
No. of Analyses 11

Laboratory Del Mar  
Reviewer P. Meeks  
Analysis/Method Radionuclides

Date: 03/24/05  
Reviewer's Signature  
P. Meeks

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: 1. Exceeded holding times. 2. Matrix spike recovery outlier. 3. Laboratory duplicate RPD outlier. 4. Incorrect sample container. 5. Detector efficiency outliers. 6. Incorrect sample preservation. 7. Reanalysis rejected in favor of original result Three tritium results rejected due to incorrect sample preservation.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.	
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069

Prepared by

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## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069  
Project Manager: P. Costa  
Matrix: Water/Soilid  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 5  
Reviewer: P. Meeks  
Date of Review: March 23, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 002	IOB0418-01	8237-001	water	900.0, 905.0, 906.0
Outfall 001	IOB0980-01	8265-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 001RE1	IOB0980-01RE1	8265-001	water	900.0
Outfall 007	IOB0993-01	8261-001	water	900.0, 905.0, 906.0
Outfall 007 RE1	IOB0993-01 RE1	8377-001	water	906.0
Outfall 009	IOB0996-01	8262-001	water	900.0, 905.0, 906.0
Outfall 009 RE1	IOB0996-01 RE1	8378-001	water	906.0
Outfall 008	IOB0997-01	8266-001	water	900.0, 905.0, 906.0
Outfall 008 RE1	IOB0997-01 RE1	8379-001	water	906.0
Outfall 010	IOB1001-01	8267-001	water	900.0, 905.0, 906.0
Outfall 010 RE1	IOB1001-01 RE1	8380-001	water	906.0
Outfall 011	IOB1004-01	8263-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Unfiltered	IOB1014-01	8264-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Filtered	IOB1014-03	8264-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Substrate	IOB1014-04	8348-001	solid	901.1
Outfall 003 Filtered	IOB1069-01	8268-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOB1069-02	8268-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOB1069-03	8269-001	solid	901.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Most samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

According to the Eberline login sheet, Outfall 002 was received unpreserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. The gross alpha, gross beta, and strontium results were not qualified for lack of preservation, as the method also specifies a five-day holding time for unpreserved samples.

Eberline noted on their login sheets that Outfall 007, Outfall 008, Outfall 009 and Outfall 010 were received preserved, in plastic containers. The method states that tritium samples should not be preserved. Per a telephone conversation with M. Mannion of Eberline, these samples were adjusted back to a pH of about 7 upon receipt at Eberline. Due to the improper pH adjustments, the tritium results for Outfall 007, Outfall 008, Outfall 009, and Outfall 010 were rejected, "R." Del Mar Analytical sent additional aliquots of Outfall 007, Outfall 008, Outfall 009, and Outfall 010 for tritium reanalyses. These samples were received in the proper containers and were not preserved.

Additionally, according to the Los Angeles Regional Water Quality Control Board's guidance letter dated 01/12/05, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As the Outfall 007, Outfall 008, Outfall 009 and Outfall 010 tritium analyses were previously rejected, no further qualifications were required.

After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 001 to Eberline for gross alpha reanalysis and radium-228 and radium-226 analyses. Extra volume of Outfall 011 (IOB1004 and IOB1014) was sent to Eberline for radium-228 and radium-226 analyses. These aliquots were received properly preserved. The radium-226 and radium-228 results for Outfall 003 Unfiltered and Outfall 011 Unfiltered (IOB1014) were not preserved and were not qualified for lack of preservation, as the methods specify a five-day holding time for unpreserved samples.

Additionally, per a request from Del Mar Analytical (see section 2.1.2), Eberline filtered and then preserved radium-226 and radium-228 aliquots for Outfall 003 Filtered and gross alpha, gross beta, and strontium aliquots for Outfall 011 Filtered (IOB1014). No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories.



Filtered, unfiltered, and substrate analyses were requested for Outfall 011 (IOB1014) on the original COC from the field to Del Mar. These instructions did not appear on the transfer COC to Eberline and subsequently only unfiltered analyses were originally performed. Extra volume of Outfall 011 (IOB1014) was sent by Del Mar Analytical (see section 2.1.1) for the filtered and substrate analyses. The results are reported as Outfall 011 Filtered (IOB1014) and Outfall 011 Substrate (IOB1014).

The remaining original and transfer COCs accounted for the samples and analyses presented in this data package. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. A gross alpha was reanalysis was requested for Outfall 001, and tritium reanalysis were requested for Outfall 007, Outfall 008, Outfall 009, and Outfall 010. To distinguish between the original and reanalysis results, the reviewer added an "RE1" suffix to the original MWH and Del Mar Analytical IDs. No qualifications were required.

### 2.1.3 Holding Times

The tritium and cesium analyses were analyzed within 180 days of collection. The Outfall 002 gross alpha, gross beta, and strontium, Outfall 003 Unfiltered gross alpha, gross beta, strontium, radium-226, and radium-228, and Outfall 011 Unfiltered (IOB1014) gross alpha, gross beta, strontium, radium-226, and radium-228 samples were analyzed beyond the five day holding time for unpreserved samples; therefore, these results were qualified as estimated, "J," for detects and, "UJ," for nondetects. As the Outfall 011 Filtered (IOB1014) aliquots for gross alpha, gross beta, radium 226, radium 228, and strontium aliquots were preserved more than five days after collection, these nondetected results were qualified as estimated, "UJ." No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects, unless otherwise rejected (see section 2.10).

### Gross Beta

The initial calibrations were performed in June 1997. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in February 2001 or June 2003. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%, and the actinium chemical yields were greater than 50%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Blank spikes were analyzed in association with the samples in these SDGs. For one blank spike, the gross alpha, gross beta, and strontium recoveries were outside of the 3-sigma limits, but all had acceptable recoveries of 80%, 88%, and 108%, respectively. One radium-228 blank spike was recovered outside of the 3-sigma limits, but had an acceptable recovery of 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 002, Outfall 007, tritium on Outfall 007 RE1, radium-226 and radium-228 on Outfall 011 (IOB1004), for radium 226 on Outfall 011 Filtered, and cesium on Outfall 003 Substrate. The gross alpha and tritium RPDs were greater than 20% for Outfall 007. The gross alpha results were within 3-sigma and were considered acceptable, but the tritium result was just above 3-sigma; however, as no associated tritium detects were retained (see section 2.1.1), no qualifications were required. The remaining RPD were  $\leq 20\%$ . No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 002 and Outfall 007, for tritium on Outfall 007 RE1, and for radium 226 on Outfall 011 Filtered (IOB1014). The Outfall 002 recovery for gross alpha was below 3-sigma; therefore, the gross alpha results in Outfall 001, Outfall 002, Outfall 008, Outfall 009, Outfall 010, Outfall 011 Unfiltered (IOB1014), Outfall 011 (IOB1004), Outfall 003 Filtered, and Outfall 003 Unfiltered were qualified as estimated, "J," for detects and, "UJ," for nondetects. Outfall 007 was also analyzed with Outfall 002, however, as Outfall 007 had an acceptable recovery for gross alpha, no qualifications were applied. The remaining recoveries were within the 3-sigma limits. The radium 226 recovery for Outfall 011 Filtered

DATA VALIDATION REPORT

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Project: NPDES  
SDG No.: Multiple  
Analysis: RAD

was outside the 3-sigma limit; therefore, nondetected radium 226 in Outfall 011 Filtered was qualified as estimated, "UJ." No further qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted.

The original planchet for gross alpha in Outfall 001 was recounted once per a request from MWH personnel. The recount yielded a result equivalent to original count and was not reported. The sample was later reanalyzed from extra sample volume provided by Del Mar Analytical, and was reported as Outfall 001 RE1. As the two gross alpha results were similar, the reviewer rejected, "R," the reanalysis, Outfall 001 RE1, in favor of the original result, Outfall 001. No further qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

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ANALYSIS RESULTS

SDG <u>8237</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502073-01</u>	Contract <u>PROJECT# 1080418</u>
Received Date <u>02/08/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 002 1080418-01	8237-001	02/04/05	03/02/05	GrossAlpha	0.865 ± 2.9	pCi/L	4.35	UJ	H, R, Q	
			03/02/05	Gross Beta	4.17 ± 3.4	pCi/L	5.53	UJ	H	
			02/28/05	H3	5.86 ± 94	pCi/L	158	UJ	H	
			02/25/05	Sr90	0.010 ± 0.22	pCi/L	0.420	UJ	H	

PM 3/24/05

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ANALYSIS RESULTS

SDG <u>8265</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS02138-01</u>	Contract <u>PROJECT# IOB0980</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA	Rev Qual	Qual Code
IOB0980-01		8265-001	02/11/05	03/01/05	GrossAlpha	17.3 ± 4.5	pCi/L	2.78	J	R, A
				03/01/05	Gross Beta	20.0 ± 3.4	pCi/L	3.94		
				03/29/05	Ra-228	0.904 ± 0.20	pCi/L	0.449		
				03/03/05	Tritium	157 ± 150	pCi/L	244	U	
				04/04/05	Ra-226	0.660 ± 0.32	pCi/L	0.423		
				02/25/05	Sr-90	0.034 ± 0.20	pCi/L	0.392	U	

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ANALYSIS RESULTS

SDG 8384	Client DEL MAR ANAL
Work Order R501234-01	Contract PROJECT# IOB0980
Received Date 03/30/05	Matrix WATER

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		Outfall 001 RE1								
IOB0980-01 RE1		8384-001	02/11/05	04/04/05	GrossAlpha	18.1 ± 4.3	pCi/L	2.40	R	D

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ANALYSIS RESULTS

SDG <u>8261</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502132-01</u>	Contract <u>PROJECT# IOB0993</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Pre Qual	Qual Code
Outfall 007 IOB0993-01	8261-001		02/11/05	03/01/05	GrossAlpha	1.64 ± 1.0	pCi/L	0.936	CR	R
				03/01/05	Gross Beta	5.18 ± 1.3	pCi/L	1.80		
				03/02/05	H3	71.9 ± 150	pCi/L	246		
				02/25/05	Sr90	-0.077 ± 0.25	pCi/L	0.499		

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SDG <u>8377</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503226-01</u>	Contract <u>PROJECT# IOB0993</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab								Rev	Qual
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>Units</u>	<u>MDA</u>		<u>Qual</u>	<u>Code</u>
Outfall 007 RE1 IOB0993-01 RE1	8377-001	02/11/05	04/08/05	H3	-86.2 ± 99	pCi/L	171		U	

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ANALYSIS RESULTS

SDG <u>8262</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502133-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code	
Client <u>Sample ID</u> out fall 009 IOB0996-01  pm 3/24/05	Lab 8262-001	Sample ID 02/11/05	Collected 03/01/05	Analyzed GrossAlpha	Nuclide 0.812 ± 0.63	Results ± 2σ pCi/L	Units 0.864	MDA U	Raw Qual U	Qual Code R,Q	
											Gross Beta 1.76 ± 1.1 pCi/L 1.79 U
											H3 59.8 ± 140 pCi/L 240 R
											Sr90 0.078 ± 0.25 pCi/L 0.470 U

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ANALYSIS RESULTS

SDG <u>8378</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503227-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 009 RE1</u>								
IOB0996-01 RE1	8378-001	02/11/05	04/09/05	H3	-129 ± 98	pCi/L	172		U	

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SDG <u>8265</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502137-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Client <u>Sample ID</u> outfall 008 IOB0997-01	Lab 8266-001	02/11/05	03/01/05	GrossAlpha	6.07 ± 1.7	pCi/L	1.06	J	R, Q	
			03/01/05	Gross Beta	7.48 ± 1.5	pCi/L	1.88			
			03/03/05	H3	110 ± 150	pCi/L	242	R	*1	
			02/25/05	Sr90	-0.107 ± 0.22	pCi/L	0.458	C		

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ANALYSIS RESULTS

SDG <u>8379</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503228-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 008 RE1</u>								
IOB0997-01 RE1	8379-001	02/11/05	04/09/05	H3	-76.3 ± 100	pCi/L	172		U	

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ANALYSIS RESULTS

SDG <u>8267</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502138-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 010 IOB1001-01		8267-001	02/11/05	03/01/05	GrossAlpha	4.98 ± 1.5	pCi/L	1.06	J	R,Q
				03/01/05	Gross Beta	8.16 ± 1.6	pCi/L	1.92		
				03/03/05	H3	271 ± 150	pCi/L	240	RA	<del>RA</del>
				02/25/05	Sr90	-0.061 ± 0.24	pCi/L	0.485	U	<del>RA</del>

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ANALYSIS RESULTS

SDG <u>8380</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503229-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 010 RE1</u>								
		IOB1001-01RE1	8380-001	02/11/05	04/09/05	H3	-59.6 ± 100	pCi/L	175	U

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# Eberline Services

## ANALYSIS RESULTS

SDG <u>8269</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502140-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
IOB1069-03		8269-001	02/11/05	02/22/05	Cs137 (G)	0	pCi/Smpl	11.6	U	

Outfall 003 Substrate

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ANALYSIS RESULTS

SDG <u>8263</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502134-01</u>	Contract <u>PROJECT# IOB1004</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Client <u>Outfall (A)</u> IOB1004-01  <i>AM 5/15/05</i>	8263-001		02/11/05	03/01/05	GrossAlpha	2.03 ± 0.91	pCi/L	0.787
				03/01/05	Gross Beta	2.30 ± 1.2	pCi/L	1.78
				04/22/05	Ra228	0.143 ± 0.31	pCi/L	0.787
				03/02/05	H3	21.1 ± 140	pCi/L	240
				05/04/05	Ra226	0.030 ± 0.018	pCi/L	0.027
				02/25/05	Sr90	-0.060 ± 0.23	pCi/L	0.470

Qual	Code
J	R, Q
U	
U	
U	

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ANALYSIS RESULTS

SDG <u>8268</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502133-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
Client Sample ID <u>outfall 003 Filtered</u> IOB1069-01	Lab Sample ID 8268-001		02/11/05	03/01/05	GrossAlpha	-0.288 ± 0.45	pCi/L	0.969
			03/01/05		Gross Beta	4.44 ± 1.3	pCi/L	1.80
			04/22/05		Ra228	1.37 ± 0.46	pCi/L	0.772
			03/03/05		H3	138 ± 150	pCi/L	242
			05/05/05		Ra226	0.056 ± 0.021	pCi/L	0.029
			02/25/05		Sr90	1.04 ± 0.31	pCi/L	0.428
			02/11/05	03/01/05	GrossAlpha	0.240 ± 0.58	pCi/L	1.09
Client Sample ID <u>outfall 003 Unfiltered</u> IOB1069-02	Lab Sample ID 8268-002		03/01/05		Gross Beta	3.53 ± 1.2	pCi/L	1.82
			04/22/05		Ra228	1.30 ± 0.37	pCi/L	0.756
			03/03/05		H3	106 ± 150	pCi/L	242
			05/05/05		Ra226	0.018 ± 0.019	pCi/L	0.031
			02/25/05		Sr90	1.10 ± 0.34	pCi/L	0.462

Rev Qual	Qual Code
UJ	R, Q
C	
45C455	R, Q, H
55455	H
55455	H
55455	H

am s/s/05

NOT VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8347</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503157-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Sample ID IOB1014-03		<u>Outfall Oil Filtered</u> 8347-001	02/11/05	04/02/05	GrossAlpha	0.681 ± 0.61	pCi/L	0.811
				04/02/05	Gross Beta	1.33 ± 1.1	pCi/L	1.76
				06/08/05	Ra-228	0.368 ± 0.18	pCi/L	0.423
				04/07/05	Tritium	-80.6 ± 97	pCi/L	169
				06/09/05	Ra-226	-0.133 ± 0.31	pCi/L	0.675
				04/05/05	Sr-90	0.004 ± 0.24	pCi/L	0.474

REV	Qual	Qual Code
5	5	H, R
5	5	H
5	5	H
5	5	H, R
5	5	H

PM 8/2/05

**AMEC VALIDATED**

**LEVEL 1**

Certified by <u>[Signature]</u>
Report Date <u>05/21/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
IOB1014-01	8264-001	02/11/05	03/01/05	GrossAlpha	0.895 ± 0.76	pCi/L	1.05	
			03/01/05	Gross Beta	2.50 ± 1.3	pCi/L	1.90	
			04/22/05	Ra228	0.375 ± 0.24	pCi/L	0.612	
			03/02/05	H3	97.4 ± 140	pCi/L	237	
			05/04/05	Ra226	0.034 ± 0.022	pCi/L	0.034	
			02/25/05	Sr90	-0.216 ± 0.23	pCi/L	0.519	

PM 5/17/05

Rw Qual	Qual Code
UJ	R, Q, H
HS	H
BS	H
CH	H
BS	H

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8348</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503158-01</u>	Contract <u>PROJECT# 1081014</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 1081014-04	Oil Substrate	8348-001	02/11/05	04/11/05	Cs137 (G)	U	pCi/G	29.3	U	

pm 8/2/05

**AMEC VALIDATED**

**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>07/06/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV45  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 1

Laboratory Del Mar

Date: April 4, 2005

Reviewer M. Pokorny

Reviewer's Signature

Analysis/Method Semivolatiles

*M. Pokorny*

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were required for calibration and LCS outliers.
COMMENTS <sup>b</sup>	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOB1014-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of 4°C ±2°C. The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 02/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds except for the  $r^2$  values for 2,4-dinitrophenol, 4-nitroaniline, and 4,6-dinitro-2-methylphenol. 2,4-Dinitrophenol, 4-nitroaniline, and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the sample of this SDG. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 02/18/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$ , except for the %Ds for NDMA, benzoic acid, and 4-nitrophenol. NDMA, benzoic acid, and 4-nitrophenol were qualified as estimated nondetects, "UJ," in the sample of this SDG. A representative number of RRFs,  $r^2$  values, and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

### 2.4 BLANKS

One method blank (5B14010-BLK1) was extracted and analyzed with this SDG. Fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene were reported in the method blank at concentrations less than the reporting limits; however, the sample of this SDG did not have any

target compound detects. Review of the raw data indicated no reportable false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5B14010-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ," for nondetects, and "J," for detects, in the associated samples. All percent recoveries and RPDs were within the laboratory QC limits except for benzidine. Benzidine was not recovered in the BSD and its RPD exceeded the control limit. The RPD for NDMA exceeded the control limit. The sample of this SDG had benzidine and NDMA qualified as estimated nondetects, "UJ." A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial and the method detection limit study. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.



# Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
Outfall 011  
Report Number: IOB1014

Sampled: 02/11/05  
Received: 02/11/05

## DRAFT: ACID & BASE NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									QUAL	QUA CAD
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water); Reporting Units: ug/l										
Acenaphthene	EPA 625	5B14010	0.10	0.50	ND	0.962	02/14/05	02/18/05	U	
Acenaphthylene	EPA 625	5B14010	0.10	0.50	ND	0.962	02/14/05	02/18/05	U	
Aniline	EPA 625	5B14010	2.9	10	ND	0.962	02/14/05	02/18/05	U	
Anthracene	EPA 625	5B14010	0.085	0.50	ND	0.962	02/14/05	02/18/05	U	
Benzidine	EPA 625	5B14010	2.4	5.0	ND	0.962	02/14/05	02/18/05	U	
Benzoic acid	EPA 625	5B14010	3.7	20	ND	0.962	02/14/05	02/18/05	U	
Benzo(a)anthracene	EPA 625	5B14010	0.058	5.0	ND	0.962	02/14/05	02/18/05	U	
Benzo(a)pyrene	EPA 625	5B14010	0.14	2.0	ND	0.962	02/14/05	02/18/05	U	
Benzo(b)fluoranthene	EPA 625	5B14010	0.050	2.0	ND	0.962	02/14/05	02/18/05	U	
Benzo(g,h,i)perylene	EPA 625	5B14010	0.059	5.0	ND	0.962	02/14/05	02/18/05	U	
Benzo(k)fluoranthene	EPA 625	5B14010	0.055	0.50	ND	0.962	02/14/05	02/18/05	U	
Benzyl alcohol	EPA 625	5B14010	0.21	5.0	ND	0.962	02/14/05	02/18/05	U	
Bis(2-chloroethoxy)methane	EPA 625	5B14010	0.072	0.50	ND	0.962	02/14/05	02/18/05	U	
Bis(2-chloroethyl)ether	EPA 625	5B14010	0.084	0.50	ND	0.962	02/14/05	02/18/05	U	
Bis(2-chloroisopropyl)ether	EPA 625	5B14010	0.11	0.50	ND	0.962	02/14/05	02/18/05	U	
Bis(2-ethylhexyl)phthalate	EPA 625	5B14010	1.1	5.0	ND	0.962	02/14/05	02/18/05	U	
4-Bromophenyl phenyl ether	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	U	
Butyl benzyl phthalate	EPA 625	5B14010	0.34	5.0	ND	0.962	02/14/05	02/18/05	U	
4-Chloroaniline	EPA 625	5B14010	0.20	2.0	ND	0.962	02/14/05	02/18/05	U	
2-Chloronaphthalene	EPA 625	5B14010	0.059	0.50	ND	0.962	02/14/05	02/18/05	U	
4-Chloro-3-methylphenol	EPA 625	5B14010	0.34	2.0	ND	0.962	02/14/05	02/18/05	U	
4-Chlorophenyl phenyl ether	EPA 625	5B14010	0.056	0.50	ND	0.962	02/14/05	02/18/05	U	
2-Chlorophenol	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	U	
Chrysene	EPA 625	5B14010	0.072	0.50	ND	0.962	02/14/05	02/18/05	U	
Dibenz(a,h)anthracene	EPA 625	5B14010	0.085	0.50	ND	0.962	02/14/05	02/18/05	U	
Dibenzofuran	EPA 625	5B14010	0.075	0.50	ND	0.962	02/14/05	02/18/05	U	
Di-n-butyl phthalate	EPA 625	5B14010	0.26	2.0	ND	0.962	02/14/05	02/18/05	U	
1,2-Dichlorobenzene	EPA 625	5B14010	0.11	0.50	ND	0.962	02/14/05	02/18/05	U	
1,3-Dichlorobenzene	EPA 625	5B14010	0.13	0.50	ND	0.962	02/14/05	02/18/05	U	
1,4-Dichlorobenzene	EPA 625	5B14010	0.050	0.50	ND	0.962	02/14/05	02/18/05	U	
3,3-Dichlorobenzidine	EPA 625	5B14010	0.93	5.0	ND	0.962	02/14/05	02/18/05	U	
2,4-Dichlorophenol	EPA 625	5B14010	0.21	2.0	ND	0.962	02/14/05	02/18/05	U	
Diethyl phthalate	EPA 625	5B14010	0.12	1.0	ND	0.962	02/14/05	02/18/05	U	
2,4-Dimethylphenol	EPA 625	5B14010	0.31	2.0	ND	0.962	02/14/05	02/18/05	U	
Dimethyl phthalate	EPA 625	5B14010	0.081	0.50	ND	0.962	02/14/05	02/18/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5B14010	0.38	5.0	ND	0.962	02/14/05	02/18/05	U	
2,4-Dinitrophenol	EPA 625	5B14010	2.7	5.0	ND	0.962	02/14/05	02/18/05	U	
2,4-Dinitrotoluene	EPA 625	5B14010	0.23	5.0	ND	0.962	02/14/05	02/18/05	U	
2,6-Dinitrotoluene	EPA 625	5B14010	0.24	5.0	ND	0.962	02/14/05	02/18/05	U	
Di-n-octyl phthalate	EPA 625	5B14010	0.17	5.0	ND	0.962	02/14/05	02/18/05	U	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B14010	0.087	1.0	ND	0.962	02/14/05	02/18/05	U	

DRAFT REPORT  
DRAFT REPORT  
DATA SUBJECT TO CHANGE

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LEVEL IV



# Del Mar Analytical

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 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5B14010	0.089	0.50	ND	0.962	02/14/05	02/18/05	U
Fluorene	EPA 625	5B14010	0.075	0.50	ND	0.962	02/14/05	02/18/05	U
Hexachlorobenzene	EPA 625	5B14010	0.15	1.0	ND	0.962	02/14/05	02/18/05	U
Hexachlorobutadiene	EPA 625	5B14010	0.38	2.0	ND	0.962	02/14/05	02/18/05	U
Hexachlorocyclopentadiene	EPA 625	5B14010	1.8	5.0	ND	0.962	02/14/05	02/18/05	U
Hexachloroethane	EPA 625	5B14010	0.51	3.0	ND	0.962	02/14/05	02/18/05	U
Indeno(1,2,3-cd)pyrene	EPA 625	5B14010	0.19	2.0	ND	0.962	02/14/05	02/18/05	U
Isophorone	EPA 625	5B14010	0.059	1.0	ND	0.962	02/14/05	02/18/05	U
2-Methylnaphthalene	EPA 625	5B14010	0.13	1.0	ND	0.962	02/14/05	02/18/05	U
2-Methylphenol	EPA 625	5B14010	0.28	2.0	ND	0.962	02/14/05	02/18/05	U
4-Methylphenol	EPA 625	5B14010	0.20	5.0	ND	0.962	02/14/05	02/18/05	U
Naphthalene	EPA 625	5B14010	0.13	1.0	ND	0.962	02/14/05	02/18/05	U
2-Nitroaniline	EPA 625	5B14010	0.18	5.0	ND	0.962	02/14/05	02/18/05	U
3-Nitroaniline	EPA 625	5B14010	0.35	5.0	ND	0.962	02/14/05	02/18/05	U
4-Nitroaniline	EPA 625	5B14010	0.49	5.0	ND	0.962	02/14/05	02/18/05	U
Nitrobenzene	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	U
2-Nitrophenol	EPA 625	5B14010	0.23	2.0	ND	0.962	02/14/05	02/18/05	U
4-Nitrophenol	EPA 625	5B14010	0.73	5.0	ND	0.962	02/14/05	02/18/05	U
N-Nitrosodimethylamine	EPA 625	5B14010	0.22	2.0	ND	0.962	02/14/05	02/18/05	U
N-Nitroso-di-n-propylamine	EPA 625	5B14010	0.18	2.0	ND	0.962	02/14/05	02/18/05	U
N-Nitrosodiphenylamine	EPA 625	5B14010	0.077	1.0	ND	0.962	02/14/05	02/18/05	U
Pentachlorophenol	EPA 625	5B14010	0.78	2.0	ND	0.962	02/14/05	02/18/05	U
Phenanthrene	EPA 625	5B14010	0.071	0.50	ND	0.962	02/14/05	02/18/05	U
Phenol	EPA 625	5B14010	0.14	1.0	ND	0.962	02/14/05	02/18/05	U
Pyrene	EPA 625	5B14010	0.059	0.50	ND	0.962	02/14/05	02/18/05	U
1,2,4-Trichlorobenzene	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	U
2,4,5-Trichlorophenol	EPA 625	5B14010	0.075	2.0	ND	0.962	02/14/05	02/18/05	U
2,4,6-Trichlorophenol	EPA 625	5B14010	0.10	1.0	ND	0.962	02/14/05	02/18/05	U
Surrogate: 2-Fluorophenol (35-120%)									77%
Surrogate: Phenol-d6 (45-120%)									72%
Surrogate: 2,4,6-Tribromophenol (50-125%)									77%
Surrogate: Nitrobenzene-d5 (45-120%)									74%
Surrogate: 2-Fluorobiphenyl (45-120%)									76%
Surrogate: Terphenyl-d14 (45-135%)									75%

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

### AMEC VALIDATED

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IOB1014 Page 28 of 39

LEVEL IV

### CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711TF50  
Task Order 313150010  
SDG No. IOB1014  
No. of Analyses 2

Laboratory Del Mar Analytical

Date: April 6, 2005

Reviewer L. Calvin

Reviewer's Signature

Analysis/Method GRO by Method 8015M

*L. Calvin*

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: Total Petroleum Hydrocarbons: Purgeable

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOB1014-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB1014-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $4^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. The TPH-GRO analysis was not requested on the COC for the trip blank sample; however, as the laboratory analyzed the trip blank and included it in the data package, the analysis was validated. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/20/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for all CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5B22003-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5B22003-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike.

The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound 4-bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140% for both samples. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. There were no field blank or equipment rinsate samples associated with this SDG. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibrations and by the laboratory MDL. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont. Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B22003	0.050	0.10	ND	1	02/22/05	02/22/05	u
Surrogate: 4-BFB (FID) (65-140%)					78 %				
Sample ID: IOB1014-02 (DRAFT: Trip Blank - Water) Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B23023	0.050	0.10	ND	1	02/23/05	02/23/05	u
Surrogate: 4-BFB (FID) (65-140%)					93 %				

AMEC VALIDATED  
 LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF51  
 Task Order 313150010  
 SDG No. JOB1014  
 No. of Analyses 1

Laboratory Del Mar Analytical

Reviewer L. Calvin

Analysis/Method EFH by Method 8015B

Date: April 6, 2005
Reviewer Signature <i>L. Calvin</i>

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	_____
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



Table 1. Sample identification

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOB1014-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 02/08/05. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5B19002-BLK1) was extracted and analyzed with the sample in this SDG. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5B19002-BS1/BSD1) was extracted and analyzed with the sample in this SDG. The recoveries of alkane range C13-C22 from spiked diesel were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample was fortified with the surrogate compound n-octacosane. The sample surrogate recovery was within the laboratory-established QC of 40-125%. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the sample of this SDG. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factor on the sample result summary reflected the sample amount extracted. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5B14105	0.082	0.50	ND	0.98	02/14/05	02/15/05	u
Surrogate: n-Octacosane (40-125%)									
					59 %				

*ver  
qual  
code*

### AMEC VALIDATED

### LEVEL 1

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

*The results pertain only to the samples used  
 except in full.*

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO77  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 2

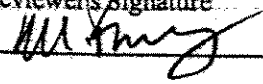
Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles

Date: April 4, 2005

Reviewer's Signature



ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were required for calibration outliers.
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOB1014-01	water	624
Trip Blank	Trip Blank	IOB1014-02	water	624



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of 4°C ±2°C. The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. 2-Chloroethylvinyl ether was analyzed from an unpreserved sample. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 11/03/04 (acrolein, acrylonitrile, and Freon 113 only) and 02/01/05 were associated with this SDG. The average RRFs were ≥0.05 for all compounds listed on the sample result summaries except for the RRF for acrolein. Acrolein was rejected, "R," in both of the samples. The %RSDs were ≤35% for the target compounds analyzed by EPA Method 624, and the %RSD for trichlorotrifluoroethane (Freon 113) analyzed by EPA SW-846 Method 8260B was ≤15%. Two continuing calibrations associated with the sample analyses were analyzed 02/17/05 (14:08 and 15:09). The RRFs were ≥0.05 in all of the continuing calibrations, except for the RRF for acrolein. Acrolein was rejected, "R," in both of the samples of this SDG. The %Ds for acrolein and acrylonitrile exceeded 20% in the continuing calibration. Acrolein was already rejected and not further qualified. Acrylonitrile was qualified as an estimated nondetect, "UJ," in the site sample. No qualifications were required for the Trip blank. The %Ds were ≤20% for the remaining target compounds listed on the result summaries. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations

were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blanks (5B17014-BLK1 and 5B12011-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5B17014-BS1 and 5B12011-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank was the trip blank associated with this SDG. No target compounds were reported in the trip blank. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in the site samples of these SDGs. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	REV QUAL
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	QUAL
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	QUAL
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	QUAL
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	QUAL
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	QUAL
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	QUAL
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	QUAL
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	QUAL
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	QUAL
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	QUAL
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	QUAL
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	QUAL
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	QUAL
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	QUAL
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	QUAL
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	QUAL
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	QUAL
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	QUAL
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	QUAL
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	QUAL
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	QUAL
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	QUAL
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	QUAL
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	QUAL
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	QUAL
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	QUAL
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	QUAL
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	QUAL
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	QUAL
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	QUAL
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

# AMEC VALIDATED

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## LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	U
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)									109 %
Surrogate: Toluene-d8 (80-120%)									101 %
Surrogate: 4-Bromofluorobenzene (80-120%)									97 %

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### LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									RD	QUAL CODE
Sample ID: IOB1014-01RE1 (DRAFT: Outfall 011-grab - Water)										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B24007	1.2	5.0	ND	1	02/24/05	02/24/05	U	
Surrogate: Dibromofluoromethane (80-120%)					104 %					
Surrogate: Toluene-d8 (80-120%)					99 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					100 %					
Sample ID: IOB1014-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	U	
Surrogate: Dibromofluoromethane (80-120%)					109 %					
Surrogate: Toluene-d8 (80-120%)					101 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %					

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### LEVEL IV

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 1320 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	R
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	C
Surrogate: Dibromofluoromethane (80-120%)					98 %				U
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				
<b>Sample ID: IOB1014-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	R
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	C
Surrogate: Dibromofluoromethane (80-120%)					97 %				U
Surrogate: Toluene-d8 (80-120%)					105 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					100 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Qualifiers	
									REV QUAL	QUAL CODE
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	UJ	#11
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	UJ	#11
Sample ID: IOB1014-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	U	
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	U	

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LEVEL IV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711WC108  
Task Order 313150010  
SDG No. IOB1014

No. of Analyses 1

Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method General Minerals

Date: 03/31/05  
Reviewer's Signature  
*L. Jarusewic*

**ACTION ITEMS\***

1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not	
Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from	Qualifications applied for:
Analysis Protocol, e.g.,	1) Detects below the reporting limit
	2) CCB detects
Holding Times	
GC/MS Tune/Inst.	
Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard	
Performance	
Compound Identification	
and Quantitation	
System Performance	

**COMMENTS\***

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
\* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: March 31, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 330.5, 405.1, 335.2, 160.2, 120.1, 160.5, 415.1, 413.1, 350.2, 418.1, and 180.1. Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOB1014  
Analysis: General Minerals

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOB1014-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC accounted for the analyses and sample presented in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for total recoverable hydrocarbons, ammonia, chloride, fluoride, sulfate, oil and grease, total organic carbon, and conductivity, the 14-day analytical holding time for cyanide, the seven-day holding time for total dissolved solids and total suspended solids, the 48-hour holding time for turbidity, nitrate/nitrite, surfactants, total settleable solids, and biological oxygen demand, and the 24-hour residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . The initial and continuing calibration verification information was acceptable with recoveries within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. The total cyanide reporting limit check standard was recovered above control limits at 137.9%; however, as cyanide was not detected in Outfall 011-Grab, no qualifications were required. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total settleable solids, or total suspended solids. No qualifications were required.

### 2.3 BLANKS

Turbidity was detected in method blank 5B12055-BLK1 at 0.040 NTU; however, the method blank result was insufficient to qualify the Outfall 011-Grab result. Fluoride was detected in a bracketing CCB at 0.27 mg/L; therefore, fluoride detected in Outfall 011-Grab was qualified as estimated, "UJ." The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No further qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, total recoverable hydrocarbons, and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, total settleable solids, conductivity, or residual chlorine. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

## **2.6 LABORATORY DUPLICATES**

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Surfactant detected below the reporting limit was qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont. Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5B15110	0.50	0.50	ND	1	02/15/05	02/15/05	U
Biochemical Oxygen Demand	EPA 405.1	5B12037	0.59	2.0	3.6	1	02/12/05	02/17/05	
Chloride	EPA 300.0	5B11120	0.25	0.50	5.4	1	02/11/05	02/12/05	
Fluoride	EPA 300.0	5B11120	0.10	0.50	0.29	1	02/11/05	02/12/05	
Nitrate/Nitrite-N	EPA 300.0	5B11120	0.072	0.26	0.47	1	02/11/05	02/12/05	U, J, B
Oil & Grease	EPA 413.1	5B14044	0.94	5.0	ND	1	02/14/05	02/14/05	
Residual Chlorine	EPA 330.5	5B12035	0.10	0.10	ND	1	02/12/05	02/12/05	U
Sulfate	EPA 300.0	5B11120	0.18	0.50	14	1	02/11/05	02/12/05	J
Surfactants (MBAS)	SM5540-C	5B12050	0.044	0.10	0.082	1	02/12/05	02/12/05	J, BNG
Total Dissolved Solids	SM2540C	5B16119	10	10	110	1	02/16/05	02/16/05	
Total Organic Carbon	EPA 415.1	5B18126	0.25	1.0	11	1	02/18/05	02/18/05	
Total Suspended Solids	EPA 160.2	5B17069	10	10	26	1	02/17/05	02/17/05	

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### LEVEL 1

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: ml/hr									
Total Suspended Solids	EPA 160.5	SB12034	0.10	0.10	ND	1	02/12/05	02/12/05	U

REV QUAL CODE

# AMEC VALIDATED

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 DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B12055	0.040	1.0	38	1	02/12/05	02/12/05	REV QUAL CODE

# AMEC VALIDATED

# LEVEL II

DRAFT REPORT  
 DRAFT REPORT  
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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 787-0043 FAX (480) 787-0043  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5B14107	2.2	5.0	ND	1	02/14/05	02/14/05	U
Perchlorate	EPA 314.0	5B17053	0.80	4.0	ND	1	02/17/05	02/17/05	*

REV  
 DATE  
 CODE

### AMEC VALIDATED

*[Faint, illegible text]*

*[Faint, illegible text]*

DRAFT REPORT  
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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 305-8596 FAX (619) 305-9681  
 9830 South 51st St., Suite B-100, Phoenix, AZ 85044 (480) 790-0041 FAX (480) 790-0041  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: I3267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont. Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B16120	1.0	1.0	130	1	02/16/05	02/16/05	REV QUAL CODE

# AMEC VALIDATED

# LEVEL 1

DRAFT REPORT  
 DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5B15078	0.31	1.0	ND	1	02/15/05	02/15/05	U

REV QUAL  
 CODE

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

*The results presented are for samples tested in the laboratory. This report is not valid unless used  
 along with the original specimens from the test locations.*

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711WC109  
 Task Order 313150010  
 SDG No. IOB1014

No. of Analyses 1

Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method Perchlorate

Date: 03/31/05  
 Reviewer's Signature 

**ACTION ITEMS\***

1. **Case Narrative Deficiencies**

2. **Out of Scope Analyses**

3. **Analyses Not Conducted**

4. **Missing Hardcopy Deliverables**

5. **Incorrect Hardcopy Deliverables**

6. **Deviations from Analysis Protocol, e.g.,**

    Holding Times

    GC/MS Tune/Inst.

        Performance

    Calibrations

    Blanks

    Surrogates

    Matrix Spike/Dup LCS

    Field QC

    Internal Standard

        Performance

    Compound Identification

        and Quantitation

    System Performance

**COMMENTS<sup>b</sup>**

Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOB1014

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB1014  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: March 31, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2*, USEPA *Methods for Chemical Analysis of Water and Wastes Method 314.0*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOB1014-01	Water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel, and accounted for the sample and analysis presented in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV, and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in this SDG.

## **2.6 LABORATORY DUPLICATES**

No MS/MSD or duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form I was verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1014

Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1014-01 (DRAFT: Outfall 011-grab - Water) - cont.									
Reporting Units: ug/l									
Total Cyanide	EPA 335.2	5B14107	2.2	5.0	ND	1	02/14/05	02/14/05	* u
Perchlorate	EPA 314.0	5B17053	0.80	4.0	ND	1	02/17/05	02/17/05	

REV  
 QUAL  
 BUA  
 COD

# AMEC VALIDATED

# LEVEL IV

Not Valid

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 29**

Outfall 011, February 25, 2005

Del Mar Analytical Laboratory Report



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 02/25/05  
Received: 02/25/05  
Issued: 04/07/05 18:48

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 3 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOB2065-01	Outfall 011 Grab	Water
IOB2065-02	Trip Blank	Water
IOB2065-03	Outfall 011-Grab/filtered	Water
IOB2065-04	Outfall 011-Grab/Substrate	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

## CORRECTIVE ACTION REPORT

Department: Extractions  
Method: EPA 625  
QC Batch: 5B28001

Date: 03/03/2005  
Matrix: Water

### Identification and Definition of Problem:

The percent recovery for benzidine in the LCS was below method acceptance limits.

### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:



Dave Dawes

Date: 03/04/2005 09:37 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water)</b>									
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5B28069	0.31	1.0	ND	1	02/28/05	02/28/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.99	03/01/05	03/02/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					69 %				

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C04004	0.050	0.10	ND	1	03/04/05	03/04/05	
Surrogate: 4-BFB (FID) (65-140%)					87 %				
<b>Sample ID: IOB2065-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C04004	0.050	0.10	ND	1	03/04/05	03/04/05	
Surrogate: 4-BFB (FID) (65-140%)					92 %				

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 Michele Harper  
 Project Manager

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				
<b>Sample ID: IOB2065-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					99 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05	
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05	
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05	
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05	
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05	
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05	
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05	
<b>Methylene chloride</b>	EPA 624	5B26009	0.48	5.0	<b>0.74</b>	1	02/26/05	02/26/05	J
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05	
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05	
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)					106 %				
Surrogate: Toluene-d8 (80-120%)					96 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05	
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05	
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05	
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05	
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05	
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05	
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05	
<b>Methylene chloride</b>	EPA 624	5B26009	0.48	5.0	<b>0.94</b>	1	02/26/05	02/26/05	J
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05	
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05	
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)									101 %
Surrogate: Toluene-d8 (80-120%)									94 %
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)					106 %				
Surrogate: Toluene-d8 (80-120%)					96 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOB2065-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)					101 %				
Surrogate: Toluene-d8 (80-120%)					94 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Del Mar Analytical, Irvine  
Michele Harper  
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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	
<b>Sample ID: IOB2065-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05	
Acenaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05	
Aniline	EPA 625	5B28001	2.9	10	ND	0.971	02/28/05	03/02/05	
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05	
Benzidine	EPA 625	5B28001	3.2	5.0	ND	0.971	02/28/05	03/03/05	L2
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.971	02/28/05	03/02/05	
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.971	02/28/05	03/02/05	
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.971	02/28/05	03/02/05	
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.971	02/28/05	03/02/05	
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.971	02/28/05	03/02/05	
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.971	02/28/05	03/02/05	
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.971	02/28/05	03/02/05	
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05	
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.971	02/28/05	03/02/05	
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.971	02/28/05	03/02/05	
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05	
Butyl benzyl phthalate	EPA 625	5B28001	0.34	5.0	ND	0.971	02/28/05	03/02/05	
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.971	02/28/05	03/02/05	
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05	
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.971	02/28/05	03/02/05	
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.971	02/28/05	03/02/05	
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05	
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05	
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05	
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05	
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.971	02/28/05	03/02/05	
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05	
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.971	02/28/05	03/02/05	
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.971	02/28/05	03/02/05	
3,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.971	02/28/05	03/02/05	
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.971	02/28/05	03/02/05	
Diethyl phthalate	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05	
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.971	02/28/05	03/02/05	
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.971	02/28/05	03/02/05	
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.971	02/28/05	03/02/05	
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.971	02/28/05	03/02/05	
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.971	02/28/05	03/02/05	
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.971	02/28/05	03/02/05	
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.971	02/28/05	03/02/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.971	02/28/05	03/02/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.971	02/28/05	03/02/05	
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05	
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05	
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.971	02/28/05	03/02/05	
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.971	02/28/05	03/02/05	
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.971	02/28/05	03/02/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.971	02/28/05	03/02/05	
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.971	02/28/05	03/02/05	
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05	
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.971	02/28/05	03/02/05	
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.971	02/28/05	03/02/05	
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05	
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.971	02/28/05	03/02/05	
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.971	02/28/05	03/02/05	
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.971	02/28/05	03/02/05	
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05	
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.971	02/28/05	03/02/05	
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.971	02/28/05	03/02/05	
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.971	02/28/05	03/02/05	
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.971	02/28/05	03/02/05	
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.971	02/28/05	03/02/05	
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.971	02/28/05	03/02/05	
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.971	02/28/05	03/02/05	
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.971	02/28/05	03/02/05	
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05	
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05	
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.971	02/28/05	03/02/05	
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05	
Surrogate: 2-Fluorophenol (30-120%)									75 %
Surrogate: Phenol-d6 (35-120%)									69 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									97 %
Surrogate: Nitrobenzene-d5 (45-120%)									77 %
Surrogate: 2-Fluorobiphenyl (45-120%)									78 %
Surrogate: Terphenyl-d14 (45-120%)									83 %

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05	
alpha-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05	
beta-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05	
delta-BHC	EPA 608	5C04051	0.020	0.20	ND	1	03/04/05	03/05/05	
gamma-BHC (Lindane)	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05	
Chlordane	EPA 608	5C04051	0.20	1.0	ND	1	03/04/05	03/05/05	
4,4'-DDD	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05	
4,4'-DDE	EPA 608	5C04051	0.025	0.10	ND	1	03/04/05	03/05/05	
<b>4,4'-DDT</b>	EPA 608	5C04051	0.030	0.10	<b>0.038</b>	1	03/04/05	03/05/05	J
Dieldrin	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05	
Endosulfan I	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05	
Endosulfan II	EPA 608	5C04051	0.040	0.10	ND	1	03/04/05	03/05/05	
Endosulfan sulfate	EPA 608	5C04051	0.015	0.20	ND	1	03/04/05	03/05/05	
Endrin	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05	
Endrin aldehyde	EPA 608	5C04051	0.045	0.10	ND	1	03/04/05	03/05/05	
Endrin ketone	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05	
Heptachlor	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05	
Heptachlor epoxide	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05	
Methoxychlor	EPA 608	5C04051	0.035	0.10	ND	1	03/04/05	03/05/05	
Toxaphene	EPA 608	5C04051	1.5	5.0	ND	1	03/04/05	03/05/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					61 %				
Surrogate: Decachlorobiphenyl (45-120%)					76 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05	
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.962	03/02/05	03/03/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					65 %				

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Sampled: 02/25/05  
 Received: 02/25/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C03085	0.00014	0.0010	<b>0.020</b>	1	03/03/05	03/03/05	
Boron	EPA 200.7	5C02083	0.0074	0.050	<b>0.062</b>	1	03/02/05	03/02/05	
Iron	EPA 200.8	5C03085	0.0032	0.010	<b>0.56</b>	1	03/03/05	03/03/05	

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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C03085	0.18	2.0	0.33	1	03/03/05	03/03/05	B, J
Arsenic	EPA 200.8	5C03085	0.49	1.0	1.3	1	03/03/05	03/03/05	
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05	
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.10	1	03/03/05	03/03/05	J
Chromium	EPA 200.8	5C03085	0.26	2.0	0.90	1	03/03/05	03/03/05	J
Cobalt	EPA 200.8	5C03085	0.10	1.0	0.23	1	03/03/05	03/03/05	J
Copper	EPA 200.8	5C03085	0.49	2.0	3.2	1	03/03/05	03/03/05	
Lead	EPA 200.8	5C03085	0.13	1.0	0.57	1	03/03/05	03/03/05	J
Manganese	EPA 200.8	5C03085	0.44	1.0	13	1	03/03/05	03/03/05	
Mercury	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05	
Nickel	EPA 200.8	5C03085	0.15	2.0	1.0	1	03/03/05	03/03/05	J
Selenium	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05	
Silver	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05	
Thallium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05	
Vanadium	EPA 200.8	5C03085	0.86	2.0	1.5	1	03/03/05	03/03/05	J
Zinc	EPA 200.8	5C03085	3.1	20	16	1	03/03/05	03/03/05	J

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Sampled: 02/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03/07/05	
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	<b>0.68</b>	1	02/25/05	03/02/05	J
Chloride	EPA 300.0	5B25042	0.26	0.50	<b>5.1</b>	1	02/25/05	02/25/05	
Fluoride	EPA 300.0	5B25042	0.10	0.50	<b>0.17</b>	1	02/25/05	02/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	<b>0.38</b>	1	02/25/05	02/25/05	
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03/02/05	
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	
Sulfate	EPA 300.0	5B25042	0.18	0.50	<b>11</b>	1	02/25/05	02/25/05	
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	<b>0.054</b>	1	02/25/05	02/25/05	J
Total Dissolved Solids	SM2540C	5B28078	10	10	<b>100</b>	1	02/28/05	02/28/05	
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	<b>11</b>	1	03/01/05	03/01/05	
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03/03/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ml/hr</b>									
Total Settleable Solids	EPA 160.5	5B25097	0.10	0.10	ND	1	02/25/05	02/25/05	

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 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B26046	0.040	1.0	9.4	1	02/26/05	02/26/05	

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Sampled: 02/25/05  
 Received: 02/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B28080	1.0	1.0	150	1	02/28/05	02/28/05	

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 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (Outfall 011 Grab - Water) - cont.</b>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C0309	0.49	1.0	ND	1	03/03/05	03/03/05	
Surrogate: Dibromofluoromethane (80-125%)					117 %				

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Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 Grab (IOB2065-01) - Water</b>					
EPA 160.5	2	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 21:15	02/25/2005 22:15
EPA 180.1	2	02/25/2005 10:42	02/25/2005 19:20	02/26/2005 12:00	02/26/2005 13:00
EPA 218.6	1	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 22:20	02/26/2005 00:11
EPA 300.0	2	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 20:15	02/25/2005 22:00
EPA 330.5	1	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 22:15	02/25/2005 22:30
EPA 405.1	2	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 21:00	03/02/2005 14:30
EPA 624	3	02/25/2005 10:42	02/25/2005 19:20	02/26/2005 00:00	02/26/2005 17:57
SM5540-C	2	02/25/2005 10:42	02/25/2005 19:20	02/25/2005 19:49	02/25/2005 23:14
<b>Sample ID: Trip Blank (IOB2065-02) - Water</b>					
EPA 624	3	02/25/2005 15:00	02/25/2005 19:20	02/26/2005 00:00	02/26/2005 11:56

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**METHOD BLANK/QC DATA**

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28069 Extracted: 02/28/05</b>										
<b>Blank Analyzed: 02/28/2005 (5B28069-BLK1)</b>										
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l						
<b>LCS Analyzed: 02/28/2005 (5B28069-BS1)</b>										
Total Recoverable Hydrocarbons	4.18	1.0	0.31	mg/l	5.00		84	65-120		M-NRI
<b>LCS Dup Analyzed: 02/28/2005 (5B28069-BSD1)</b>										
Total Recoverable Hydrocarbons	4.33	1.0	0.31	mg/l	5.00		87	65-120	4 20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**METHOD BLANK/QC DATA**

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C01045 Extracted: 03/01/05</b>										
<b>Blank Analyzed: 03/02/2005 (5C01045-BLK1)</b>										
EFH (C13 - C22)	ND	0.50	0.082	mg/l						
EFH (C13 - C40)	ND	0.50	0.082	mg/l						
Surrogate: n-Octacosane	0.131			mg/l	0.200		66 40-125			
<b>LCS Analyzed: 03/02/2005 (5C01045-BS1)</b>										
EFH (C13 - C40)	0.586	0.50	0.082	mg/l	0.775		76 40-120			M-NR1
Surrogate: n-Octacosane	0.164			mg/l	0.200		82 40-125			
<b>LCS Dup Analyzed: 03/02/2005 (5C01045-BSD1)</b>										
EFH (C13 - C40)	0.503	0.50	0.082	mg/l	0.775		65 40-120	15	25	
Surrogate: n-Octacosane	0.146			mg/l	0.200		73 40-125			

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**METHOD BLANK/QC DATA**

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C04004 Extracted: 03/04/05</b>											
<b>Blank Analyzed: 03/04/2005 (5C04004-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00860			mg/l	0.0100		86	65-140			
<b>LCS Analyzed: 03/04/2005 (5C04004-BS1)</b>											
GRO (C4 - C12)	0.654	0.10	0.050	mg/l	0.800		82	70-140			
Surrogate: 4-BFB (FID)	0.0248			mg/l	0.0300		83	65-140			
<b>Matrix Spike Analyzed: 03/04/2005 (5C04004-MS1) Source: IOB1759-15</b>											
GRO (C4 - C12)	3.47	1.0	0.50	mg/l	2.20	1.7	80	60-140			
Surrogate: 4-BFB (FID)	0.109			mg/l	0.100		109	65-140			
<b>Matrix Spike Dup Analyzed: 03/04/2005 (5C04004-MSD1) Source: IOB1759-15</b>											
GRO (C4 - C12)	3.61	1.0	0.50	mg/l	2.20	1.7	87	60-140	4	20	
Surrogate: 4-BFB (FID)	0.108			mg/l	0.100		108	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C04021 Extracted: 03/04/05</b>											
<b>Blank Analyzed: 03/04/2005 (5C04021-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	26.9			ug/l	25.0		108	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	24.6			ug/l	25.0		98	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>										
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	24.4			ug/l	25.0		98		80-120	
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98		80-120	

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>LCS Analyzed: 02/26/2005 (5B26009-BS1)</b>											
Benzene	28.2	1.0	0.28	ug/l	25.0		113	70-120			
Bromodichloromethane	27.2	2.0	0.30	ug/l	25.0		109	70-140			
Bromoform	22.4	5.0	0.32	ug/l	25.0		90	55-135			
Bromomethane	28.1	5.0	0.34	ug/l	25.0		112	60-140			
Carbon tetrachloride	26.7	0.50	0.28	ug/l	25.0		107	70-140			
Chlorobenzene	27.5	2.0	0.36	ug/l	25.0		110	80-125			
Chloroethane	27.7	5.0	0.33	ug/l	25.0		111	60-145			
Chloroform	30.0	2.0	0.33	ug/l	25.0		120	75-130			
Chloromethane	26.2	5.0	0.30	ug/l	25.0		105	40-145			
Dibromochloromethane	27.4	2.0	0.28	ug/l	25.0		110	65-145			
1,2-Dichlorobenzene	27.8	2.0	0.32	ug/l	25.0		111	80-120			
1,3-Dichlorobenzene	27.6	2.0	0.35	ug/l	25.0		110	80-120			
1,4-Dichlorobenzene	27.0	2.0	0.37	ug/l	25.0		108	80-120			
1,1-Dichloroethane	28.9	2.0	0.27	ug/l	25.0		116	70-135			
1,2-Dichloroethane	29.0	0.50	0.28	ug/l	25.0		116	60-150			
1,1-Dichloroethene	27.7	5.0	0.32	ug/l	25.0		111	75-135			
trans-1,2-Dichloroethene	29.0	2.0	0.27	ug/l	25.0		116	70-130			
1,2-Dichloropropane	28.1	2.0	0.35	ug/l	25.0		112	70-120			
cis-1,3-Dichloropropene	29.1	2.0	0.22	ug/l	25.0		116	75-130			
trans-1,3-Dichloropropene	29.1	2.0	0.24	ug/l	25.0		116	75-135			
Ethylbenzene	29.5	2.0	0.25	ug/l	25.0		118	80-120			
Methylene chloride	29.3	5.0	0.48	ug/l	25.0		117	60-135			
1,1,1,2-Tetrachloroethane	28.1	2.0	0.24	ug/l	25.0		112	60-135			
Tetrachloroethene	25.6	2.0	0.32	ug/l	25.0		102	75-125			
Toluene	27.8	2.0	0.36	ug/l	25.0		111	75-120			
1,1,1-Trichloroethane	28.5	2.0	0.30	ug/l	25.0		114	75-140			
1,1,2-Trichloroethane	28.2	2.0	0.30	ug/l	25.0		113	70-125			
Trichloroethene	26.2	2.0	0.26	ug/l	25.0		105	80-120			
Trichlorofluoromethane	29.0	5.0	0.34	ug/l	25.0		116	65-145			
Vinyl chloride	26.2	0.50	0.26	ug/l	25.0		105	50-130			
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Matrix Spike Analyzed: 02/26/2005 (5B26009-MS1)</b>						<b>Source: IOB2045-02</b>					
Benzene	26.6	1.0	0.28	ug/l	25.0	0.71	104	70-120			
Bromodichloromethane	25.4	2.0	0.30	ug/l	25.0	ND	102	70-140			
Bromoform	20.9	5.0	0.32	ug/l	25.0	ND	84	55-140			
Bromomethane	24.9	5.0	0.34	ug/l	25.0	ND	100	50-145			
Carbon tetrachloride	24.2	0.50	0.28	ug/l	25.0	ND	97	70-145			
Chlorobenzene	25.1	2.0	0.36	ug/l	25.0	ND	100	80-125			
Chloroethane	25.4	5.0	0.33	ug/l	25.0	ND	102	50-145			
Chloroform	79.4	2.0	0.33	ug/l	25.0	50	118	70-135			
Chloromethane	23.8	5.0	0.30	ug/l	25.0	ND	95	35-145			
Dibromochloromethane	25.2	2.0	0.28	ug/l	25.0	ND	101	65-145			
1,2-Dichlorobenzene	25.8	2.0	0.32	ug/l	25.0	ND	103	75-130			
1,3-Dichlorobenzene	25.2	2.0	0.35	ug/l	25.0	ND	101	75-130			
1,4-Dichlorobenzene	24.8	2.0	0.37	ug/l	25.0	ND	99	80-120			
1,1-Dichloroethane	26.8	2.0	0.27	ug/l	25.0	ND	107	65-135			
1,2-Dichloroethane	27.4	0.50	0.28	ug/l	25.0	0.30	108	60-150			
1,1-Dichloroethene	25.6	5.0	0.32	ug/l	25.0	ND	102	65-140			
trans-1,2-Dichloroethene	26.4	2.0	0.27	ug/l	25.0	ND	106	65-135			
1,2-Dichloropropane	26.0	2.0	0.35	ug/l	25.0	ND	104	65-130			
cis-1,3-Dichloropropene	26.7	2.0	0.22	ug/l	25.0	ND	107	70-140			
trans-1,3-Dichloropropene	27.2	2.0	0.24	ug/l	25.0	ND	109	70-140			
Ethylbenzene	27.0	2.0	0.25	ug/l	25.0	0.60	106	70-130			
Methylene chloride	38.7	5.0	0.48	ug/l	25.0	8.4	121	60-135			
1,1,2,2-Tetrachloroethane	27.2	2.0	0.24	ug/l	25.0	ND	109	60-145			
Tetrachloroethene	22.6	2.0	0.32	ug/l	25.0	ND	90	70-130			
Toluene	25.9	2.0	0.36	ug/l	25.0	ND	104	70-120			
1,1,1-Trichloroethane	26.6	2.0	0.30	ug/l	25.0	ND	106	75-140			
1,1,2-Trichloroethane	27.1	2.0	0.30	ug/l	25.0	ND	108	60-135			
Trichloroethene	25.2	2.0	0.26	ug/l	25.0	1.6	94	70-125			
Trichlorofluoromethane	64.8	5.0	0.34	ug/l	25.0	37	111	55-145			
Vinyl chloride	23.7	0.50	0.26	ug/l	25.0	ND	95	40-135			
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	24.3			ug/l	25.0		97	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Matrix Spike Dup Analyzed: 02/26/2005 (5B26009-MSD1)</b>						<b>Source: IOB2045-02</b>					
Benzene	25.5	1.0	0.28	ug/l	25.0	0.71	99	70-120	4	20	
Bromodichloromethane	24.3	2.0	0.30	ug/l	25.0	ND	97	70-140	4	20	
Bromoform	20.8	5.0	0.32	ug/l	25.0	ND	83	55-140	1	25	
Bromomethane	23.6	5.0	0.34	ug/l	25.0	ND	94	50-145	5	25	
Carbon tetrachloride	23.5	0.50	0.28	ug/l	25.0	ND	94	70-145	3	25	
Chlorobenzene	24.5	2.0	0.36	ug/l	25.0	ND	98	80-125	2	20	
Chloroethane	24.0	5.0	0.33	ug/l	25.0	ND	96	50-145	6	25	
Chloroform	72.4	2.0	0.33	ug/l	25.0	50	90	70-135	9	20	
Chloromethane	22.1	5.0	0.30	ug/l	25.0	ND	88	35-145	7	25	
Dibromochloromethane	24.6	2.0	0.28	ug/l	25.0	ND	98	65-145	2	25	
1,2-Dichlorobenzene	25.0	2.0	0.32	ug/l	25.0	ND	100	75-130	3	20	
1,3-Dichlorobenzene	24.3	2.0	0.35	ug/l	25.0	ND	97	75-130	4	20	
1,4-Dichlorobenzene	24.0	2.0	0.37	ug/l	25.0	ND	96	80-120	3	20	
1,1-Dichloroethane	25.5	2.0	0.27	ug/l	25.0	ND	102	65-135	5	20	
1,2-Dichloroethane	26.2	0.50	0.28	ug/l	25.0	0.30	104	60-150	4	20	
1,1-Dichloroethene	23.9	5.0	0.32	ug/l	25.0	ND	96	65-140	7	20	
trans-1,2-Dichloroethene	25.4	2.0	0.27	ug/l	25.0	ND	102	65-135	4	20	
1,2-Dichloropropane	25.2	2.0	0.35	ug/l	25.0	ND	101	65-130	3	20	
cis-1,3-Dichloropropene	26.0	2.0	0.22	ug/l	25.0	ND	104	70-140	3	20	
trans-1,3-Dichloropropene	26.1	2.0	0.24	ug/l	25.0	ND	104	70-140	4	25	
Ethylbenzene	26.0	2.0	0.25	ug/l	25.0	0.60	102	70-130	4	20	
Methylene chloride	34.7	5.0	0.48	ug/l	25.0	8.4	105	60-135	11	20	
1,1,2,2-Tetrachloroethane	26.0	2.0	0.24	ug/l	25.0	ND	104	60-145	5	30	
Tetrachloroethene	22.2	2.0	0.32	ug/l	25.0	ND	89	70-130	2	20	
Toluene	24.8	2.0	0.36	ug/l	25.0	ND	99	70-120	4	20	
1,1,1-Trichloroethane	25.2	2.0	0.30	ug/l	25.0	ND	101	75-140	5	20	
1,1,2-Trichloroethane	25.5	2.0	0.30	ug/l	25.0	ND	102	60-135	6	25	
Trichloroethene	24.7	2.0	0.26	ug/l	25.0	1.6	92	70-125	2	20	
Trichlorofluoromethane	59.0	5.0	0.34	ug/l	25.0	37	88	55-145	9	25	
Vinyl chloride	22.3	0.50	0.26	ug/l	25.0	ND	89	40-135	6	30	
Surrogate: Dibromofluoromethane	25.6			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	24.1			ug/l	25.0		96	80-120			
Surrogate: 4-Bromofluorobenzene	24.9			ug/l	25.0		100	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>										
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>										
Acrolein	ND	50	4.6	ug/l						
Acrylonitrile	ND	50	5.1	ug/l						
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l						
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	24.4			ug/l	25.0		98		80-120	
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98		80-120	
<b>LCS Analyzed: 02/26/2005 (5B26009-BS1)</b>										
2-Chloroethyl vinyl ether	27.6	5.0	1.3	ug/l	25.0		110		20-175	
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	24.9			ug/l	25.0		100		80-120	
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102		80-120	

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>											
Cyclohexane	ND	2.5	N/A	ug/l							
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l							

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting			Spike Level	Source		%REC		RPD Limit	Data Qualifiers
		Limit	MDL	Units		Result	%REC	Limits	RPD		
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	3.2	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	1.00	5.0	0.34	ug/l							J
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	0.380	2.0	0.26	ug/l							J
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	0.140	1.0	0.12	ug/l							J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	ND	0.50	0.075	ug/l							
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	ND	1.0	0.13	ug/l							
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	ND	1.0	0.13	ug/l							
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	ND	0.50	0.071	ug/l							
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	14.4			ug/l	20.0		72			35-120	

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>											
Surrogate: Phenol-d6	14.6			ug/l	20.0		73	45-120			
Surrogate: 2,4,6-Tribromophenol	19.1			ug/l	20.0		96	50-125			
Surrogate: Nitrobenzene-d5	7.80			ug/l	10.0		78	45-120			
Surrogate: 2-Fluorobiphenyl	7.90			ug/l	10.0		79	45-120			
Surrogate: Terphenyl-d14	8.86			ug/l	10.0		89	45-135			
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>											
Acenaphthene	8.22	0.50	0.10	ug/l	10.0		82	55-120			
Acenaphthylene	8.76	0.50	0.10	ug/l	10.0		88	55-120			
Aniline	7.52	10	2.9	ug/l	10.0		75	30-120			J
Anthracene	8.80	0.50	0.083	ug/l	10.0		88	60-120			
Benzidine	ND	5.0	3.2	ug/l	10.0			20-180			L2
Benzoic acid	9.08	20	3.7	ug/l	10.0		91	30-125			J
Benzo(a)anthracene	8.64	5.0	0.038	ug/l	10.0		86	65-120			
Benzo(a)pyrene	9.26	2.0	0.14	ug/l	10.0		93	55-125			
Benzo(b)fluoranthene	8.54	2.0	0.050	ug/l	10.0		85	50-125			
Benzo(g,h,i)perylene	9.52	5.0	0.059	ug/l	10.0		95	35-160			
Benzo(k)fluoranthene	8.30	0.50	0.053	ug/l	10.0		83	50-125			
Benzyl alcohol	7.10	5.0	0.21	ug/l	10.0		71	40-130			
Bis(2-chloroethoxy)methane	8.10	0.50	0.072	ug/l	10.0		81	55-120			
Bis(2-chloroethyl)ether	7.30	0.50	0.084	ug/l	10.0		73	50-120			
Bis(2-chloroisopropyl)ether	7.94	0.50	0.11	ug/l	10.0		79	50-120			
Bis(2-ethylhexyl)phthalate	8.90	5.0	1.1	ug/l	10.0		89	65-125			
4-Bromophenyl phenyl ether	8.52	1.0	0.12	ug/l	10.0		85	55-125			
Butyl benzyl phthalate	9.04	5.0	0.34	ug/l	10.0		90	60-125			
4-Chloroaniline	6.48	2.0	0.20	ug/l	10.0		65	55-120			
2-Chloronaphthalene	8.36	0.50	0.059	ug/l	10.0		84	60-120			
4-Chloro-3-methylphenol	9.10	2.0	0.34	ug/l	10.0		91	60-120			
4-Chlorophenyl phenyl ether	8.74	0.50	0.056	ug/l	10.0		87	55-120			
2-Chlorophenol	7.64	1.0	0.12	ug/l	10.0		76	45-120			
Chrysene	8.52	0.50	0.072	ug/l	10.0		85	65-120			
Dibenz(a,h)anthracene	9.66	0.50	0.083	ug/l	10.0		97	40-160			
Dibenzofuran	8.48	0.50	0.075	ug/l	10.0		85	60-120			
Di-n-butyl phthalate	8.90	2.0	0.26	ug/l	10.0		89	65-125			
1,2-Dichlorobenzene	6.42	0.50	0.11	ug/l	10.0		64	40-120			
1,3-Dichlorobenzene	6.10	0.50	0.13	ug/l	10.0		61	40-120			

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>											
1,4-Dichlorobenzene	6.00	0.50	0.050	ug/l	10.0		60	40-120			M-NR1
3,3-Dichlorobenzidine	6.60	5.0	0.93	ug/l	10.0		66	50-170			
2,4-Dichlorophenol	7.48	2.0	0.21	ug/l	10.0		75	55-120			
Diethyl phthalate	8.42	1.0	0.12	ug/l	10.0		84	60-120			
2,4-Dimethylphenol	6.90	2.0	0.31	ug/l	10.0		69	35-120			
Dimethyl phthalate	7.86	0.50	0.081	ug/l	10.0		79	60-120			
4,6-Dinitro-2-methylphenol	8.12	5.0	0.38	ug/l	10.0		81	55-120			
2,4-Dinitrophenol	7.80	5.0	2.7	ug/l	10.0		78	40-140			
2,4-Dinitrotoluene	7.92	5.0	0.23	ug/l	10.0		79	60-140			
2,6-Dinitrotoluene	7.94	5.0	0.24	ug/l	10.0		79	65-125			
Di-n-octyl phthalate	9.08	5.0	0.17	ug/l	10.0		91	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.78	1.0	0.087	ug/l	10.0		88	60-120			
Fluoranthene	8.96	0.50	0.089	ug/l	10.0		90	55-125			
Fluorene	8.80	0.50	0.075	ug/l	10.0		88	60-120			
Hexachlorobenzene	9.14	1.0	0.13	ug/l	10.0		91	50-120			
Hexachlorobutadiene	6.76	2.0	0.38	ug/l	10.0		68	45-120			
Hexachlorocyclopentadiene	7.22	5.0	1.8	ug/l	10.0		72	10-130			
Hexachloroethane	6.00	3.0	0.51	ug/l	10.0		60	40-120			
Indeno(1,2,3-cd)pyrene	10.1	2.0	0.19	ug/l	10.0		101	35-150			
Isophorone	7.50	1.0	0.059	ug/l	10.0		75	55-120			
2-Methylnaphthalene	8.66	1.0	0.13	ug/l	10.0		87	50-120			
2-Methylphenol	7.66	2.0	0.28	ug/l	10.0		77	45-120			
4-Methylphenol	7.30	5.0	0.20	ug/l	10.0		73	45-120			
Naphthalene	8.08	1.0	0.13	ug/l	10.0		81	50-120			
2-Nitroaniline	8.22	5.0	0.18	ug/l	10.0		82	60-130			
3-Nitroaniline	8.00	5.0	0.35	ug/l	10.0		80	50-140			
4-Nitroaniline	7.86	5.0	0.49	ug/l	10.0		79	45-160			
Nitrobenzene	7.38	1.0	0.10	ug/l	10.0		74	50-120			
2-Nitrophenol	7.76	2.0	0.23	ug/l	10.0		78	55-120			
4-Nitrophenol	7.28	5.0	0.73	ug/l	10.0		73	50-135			
N-Nitrosodimethylamine	6.94	2.0	0.22	ug/l	10.0		69	40-120			
N-Nitroso-di-n-propylamine	6.80	2.0	0.18	ug/l	10.0		68	50-120			
N-Nitrosodiphenylamine	7.84	1.0	0.077	ug/l	10.0		78	60-120			
Pentachlorophenol	8.46	2.0	0.78	ug/l	10.0		85	50-125			
Phenanthrene	8.38	0.50	0.071	ug/l	10.0		84	55-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>											
Phenol	7.48	1.0	0.14	ug/l	10.0		75	45-120			M-NRI
Pyrene	8.86	0.50	0.059	ug/l	10.0		89	50-120			
1,2,4-Trichlorobenzene	7.18	1.0	0.10	ug/l	10.0		72	50-120			
2,4,5-Trichlorophenol	8.50	2.0	0.075	ug/l	10.0		85	60-120			
2,4,6-Trichlorophenol	8.80	1.0	0.10	ug/l	10.0		88	60-120			
Surrogate: 2-Fluorophenol	15.0			ug/l	20.0		75	35-120			
Surrogate: Phenol-d6	14.6			ug/l	20.0		73	45-120			
Surrogate: 2,4,6-Tribromophenol	19.3			ug/l	20.0		96	50-125			
Surrogate: Nitrobenzene-d5	7.94			ug/l	10.0		79	45-120			
Surrogate: 2-Fluorobiphenyl	8.42			ug/l	10.0		84	45-120			
Surrogate: Terphenyl-d14	8.96			ug/l	10.0		90	45-135			
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>											
Acenaphthene	8.34	0.50	0.10	ug/l	10.0		83	55-120	1	20	
Acenaphthylene	8.44	0.50	0.10	ug/l	10.0		84	55-120	4	20	
Aniline	7.86	10	2.9	ug/l	10.0		79	30-120	4	25	J
Anthracene	8.50	0.50	0.083	ug/l	10.0		85	60-120	3	20	
Benzidine	3.62	5.0	3.2	ug/l	10.0		36	20-180		35	J
Benzoic acid	6.72	20	3.7	ug/l	10.0		67	30-125	30	30	J
Benzo(a)anthracene	8.82	5.0	0.038	ug/l	10.0		88	65-120	2	20	
Benzo(a)pyrene	9.32	2.0	0.14	ug/l	10.0		93	55-125	1	25	
Benzo(b)fluoranthene	8.78	2.0	0.050	ug/l	10.0		88	50-125	3	25	
Benzo(g,h,i)perylene	9.94	5.0	0.059	ug/l	10.0		99	35-160	4	25	
Benzo(k)fluoranthene	8.56	0.50	0.053	ug/l	10.0		86	50-125	3	20	
Benzyl alcohol	8.08	5.0	0.21	ug/l	10.0		81	40-130	13	20	
Bis(2-chloroethoxy)methane	8.02	0.50	0.072	ug/l	10.0		80	55-120	1	20	
Bis(2-chloroethyl)ether	7.44	0.50	0.084	ug/l	10.0		74	50-120	2	20	
Bis(2-chloroisopropyl)ether	8.36	0.50	0.11	ug/l	10.0		84	50-120	5	20	
Bis(2-ethylhexyl)phthalate	9.44	5.0	1.1	ug/l	10.0		94	65-125	6	20	
4-Bromophenyl phenyl ether	8.02	1.0	0.12	ug/l	10.0		80	55-125	6	25	
Butyl benzyl phthalate	9.50	5.0	0.34	ug/l	10.0		95	60-125	5	20	
4-Chloroaniline	7.58	2.0	0.20	ug/l	10.0		76	55-120	16	25	
2-Chloronaphthalene	8.14	0.50	0.059	ug/l	10.0		81	60-120	3	20	
4-Chloro-3-methylphenol	8.74	2.0	0.34	ug/l	10.0		87	60-120	4	25	
4-Chlorophenyl phenyl ether	8.36	0.50	0.056	ug/l	10.0		84	55-120	4	20	
2-Chlorophenol	7.84	1.0	0.12	ug/l	10.0		78	45-120	3	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-BSD1)</b>											
Chrysene	8.44	0.50	0.072	ug/l	10.0		84	65-120	1	20	
Dibenz(a,h)anthracene	10.0	0.50	0.083	ug/l	10.0		100	40-160	3	25	
Dibenzofuran	8.06	0.50	0.075	ug/l	10.0		81	60-120	5	20	
Di-n-butyl phthalate	8.74	2.0	0.26	ug/l	10.0		87	65-125	2	20	
1,2-Dichlorobenzene	6.26	0.50	0.11	ug/l	10.0		63	40-120	3	25	
1,3-Dichlorobenzene	6.00	0.50	0.13	ug/l	10.0		60	40-120	2	25	
1,4-Dichlorobenzene	6.10	0.50	0.050	ug/l	10.0		61	40-120	2	25	
3,3-Dichlorobenzidine	8.02	5.0	0.93	ug/l	10.0		80	50-170	19	25	
2,4-Dichlorophenol	7.58	2.0	0.21	ug/l	10.0		76	55-120	1	20	
Diethyl phthalate	8.02	1.0	0.12	ug/l	10.0		80	60-120	5	20	
2,4-Dimethylphenol	6.62	2.0	0.31	ug/l	10.0		66	35-120	4	25	
Dimethyl phthalate	7.74	0.50	0.081	ug/l	10.0		77	60-120	2	20	
4,6-Dinitro-2-methylphenol	7.88	5.0	0.38	ug/l	10.0		79	55-120	3	25	
2,4-Dinitrophenol	7.12	5.0	2.7	ug/l	10.0		71	40-140	9	25	
2,4-Dinitrotoluene	7.70	5.0	0.23	ug/l	10.0		77	60-140	3	20	
2,6-Dinitrotoluene	7.78	5.0	0.24	ug/l	10.0		78	65-125	2	20	
Di-n-octyl phthalate	9.70	5.0	0.17	ug/l	10.0		97	60-130	7	20	
1,2-Diphenylhydrazine/Azobenzene	8.30	1.0	0.087	ug/l	10.0		83	60-120	6	25	
Fluoranthene	8.94	0.50	0.089	ug/l	10.0		89	55-125	0	20	
Fluorene	8.56	0.50	0.075	ug/l	10.0		86	60-120	3	20	
Hexachlorobenzene	9.26	1.0	0.13	ug/l	10.0		93	50-120	1	20	
Hexachlorobutadiene	6.24	2.0	0.38	ug/l	10.0		62	45-120	8	25	
Hexachlorocyclopentadiene	7.08	5.0	1.8	ug/l	10.0		71	10-130	2	30	
Hexachloroethane	5.86	3.0	0.51	ug/l	10.0		59	40-120	2	25	
Indeno(1,2,3-cd)pyrene	10.3	2.0	0.19	ug/l	10.0		103	35-150	2	25	
Isophorone	7.42	1.0	0.059	ug/l	10.0		74	55-120	1	20	
2-Methylnaphthalene	8.06	1.0	0.13	ug/l	10.0		81	50-120	7	20	
2-Methylphenol	7.98	2.0	0.28	ug/l	10.0		80	45-120	4	20	
4-Methylphenol	7.60	5.0	0.20	ug/l	10.0		76	45-120	4	20	
Naphthalene	7.68	1.0	0.13	ug/l	10.0		77	50-120	5	20	
2-Nitroaniline	8.24	5.0	0.18	ug/l	10.0		82	60-130	0	20	
3-Nitroaniline	7.84	5.0	0.35	ug/l	10.0		78	50-140	2	25	
4-Nitroaniline	7.96	5.0	0.49	ug/l	10.0		80	45-160	1	20	
Nitrobenzene	7.00	1.0	0.10	ug/l	10.0		70	50-120	5	25	
2-Nitrophenol	8.10	2.0	0.23	ug/l	10.0		81	55-120	4	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-bsd1)</b>											
4-Nitrophenol	8.16	5.0	0.73	ug/l	10.0		82	50-135	11	25	
N-Nitrosodimethylamine	7.90	2.0	0.22	ug/l	10.0		79	40-120	13	20	
N-Nitroso-di-n-propylamine	7.56	2.0	0.18	ug/l	10.0		76	50-120	11	20	
N-Nitrosodiphenylamine	7.92	1.0	0.077	ug/l	10.0		79	60-120	1	20	
Pentachlorophenol	8.76	2.0	0.78	ug/l	10.0		88	50-125	3	25	
Phenanthrene	8.70	0.50	0.071	ug/l	10.0		87	55-120	4	20	
Phenol	7.60	1.0	0.14	ug/l	10.0		76	45-120	2	25	
Pyrene	8.74	0.50	0.059	ug/l	10.0		87	50-120	1	25	
1,2,4-Trichlorobenzene	6.58	1.0	0.10	ug/l	10.0		66	50-120	9	20	
2,4,5-Trichlorophenol	8.30	2.0	0.075	ug/l	10.0		83	60-120	2	20	
2,4,6-Trichlorophenol	8.64	1.0	0.10	ug/l	10.0		86	60-120	2	20	
Surrogate: 2-Fluorophenol	14.4			ug/l	20.0		72	35-120			
Surrogate: Phenol-d6	15.0			ug/l	20.0		75	45-120			
Surrogate: 2,4,6-Tribromophenol	19.8			ug/l	20.0		99	50-125			
Surrogate: Nitrobenzene-d5	7.80			ug/l	10.0		78	45-120			
Surrogate: 2-Fluorobiphenyl	7.90			ug/l	10.0		79	45-120			
Surrogate: Terphenyl-d14	8.80			ug/l	10.0		88	45-135			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C04051 Extracted: 03/04/05</b>											
<b>Blank Analyzed: 03/04/2005 (5C04051-BLK1)</b>											
Aldrin	ND	0.10	0.030	ug/l							
alpha-BHC	ND	0.10	0.015	ug/l							
beta-BHC	ND	0.10	0.015	ug/l							
delta-BHC	ND	0.20	0.020	ug/l							
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l							
Chlordane	ND	1.0	0.20	ug/l							
4,4'-DDD	ND	0.10	0.020	ug/l							
4,4'-DDE	ND	0.10	0.025	ug/l							
4,4'-DDT	ND	0.10	0.030	ug/l							
Dieldrin	ND	0.10	0.015	ug/l							
Endosulfan I	ND	0.10	0.015	ug/l							
Endosulfan II	ND	0.10	0.040	ug/l							
Endosulfan sulfate	ND	0.20	0.015	ug/l							
Endrin	ND	0.10	0.020	ug/l							
Endrin aldehyde	ND	0.10	0.045	ug/l							
Endrin ketone	ND	0.10	0.020	ug/l							
Heptachlor	ND	0.10	0.030	ug/l							
Heptachlor epoxide	ND	0.10	0.020	ug/l							
Methoxychlor	ND	0.10	0.035	ug/l							
Toxaphene	ND	5.0	1.5	ug/l							
Surrogate: Tetrachloro-m-xylene	0.364			ug/l	0.500		73	35-120			
Surrogate: Decachlorobiphenyl	0.408			ug/l	0.500		82	45-120			
<b>LCS Analyzed: 03/04/2005 (5C04051-BS1)</b>											
Aldrin	0.340	0.10	0.030	ug/l	0.500		68	45-115			
alpha-BHC	0.320	0.10	0.015	ug/l	0.500		64	45-115			
beta-BHC	0.385	0.10	0.015	ug/l	0.500		77	50-115			
delta-BHC	0.428	0.20	0.020	ug/l	0.500		86	55-120			
gamma-BHC (Lindane)	0.374	0.10	0.020	ug/l	0.500		75	45-115			
4,4'-DDD	0.431	0.10	0.020	ug/l	0.500		86	60-120			
4,4'-DDE	0.428	0.10	0.025	ug/l	0.500		86	55-120			
4,4'-DDT	0.448	0.10	0.030	ug/l	0.500		90	60-130			
Dieldrin	0.401	0.10	0.015	ug/l	0.500		80	55-120			
Endosulfan I	0.374	0.10	0.015	ug/l	0.500		75	50-115			
Endosulfan II	0.404	0.10	0.040	ug/l	0.500		81	60-125			
Endosulfan sulfate	0.411	0.20	0.015	ug/l	0.500		82	60-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C04051 Extracted: 03/04/05</b>											
<b>LCS Analyzed: 03/04/2005 (5C04051-BS1)</b>											
Endrin	0.409	0.10	0.020	ug/l	0.500		82	55-125			
Endrin aldehyde	0.398	0.10	0.045	ug/l	0.500		80	55-115			
Endrin ketone	0.417	0.10	0.020	ug/l	0.500		83	60-120			
Heptachlor	0.371	0.10	0.030	ug/l	0.500		74	45-115			
Heptachlor epoxide	0.381	0.10	0.020	ug/l	0.500		76	50-120			
Methoxychlor	0.429	0.10	0.035	ug/l	0.500		86	60-135			
Surrogate: Tetrachloro-m-xylene	0.321			ug/l	0.500		64	35-120			
Surrogate: Decachlorobiphenyl	0.396			ug/l	0.500		79	45-120			
<b>Matrix Spike Analyzed: 03/04/2005 (5C04051-MS1)</b>											
						<b>Source: IOB2149-04</b>					
Aldrin	0.703	0.20	0.060	ug/l	1.00	ND	70	45-115			
alpha-BHC	0.683	0.20	0.030	ug/l	1.00	ND	68	45-115			
beta-BHC	0.777	0.20	0.030	ug/l	1.00	ND	78	50-115			
delta-BHC	0.867	0.40	0.040	ug/l	1.00	ND	87	55-120			
gamma-BHC (Lindane)	0.791	0.20	0.040	ug/l	1.00	ND	79	45-115			
4,4'-DDD	0.870	0.20	0.040	ug/l	1.00	ND	87	60-120			
4,4'-DDE	0.863	0.20	0.050	ug/l	1.00	ND	86	55-120			
4,4'-DDT	0.916	0.20	0.060	ug/l	1.00	ND	92	60-130			
Dieldrin	0.818	0.20	0.030	ug/l	1.00	ND	82	55-120			
Endosulfan I	0.766	0.20	0.030	ug/l	1.00	ND	77	50-115			
Endosulfan II	0.816	0.20	0.080	ug/l	1.00	ND	82	60-125			
Endosulfan sulfate	0.833	0.40	0.030	ug/l	1.00	ND	83	60-120			
Endrin	0.831	0.20	0.040	ug/l	1.00	ND	83	55-125			
Endrin aldehyde	0.804	0.20	0.090	ug/l	1.00	ND	80	55-115			
Endrin ketone	0.846	0.20	0.040	ug/l	1.00	ND	85	60-120			
Heptachlor	0.791	0.20	0.060	ug/l	1.00	ND	79	45-115			
Heptachlor epoxide	0.785	0.20	0.040	ug/l	1.00	ND	78	50-120			
Methoxychlor	0.866	0.20	0.070	ug/l	1.00	ND	87	60-135			
Surrogate: Tetrachloro-m-xylene	0.683			ug/l	1.00		68	35-120			
Surrogate: Decachlorobiphenyl	0.790			ug/l	1.00		79	45-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C04051 Extracted: 03/04/05</b>											
<b>Matrix Spike Dup Analyzed: 03/05/2005 (5C04051-MSD1)</b>						<b>Source: IOB2149-04</b>					
Aldrin	0.797	0.20	0.060	ug/l	1.00	ND	80	45-115	13	30	
alpha-BHC	0.735	0.20	0.030	ug/l	1.00	ND	74	45-115	7	30	
beta-BHC	0.862	0.20	0.030	ug/l	1.00	ND	86	50-115	10	30	
delta-BHC	0.957	0.40	0.040	ug/l	1.00	ND	96	55-120	10	30	
gamma-BHC (Lindane)	0.852	0.20	0.040	ug/l	1.00	ND	85	45-115	7	30	
4,4'-DDD	0.992	0.20	0.040	ug/l	1.00	ND	99	60-120	13	30	
4,4'-DDE	0.970	0.20	0.050	ug/l	1.00	ND	97	55-120	12	30	
4,4'-DDT	1.02	0.20	0.060	ug/l	1.00	ND	102	60-130	11	30	
Dieldrin	0.908	0.20	0.030	ug/l	1.00	ND	91	55-120	10	30	
Endosulfan I	0.845	0.20	0.030	ug/l	1.00	ND	84	50-115	10	30	
Endosulfan II	0.921	0.20	0.080	ug/l	1.00	ND	92	60-125	12	30	
Endosulfan sulfate	0.946	0.40	0.030	ug/l	1.00	ND	95	60-120	13	30	
Endrin	0.927	0.20	0.040	ug/l	1.00	ND	93	55-125	11	30	
Endrin aldehyde	0.916	0.20	0.090	ug/l	1.00	ND	92	55-115	13	30	
Endrin ketone	0.970	0.20	0.040	ug/l	1.00	ND	97	60-120	14	30	
Heptachlor	0.851	0.20	0.060	ug/l	1.00	ND	85	45-115	7	30	
Heptachlor epoxide	0.855	0.20	0.040	ug/l	1.00	ND	86	50-120	9	30	
Methoxychlor	1.01	0.20	0.070	ug/l	1.00	ND	101	60-135	15	30	
Surrogate: Tetrachloro-m-xylene	0.734			ug/l	1.00		73	35-120			
Surrogate: Decachlorobiphenyl	0.907			ug/l	1.00		91	45-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C02052 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C02052-BLK1)</b>											
Aroclor 1016	ND	1.0	0.20	ug/l							
Aroclor 1221	ND	1.0	0.10	ug/l							
Aroclor 1232	ND	1.0	0.15	ug/l							
Aroclor 1242	ND	1.0	0.15	ug/l							
Aroclor 1248	ND	1.0	0.25	ug/l							
Aroclor 1254	ND	1.0	0.25	ug/l							
Aroclor 1260	ND	1.0	0.40	ug/l							
Surrogate: Decachlorobiphenyl	0.344			ug/l	0.500		69	45-120			
<b>LCS Analyzed: 03/03/2005 (5C02052-BS2)</b>											
Aroclor 1016	2.93	1.0	0.20	ug/l	4.00		73	50-115			M-NR1
Aroclor 1260	2.73	1.0	0.40	ug/l	4.00		68	60-115			
Surrogate: Decachlorobiphenyl	0.349			ug/l	0.500		70	45-120			
<b>LCS Dup Analyzed: 03/03/2005 (5C02052-BSD2)</b>											
Aroclor 1016	3.27	1.0	0.20	ug/l	4.00		82	50-115	11	30	
Aroclor 1260	3.05	1.0	0.40	ug/l	4.00		76	60-115	11	25	
Surrogate: Decachlorobiphenyl	0.383			ug/l	0.500		77	45-120			

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 Outfall 011  
 Report Number: IOB2065

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C02083 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C02083-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 03/02/2005 (5C02083-BS1)</b>											
Boron	0.468	0.050	0.0074	mg/l	0.500		94	85-115			
<b>Matrix Spike Analyzed: 03/02/2005 (5C02083-MS1) Source: IOB1981-05</b>											
Boron	0.679	0.050	0.0074	mg/l	0.500	0.20	96	70-130			
<b>Matrix Spike Dup Analyzed: 03/02/2005 (5C02083-MSD1) Source: IOB1981-05</b>											
Boron	0.698	0.050	0.0074	mg/l	0.500	0.20	100	70-130	3	20	
<b>Batch: 5C02089 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C02089-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 03/02/2005 (5C02089-BS1)</b>											
Mercury	8.06	0.20	0.063	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 03/02/2005 (5C02089-MS1) Source: IOB1993-06</b>											
Mercury	8.30	0.20	0.063	ug/l	8.00	ND	104	70-130			
<b>Matrix Spike Dup Analyzed: 03/02/2005 (5C02089-MSD1) Source: IOB1993-06</b>											
Mercury	8.18	0.20	0.063	ug/l	8.00	ND	102	70-130	1	20	
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03085-BLK1)</b>											
Antimony	1.28	2.0	0.18	ug/l							J
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	ND	2.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.00553	0.010	0.0032	mg/l							J
Lead	ND	1.0	0.13	ug/l							

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 Outfall 011  
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Sampled: 02/25/05  
 Received: 02/25/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03085-BLK1)</b>											
Manganese	ND	1.0	0.44	ug/l							
Nickel	ND	2.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							
<b>LCS Analyzed: 03/03/2005 (5C03085-BS1)</b>											
Antimony	90.2	2.0	0.18	ug/l	80.0		113	85-115			
Arsenic	83.8	1.0	0.49	ug/l	80.0		105	85-115			
Barium	0.0861	0.0010	0.00014	mg/l	0.0800		108	85-115			
Beryllium	86.8	0.50	0.037	ug/l	80.0		108	85-115			
Cadmium	83.1	1.0	0.015	ug/l	80.0		104	85-115			
Chromium	81.1	2.0	0.26	ug/l	80.0		101	85-115			
Cobalt	80.3	1.0	0.10	ug/l	80.0		100	85-115			
Copper	78.5	2.0	0.49	ug/l	80.0		98	85-115			
Iron	0.878	0.010	0.0032	mg/l	0.800		110	85-115			
Lead	82.6	1.0	0.13	ug/l	80.0		103	85-115			
Manganese	85.7	1.0	0.44	ug/l	80.0		107	85-115			
Nickel	80.0	2.0	0.15	ug/l	80.0		100	85-115			
Selenium	87.9	2.0	0.36	ug/l	80.0		110	85-115			
Silver	81.3	1.0	0.089	ug/l	80.0		102	85-115			
Thallium	85.6	1.0	0.075	ug/l	80.0		107	85-115			
Vanadium	77.4	2.0	0.86	ug/l	80.0		97	85-115			
Zinc	81.5	20	3.1	ug/l	80.0		102	85-115			
<b>Matrix Spike Analyzed: 03/03/2005 (5C03085-MS1)</b>						<b>Source: IOB2069-01</b>					
Antimony	92.7	2.0	0.18	ug/l	80.0	0.58	115	70-130			
Arsenic	87.9	1.0	0.49	ug/l	80.0	0.89	109	70-130			
Barium	0.155	0.0010	0.00014	mg/l	0.0800	0.066	111	70-130			
Beryllium	83.7	0.50	0.037	ug/l	80.0	ND	105	70-130			
Cadmium	83.5	1.0	0.015	ug/l	80.0	ND	104	70-130			
Chromium	84.3	2.0	0.26	ug/l	80.0	1.2	104	70-130			
Cobalt	81.4	1.0	0.10	ug/l	80.0	0.18	102	70-130			
Copper	78.8	2.0	0.49	ug/l	80.0	1.2	97	70-130			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Matrix Spike Analyzed: 03/03/2005 (5C03085-MS1)</b>						<b>Source: IOB2069-01</b>					
Iron	0.832	0.010	0.0032	mg/l	0.800	0.052	98	70-130			
Lead	82.3	1.0	0.13	ug/l	80.0	ND	103	70-130			
Manganese	101	1.0	0.44	ug/l	80.0	15	108	70-130			
Nickel	79.5	2.0	0.15	ug/l	80.0	0.36	99	70-130			
Selenium	90.6	2.0	0.36	ug/l	80.0	1.8	111	70-130			
Silver	80.4	1.0	0.089	ug/l	80.0	ND	100	70-130			
Thallium	86.2	1.0	0.075	ug/l	80.0	ND	108	70-130			
Vanadium	82.5	2.0	0.86	ug/l	80.0	ND	103	70-130			
Zinc	103	20	3.1	ug/l	80.0	25	98	70-130			
<b>Matrix Spike Analyzed: 03/03/2005 (5C03085-MS2)</b>						<b>Source: IOB2149-04</b>					
Antimony	96.1	2.0	0.18	ug/l	80.0	0.53	119	70-130			
Arsenic	100	1.0	0.49	ug/l	80.0	13	109	70-130			
Barium	0.284	0.0010	0.00014	mg/l	0.0800	0.18	130	70-130			
Beryllium	78.8	0.50	0.037	ug/l	80.0	0.048	98	70-130			
Cadmium	80.9	1.0	0.015	ug/l	80.0	0.053	101	70-130			
Chromium	85.0	2.0	0.26	ug/l	80.0	0.67	105	70-130			
Cobalt	81.6	1.0	0.10	ug/l	80.0	0.59	101	70-130			
Copper	75.9	2.0	0.49	ug/l	80.0	2.9	91	70-130			
Iron	0.746	0.010	0.0032	mg/l	0.800	0.022	90	70-130			
Lead	78.9	1.0	0.13	ug/l	80.0	0.20	98	70-130			
Manganese	1470	10	4.4	ug/l	80.0	1300	212	70-130			M-HA
Nickel	77.3	2.0	0.15	ug/l	80.0	0.93	95	70-130			
Selenium	97.5	2.0	0.36	ug/l	80.0	6.5	114	70-130			
Silver	77.1	1.0	0.089	ug/l	80.0	ND	96	70-130			
Thallium	81.5	1.0	0.075	ug/l	80.0	ND	102	70-130			
Vanadium	91.7	2.0	0.86	ug/l	80.0	4.5	109	70-130			
Zinc	101	20	3.1	ug/l	80.0	28	91	70-130			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Matrix Spike Dup Analyzed: 03/03/2005 (5C03085-MSD1)</b>						<b>Source: IOB2069-01</b>					
Antimony	88.4	2.0	0.18	ug/l	80.0	0.58	110	70-130	5	20	
Arsenic	84.3	1.0	0.49	ug/l	80.0	0.89	104	70-130	4	20	
Barium	0.151	0.0010	0.00014	mg/l	0.0800	0.066	106	70-130	3	20	
Beryllium	80.3	0.50	0.037	ug/l	80.0	ND	100	70-130	4	20	
Cadmium	81.5	1.0	0.015	ug/l	80.0	ND	102	70-130	2	20	
Chromium	82.0	2.0	0.26	ug/l	80.0	1.2	101	70-130	3	20	
Cobalt	78.6	1.0	0.10	ug/l	80.0	0.18	98	70-130	4	20	
Copper	76.4	2.0	0.49	ug/l	80.0	1.2	94	70-130	3	20	
Iron	0.807	0.010	0.0032	mg/l	0.800	0.052	94	70-130	3	20	
Lead	80.0	1.0	0.13	ug/l	80.0	ND	100	70-130	3	20	
Manganese	101	1.0	0.44	ug/l	80.0	15	108	70-130	0	20	
Nickel	77.6	2.0	0.15	ug/l	80.0	0.36	97	70-130	2	20	
Selenium	87.1	2.0	0.36	ug/l	80.0	1.8	107	70-130	4	20	
Silver	78.7	1.0	0.089	ug/l	80.0	ND	98	70-130	2	20	
Thallium	83.7	1.0	0.075	ug/l	80.0	ND	105	70-130	3	20	
Vanadium	81.0	2.0	0.86	ug/l	80.0	ND	101	70-130	2	20	
Zinc	99.9	20	3.1	ug/l	80.0	25	94	70-130	3	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25042 Extracted: 02/25/05</b>										
<b>Blank Analyzed: 02/25/2005 (5B25042-BLK1)</b>										
Chloride	ND	0.50	0.26	mg/l						
Fluoride	ND	0.50	0.10	mg/l						
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l						
Sulfate	ND	0.50	0.18	mg/l						
<b>LCS Analyzed: 02/25/2005 (5B25042-BS1)</b>										
Chloride	5.13	0.50	0.26	mg/l	5.00		103		90-110	
Fluoride	5.07	0.50	0.10	mg/l	5.00		101		90-110	
Sulfate	10.5	0.50	0.18	mg/l	10.0		105		90-110	
<b>Matrix Spike Analyzed: 02/25/2005 (5B25042-MS1) Source: IOB1979-01</b>										
Chloride	13.9	0.50	0.26	mg/l	5.00	9.6	86		80-120	
Fluoride	5.02	0.50	0.10	mg/l	5.00	0.36	93		80-120	
Sulfate	57.0	0.50	0.18	mg/l	10.0	49	80		80-120	
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B25042-MSD1) Source: IOB1979-01</b>										
Chloride	14.3	0.50	0.26	mg/l	5.00	9.6	94	3	80-120	20
Fluoride	5.13	0.50	0.10	mg/l	5.00	0.36	95	2	80-120	20
Sulfate	58.2	0.50	0.18	mg/l	10.0	49	92	2	80-120	20
<b>Batch: 5B25118 Extracted: 02/25/05</b>										
<b>Blank Analyzed: 02/25/2005 (5B25118-BLK1)</b>										
Surfactants (MBAS)	ND	0.10	0.044	mg/l						
<b>LCS Analyzed: 02/25/2005 (5B25118-BS1)</b>										
Surfactants (MBAS)	0.247	0.10	0.044	mg/l	0.250		99		90-110	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25118 Extracted: 02/25/05</b>											
<b>Matrix Spike Analyzed: 02/25/2005 (5B25118-MS1)</b>						<b>Source: IOB1984-01</b>					
Surfactants (MBAS)	0.278	0.10	0.044	mg/l	0.250	ND	111	50-125			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B25118-MSD1)</b>						<b>Source: IOB1984-01</b>					
Surfactants (MBAS)	0.267	0.10	0.044	mg/l	0.250	ND	107	50-125	4	20	
<b>Batch: 5B25120 Extracted: 02/25/05</b>											
<b>Duplicate Analyzed: 02/25/2005 (5B25120-DUP1)</b>						<b>Source: IOB1977-01</b>					
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5B25125 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B25125-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 02/25/2005 (5B25125-BS1)</b>											
Chromium VI	48.6	1.0	0.10	ug/l	50.0		97	90-110			
<b>Matrix Spike Analyzed: 02/25/2005 (5B25125-MS1)</b>						<b>Source: IOB2067-07</b>					
Chromium VI	65.8	1.0	0.10	ug/l	50.0	20	92	90-110			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B25125-MSD1)</b>						<b>Source: IOB2067-07</b>					
Chromium VI	65.0	1.0	0.10	ug/l	50.0	20	90	90-110	1	10	
<b>Batch: 5B25128 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B25128-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25128 Extracted: 02/25/05</b>											
<b>LCS Analyzed: 03/02/2005 (5B25128-BS1)</b>											
Biochemical Oxygen Demand	203	100	30	mg/l	198		103	85-115			
<b>LCS Dup Analyzed: 03/02/2005 (5B25128-BSD1)</b>											
Biochemical Oxygen Demand	202	100	30	mg/l	198		102	85-115	1	20	
<b>Batch: 5B26046 Extracted: 02/26/05</b>											
<b>Blank Analyzed: 02/26/2005 (5B26046-BLK1)</b>											
Turbidity	0.0500	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 02/26/2005 (5B26046-DUP1)</b>											
Turbidity	1.80	1.0	0.040	NTU		Source: IOB2071-01 1.8			0	20	
<b>Batch: 5B28078 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 02/28/2005 (5B28078-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/28/2005 (5B28078-BS1)</b>											
Total Dissolved Solids	1010	10	10	mg/l	1000		101	90-110			
<b>Duplicate Analyzed: 02/28/2005 (5B28078-DUP1)</b>											
Total Dissolved Solids	124	10	10	mg/l		Source: IOB2066-01 120			3	10	
<b>Batch: 5B28080 Extracted: 02/28/05</b>											
<b>Duplicate Analyzed: 02/28/2005 (5B28080-DUP1)</b>											
Specific Conductance	950	1.0	1.0	umhos/cm		Source: IOB1874-01 950			0	5	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28103 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 02/28/2005 (5B28103-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 02/28/2005 (5B28103-BS1)</b>											
Perchlorate	51.9	4.0	0.80	ug/l	50.0		104	85-115			
<b>Matrix Spike Analyzed: 03/01/2005 (5B28103-MS1)</b>											
						<b>Source: IOB1879-01RE1</b>					
Perchlorate	53.1	4.0	0.80	ug/l	50.0	5.7	95	80-120			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5B28103-MSD1)</b>											
						<b>Source: IOB1879-01RE1</b>					
Perchlorate	53.7	4.0	0.80	ug/l	50.0	5.7	96	80-120	1	20	
<b>Batch: 5B28115 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/01/2005 (5B28115-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 03/01/2005 (5B28115-BS1)</b>											
Total Cyanide	197	5.0	2.2	ug/l	200		98	90-110			
<b>Matrix Spike Analyzed: 03/01/2005 (5B28115-MS1)</b>											
						<b>Source: IOB2064-01</b>					
Total Cyanide	202	5.0	2.2	ug/l	200	ND	101	70-115			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5B28115-MSD1)</b>											
						<b>Source: IOB2064-01</b>					
Total Cyanide	210	5.0	2.2	ug/l	200	ND	105	70-115	4	15	
<b>Batch: 5C01065 Extracted: 03/01/05</b>											
<b>Blank Analyzed: 03/01/2005 (5C01065-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C01065 Extracted: 03/01/05</b>											
<b>LCS Analyzed: 03/01/2005 (5C01065-BS1)</b>											
Total Organic Carbon	10.7	1.0	0.25	mg/l	10.0		107	90-110			
<b>Matrix Spike Analyzed: 03/01/2005 (5C01065-MS1)</b>											
						<b>Source: IOB2047-09</b>					
Total Organic Carbon	6.25	1.0	0.25	mg/l	5.00	0.94	106	80-120			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5C01065-MSD1)</b>											
						<b>Source: IOB2047-09</b>					
Total Organic Carbon	6.26	1.0	0.25	mg/l	5.00	0.94	106	80-120	0	20	
<b>Batch: 5C02094 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C02094-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/02/2005 (5C02094-BS1)</b>											
Oil & Grease	18.5	5.0	0.94	mg/l	20.0		92	65-120			M-NR1
<b>LCS Dup Analyzed: 03/02/2005 (5C02094-BSD1)</b>											
Oil & Grease	17.2	5.0	0.94	mg/l	20.0		86	65-120	7	20	
<b>Batch: 5C03074 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03074-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/03/2005 (5C03074-BS1)</b>											
Total Suspended Solids	983	10	10	mg/l	1000		98	85-115			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03074 Extracted: 03/03/05</b>											
<b>Duplicate Analyzed: 03/03/2005 (5C03074-DUP1)</b>											
Total Suspended Solids	21.0	10	10	mg/l		Source: IOB2138-01 ND				10	
<b>Batch: 5C07070 Extracted: 03/07/05</b>											
<b>Blank Analyzed: 03/07/2005 (5C07070-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 03/07/2005 (5C07070-BS1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0		95	80-115			
<b>Matrix Spike Analyzed: 03/07/2005 (5C07070-MS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0	Source: IOB2063-01 ND	98	70-120			
<b>Matrix Spike Dup Analyzed: 03/07/2005 (5C07070-MSD1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	Source: IOB2063-01 ND	95	70-120	3	15	

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METHOD BLANK/QC DATA

1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5C0309 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (P5C0309-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105	80-125			
<b>LCS Analyzed: 03/03/2005 (P5C0309-BS1)</b>											
1,4-Dioxane	11.3	1.0	0.49	ug/l	10.0		113	70-130			
Surrogate: Dibromofluoromethane	1.06			ug/l	1.00		106	80-125			
<b>LCS Dup Analyzed: 03/03/2005 (P5C0309-BSD1)</b>											
1,4-Dioxane	10.2	1.0	0.49	ug/l	10.0		102	70-130	10	20	
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105	80-125			
<b>Matrix Spike Analyzed: 03/03/2005 (P5C0309-MS1)</b>											
						<b>Source: POC0043-01</b>					
1,4-Dioxane	11.7	1.0	0.49	ug/l	10.0	0.59	111	70-150			
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105	80-125			
<b>Matrix Spike Dup Analyzed: 03/03/2005 (P5C0309-MSD1)</b>											
						<b>Source: POC0043-01</b>					
1,4-Dioxane	13.4	1.0	0.49	ug/l	10.0	0.59	128	70-150	14	25	
Surrogate: Dibromofluoromethane	1.04			ug/l	1.00		104	80-125			

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Outfall 011  
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Sampled: 02/25/05  
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### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-HA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

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Sampled: 02/25/05  
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alfa Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOB2065-01

Analysis Performed: EDD + Level 4

Samples: IOB2065-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: 413.1 Oil and Grease

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 Project Manager

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Outfall 011  
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Received: 02/25/05

### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Samples: IOB2065-01

Analysis Performed: Bioassay-7 dy Chrnrc

Samples: IOB2065-01

Analysis Performed: Bioassay-Acute 96hr

Samples: IOB2065-01

### Del Mar Analytical - Phoenix NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B

Samples: IOB2065-01

### Eberline Services - SUB

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4

Samples: IOB2065-01

Analysis Performed: Gross Alpha

Samples: IOB2065-01

Analysis Performed: Gross Beta

Samples: IOB2065-01

Analysis Performed: Radium, Combined

Samples: IOB2065-01

Analysis Performed: Strontium 90

Samples: IOB2065-01

Analysis Performed: Tritium

Samples: IOB2065-01

### Eberline Services - SUB

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Gamma Scan

Samples: IOB2065-04

Analysis Performed: Gross Alpha

Samples: IOB2065-03

Analysis Performed: Gross Beta

Samples: IOB2065-03

Analysis Performed: Level 4 Data Package

Samples: IOB2065-03

Analysis Performed: Radium, Combined

Samples: IOB2065-03

Analysis Performed: Strontium 90

Samples: IOB2065-03

Analysis Performed: Tritium

Samples: IOB2065-03

### Truesdail Laboratories-SUB California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine

Samples: IOB2065-01

Analysis Performed: Level 4 Data Package

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Report Number: IOB2065

Sampled: 02/25/05  
Received: 02/25/05

**Truesdail Laboratories-SUB** *California Cert #1237*  
14201 Franklin Avenue - Tustin, CA 92680  
Samples: IOB2065-01

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**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:												
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 - 13267		Total Recoverable Metals: Ba, Cu, Pb, B, Fe, Mn, Sb, As, Hg, Ni, Se, Ag, Tl, Zn, Co, V, Cr, Hg, Settleable Solids		Temp 55.7 F pH= 7.0												
Sample Description	Sample Matrix	Container Type	# of Con	Sampling Date/Time	Preservative	Bottle #	113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PCBs	2,4,6 Trichlorophenol, 2,4-dinitrotoene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 628) + PP list	Comments
Outfall 011	W	Poly-1L	1	2-25-05 10:42	HNO3	1A												
Outfall 011-Dup	W	Poly-1L	1		HNO3	1B												
Outfall 011	W	Poly-1L	1		None	2												
Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C	X											
Outfall 011	W	1L Amber	2		None	4A, 4B		X										
Outfall 011	W	1L Amber	2		HCl	5A, 5B			X									
Outfall 011	W	Poly-500 ml	1		NaOH	6				X								
Outfall 011	W	Poly-1L	1		None	7					X							
Outfall 011	W	Poly-500 ml	2		None	8A, 8B						X						
Outfall 011	W	Poly-500 ml	2		None	9A, 9B							X					
Outfall 011	W	Poly-500 ml	2		None	10A, 10B								X				
Outfall 011	W	Poly-500 ml	1		H2SO4	11									X			
Outfall 011	W	1L Amber	2		None	12A, 12B												
Outfall 011	W	1L Amber	2		None	13A, 13B												
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C, 14D												

*DPB*

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample integrity: (Check) Intact \_\_\_\_\_  
 On Ice: \_\_\_\_\_

Relinquished By: *[Signature]* Date/Time: 2-25-05 15:00  
 Received By: *[Signature]* Date/Time: 2/25/05 19:20  
 Relinquished By: *[Signature]* Date/Time: 2/25/05 19:20  
 Received By: *[Signature]* Date/Time: 2/25/05 19:20  
 Relinquished By: *[Signature]* Date/Time: 2/25/05 19:20  
 Received By: *[Signature]* Date/Time: 2/25/05 19:20

60

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		<b>Project Manager:</b> Bronwyn Kelly Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>Sampler:</b> <i>Fallock</i>		<b>ANALYSIS REQUIRED</b>		<b>Comments</b>								
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Residual Chlorine	TOC	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Momomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	1/4 Dioxane <i>(CUMMINS from NH3, 105 12/4/8015)</i>	
Outfall 011	W	150ml Brown Poly	1	2-25-05 <i>10:00</i>	None	15	X											
Outfall 011	W	VOA	3		HCl	16A, 16B, 16C		X										
Outfall 011	W	500ml Poly	1		None	17			X									
Outfall 011	W	1L Amber	2		HCl	18A, 18B				X								
Outfall 011	W	1L Amber	2		None	19A, 19B					X							
Outfall 011	W	VOA	3		HCl	20A, 20B, 20C						X						
Outfall 011	W	1L Amber	2		None	21A, 21B							X					
Outfall 011	W	VOA	3		None	22A, 22B, 22C								X				
Outfall 011	W	Poly-1Gal	2		None	23A, 23B									X			
Outfall 011	W	1L Amber VOA	4 2		None None	24A, 24B, 24C, 24D, 24E, 24F												
Trip Blanks	W	VOA	3		None	25A, 25B, 25C												
Trip Blanks	W	VOA	3		HCl	26A, 26B, 26C						X						
Relinquished By				Date/Time: 2-25-05 15:00	Received By			Date/Time: 2/25/05 15:00										
Relinquished By				Date/Time: 2-25-05 15:00	Received By			Date/Time: 2/25/05 19:20										
Relinquished By				Date/Time: 2-25-05 15:00	Received By			Date/Time: 2/25/05 19:20										
Turn around Time: (check) 24 Hours <input type="checkbox"/> 5 Days <input type="checkbox"/> 48 Hours <input type="checkbox"/> 10 Days <input type="checkbox"/> 72 Hours <input type="checkbox"/> Normal <input type="checkbox"/> Perchlorate Only 72 Hours <input type="checkbox"/> Metals Only 72 Hours <input type="checkbox"/>										Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice <input type="checkbox"/> 6°C								



2852 Altun Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Tolson, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8586 FAX (858) 505-9689  
 9830 South 51st St., Suite B-170, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

March 31, 2005

MWH-Pasadena/ Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)  
 Outfall 011  
 Sampled: 02/25/05  
 Del Mar Analytical Number: IOB2065

Dear Ms. Kelly:

Truesdail Laboratories performed Hydrazines by EPA Method 8315M, Eberline Services tested gross alpha/gross beta (EPA 900.0), tritium (H-3, EPA 906.0), and strontium-90 (Sr-90, EPA905.0), Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0) & *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002) and Alta Analytical Laboratories performed EPA Method 1613 for Dioxin for the project referenced above. Please use the following cross-reference table letter when reviewing you your results.

MWH ID	DEL MAR ID	TRUESDAIL ID	EBERLINE ID	ATL ID	ALTA ID
Outfall 011 Grab	IOB2065-01	940178-1	R503010-8305	A-05022603-001/002	25814-001

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022 at extension 215.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager



March 10, 2005

**Alta Project I.D.: 25814**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 01, 2005 under your Project Name "IOB2065". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in cursive script that reads "Martha M. Maier".

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 3/1/2005**

Alta Lab. ID

Client Sample ID

25814-001

IOB2065-01

## SECTION II



Method Blank		EPA Method 1613					
Matrix:	Aqueous	QC Batch No.:	6571	Lab Sample:	0-MB001		
Sample Size:	1.000 L	Date Extracted:	4-Mar-05	Date Analyzed DB-5:	9-Mar-05		
				Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	3.17		IS 13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	2.85		13C-1,2,3,7,8-PeCDD	67.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	7.88		13C-1,2,3,4,7,8-HxCDD	77.9	32 - 141	
1,2,3,6,7,8-HxCDD	ND	7.76		13C-1,2,3,6,7,8-HxCDD	88.2	28 - 130	
1,2,3,7,8,9-HxCDD	ND	7.78		13C-1,2,3,4,6,7,8-HpCDD	63.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	6.25		13C-OCDD	44.4	17 - 157	
OCDD	ND	15.4		13C-2,3,7,8-TCDF	79.2	24 - 169	
2,3,7,8-TCDF	ND	4.50		13C-1,2,3,7,8-PeCDF	66.2	24 - 185	
1,2,3,7,8-PeCDF	ND	5.76		13C-2,3,4,7,8-PeCDF	67.5	21 - 178	
2,3,4,7,8-PeCDF	ND	4.98		13C-1,2,3,4,7,8-HxCDF	72.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	3.01		13C-1,2,3,6,7,8-HxCDF	81.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	2.73		13C-2,3,4,6,7,8-HxCDF	80.3	28 - 136	
2,3,4,6,7,8-HxCDF	ND	3.11		13C-1,2,3,7,8,9-HxCDF	74.3	29 - 147	
1,2,3,7,8,9-HxCDF	ND	5.02		13C-1,2,3,4,6,7,8-HpCDF	65.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	4.70		13C-1,2,3,4,7,8,9-HpCDF	64.1	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	5.90		13C-OCDF	51.8	17 - 157	
OCDF	ND	15.0		CRS 37Cl-2,3,7,8-TCDD	84.6	35 - 197	
<b>Totals</b>							
Total TCDD	ND	3.17					
Total PeCDD	ND	2.85					
Total HxCDD	ND	7.80					
Total HpCDD	ND	6.25					
Total TCDF	ND	4.50					
Total PeCDF	ND	5.36					
Total HxCDF	ND	3.36					
Total HpCDF	ND	5.21					

**Footnotes**  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: JMH  
Approved By: Martha M. Maier  
10-Mar-2005 10:14



OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	6571	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	4-Mar-05	Date Analyzed DB-5:	8-Mar-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	9.19	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	67.1	25 - 164
1,2,3,7,8-PeCDD	50.0	45.5	35 - 71	13C-1,2,3,7,8-PeCDD	61.4	25 - 181
1,2,3,4,7,8-HxCDD	50.0	47.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	60.9	32 - 141
1,2,3,6,7,8-HxCDD	50.0	45.2	38 - 67	13C-1,2,3,6,7,8-HxCDD	67.6	28 - 130
1,2,3,7,8,9-HxCDD	50.0	47.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	66.0	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	49.1	35 - 70	13C-OCDD	64.3	17 - 157
OCDD	100	98.3	78 - 144	13C-2,3,7,8-TCDF	72.7	24 - 169
2,3,7,8-TCDF	10.0	9.57	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	58.0	24 - 185
1,2,3,7,8-PeCDF	50.0	49.9	40 - 67	13C-2,3,4,7,8-PeCDF	60.4	21 - 178
2,3,4,7,8-PeCDF	50.0	50.3	34 - 80	13C-1,2,3,4,7,8-HxCDF	46.8	26 - 152
1,2,3,4,7,8-HxCDF	50.0	51.5	36 - 67	13C-1,2,3,6,7,8-HxCDF	52.4	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.4	42 - 65	13C-2,3,4,6,7,8-HxCDF	53.1	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.4	35 - 78	13C-1,2,3,7,8,9-HxCDF	55.3	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.8	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	57.2	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	51.7	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	60.2	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	52.5	39 - 69	13C-OCDF	66.3	17 - 157
OCDF	100	103	63 - 170	CRS 37Cl-2,3,7,8-TCDD	80.8	35 - 197

Analyst: JMH

Approved By: Martha M. Maier 10-Mar-2005 10:14





Sample ID: IOB2065-01		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25814-001		
Project:	IOB2065	Sample Size:	1.030 L	QC Batch No.:	6571		
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05		
Time Collected:	1042			Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.921		IS 13C-2,3,7,8-TCDD	74.9	25 - 164	
1,2,3,7,8-PeCDD	ND	1.26		13C-1,2,3,7,8-PeCDD	64.1	25 - 181	
1,2,3,4,7,8-HxCDD	ND	2.84		13C-1,2,3,4,7,8-HxCDD	65.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	2.65		13C-1,2,3,6,7,8-HxCDD	67.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	2.73		13C-1,2,3,4,6,7,8-HpCDD	67.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	9.15			13C-OCDD	60.5	17 - 157	
OCDD	81.2			13C-2,3,7,8-TCDF	77.3	24 - 169	
2,3,7,8-TCDF	ND	1.46		13C-1,2,3,7,8-PeCDF	61.6	24 - 185	
1,2,3,7,8-PeCDF	ND	1.91		13C-2,3,4,7,8-PeCDF	62.0	21 - 178	
2,3,4,7,8-PeCDF	ND	1.74		13C-1,2,3,4,7,8-HxCDF	52.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	1.18		13C-1,2,3,6,7,8-HxCDF	59.7	26 - 123	
1,2,3,6,7,8-HxCDF	ND	1.11		13C-2,3,4,6,7,8-HxCDF	57.4	28 - 136	
2,3,4,6,7,8-HxCDF	ND	1.27		13C-1,2,3,7,8,9-HxCDF	58.7	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.81		13C-1,2,3,4,6,7,8-HpCDF	55.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	2.06		13C-1,2,3,4,7,8,9-HpCDF	62.9	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	2.09		13C-OCDF	63.2	17 - 157	
OCDF	3.94			CRS 37Cl-2,3,7,8-TCDD	91.9	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.921					
Total PeCDD	ND	1.26					
Total HxCDD	ND	2.73					
Total HpCDD	20.8						
Total TCDF	ND	1.46					
Total PeCDF	ND	1.82					
Total HxCDF	ND	1.31					
Total HpCDF	ND	2.07					
<b>Footnotes</b>							
a. Sample specific estimated detection limit.							
b. Estimated maximum possible concentration.							
c. Method detection limit.							
d. Lower control limit - upper control limit.							

Analyst: JMH

Approved By: Martha M. Maier 10-Mar-2005 10:14

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that corresponds to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are "interim limits only" until in-house limits are utilized.



## CURRENT CERTIFICATIONS

NELAP — (Primary AA: California, Certificate No. 02102CA)  
Department of the Navy  
U.S. Army Corps of Engineers  
U.S. EPA Region 5  
Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)  
Commonwealth of Kentucky — (Certificate No. 90063)  
Commonwealth of Virginia — (Certificate No. 00013)  
State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)  
State of Arizona — (Certificate No. AZ0639)  
State of Arkansas, Department of Health — (Approval granted through CA certification)  
State of Arkansas, Department of Environmental Quality  
State of California — (Certificate No. 1640)  
State of Colorado  
State of Connecticut — (Certificate No. PH-0182)  
State of Florida — (Certificate No. 87456)  
State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)  
State of Louisiana, Department of Environmental Quality  
State of Maine  
State of Michigan (Certificate No. 81178087)  
State of Mississippi — (Approval granted through CA certification)  
State of Nevada — (Certificate No. CA413)  
State of New Jersey — (Certificate No. CA003)  
State of New York, Department of Health — (Certificate No. 11411)  
State of North Carolina — (Certification No. 06700)  
State of North Dakota, Department of Health — (Certificate No. R-078)  
State of New Mexico  
State of Oklahoma — (D9919)  
State of Oregon — (Certificate No. CA413)  
State of Pennsylvania — (Certificate No. 68-490)  
State of South Carolina — (Certificate No. 87002001)  
State of Tennessee — (Certificate No. 02996)  
State of Texas — (Certificate No. TX247-1000A)  
State of Utah — (Certificate No. E-201)  
State of Washington — (Certification No. C091)  
State of Wisconsin — (Certificate No. 998036160)  
State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 808, San Diego, CA 92123 Ph (619) 505-9696 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite 63, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

**SUBCONTRACT ORDER - PROJECT # IOB2065**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 933-0940  <i>25814 1.1°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB2065-01 Water</b> 1613-Dioxin-HR EDD + Level 4	<b>Sampled: 02/25/05 10:42</b> 03/04/05 10:42 03/25/05 10:42	<b>Instant Notification</b> J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b> 1 L Amber (IOB2065-01G) 1 L Amber (IOB2065-01H)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice::	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

*[Signature]* 2-28-05 1700 *[Signature]* 3/1/05 0853  
 Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25814

1. Date Samples Arrived: <u>3/1/05 0953</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
2. Time / Date logged in: <u>1054 3/1/05</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
3. Samples Arrived By: (circle) <u>FedEx</u> UPS World Courier Other:			
4. Shipping Preservation: (circle) <u>Ice</u> <u>Blue Ice</u> Dry Ice / None Temp °C <u>1.1°C</u>			
5. Shipping Container(s) Intact? If not, describe condition in comment section.	YES ✓	NO	NA
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.	✓		
7. Shipping Documentation Present? (circle) Shipping Label Airbill Tracking Number <u>7909 3312 2398</u>	✓		
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section.		✓	✓
9. Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10. Chain of Custody (COC) or other Sample Documentation Present?	✓		
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.	✓		
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed			
13. Container(s) and/or Bottle(s) Requested?		✓	
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted			✓

Comments:

ALTA Analytical Laboratory  
El Dorado Hills, CA 95762



17461 Darian Ave, Suite 100, Irvine, CA 92614 Ph: (949) 261-1022 Fax: (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92534 Ph: (909) 570-1667 Fax: (909) 270-1046  
 3484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph: (619) 526-8986 Fax: (619) 526-9889  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph: (480) 785-0043 Fax: (480) 785-0861  
 2520 E. Sahara Rd., Suite #5, Las Vegas, NV 89130 Ph: (702) 798-6020 Fax: (702) 798-3021

**SUBCONTRACT ORDER - PROJECT # IOB2065**

<p><b>SENDING LABORATORY:</b>                  Del Mar Analytical, Irvine                  17461 Darian Avenue, Suite 100                  Irvine, CA 92614                  Phone: (949) 261-1022                  Fax: (949) 261-1228                  Project Manager: Michele Harper</p>	<p><b>RECEIVING LABORATORY:</b>                  Alta Analytical                  1104 Windfield Way                  El Dorado Hills, CA 95762                  Phone: (916) 933-1640                  Fax: (916) 933-0940</p>
--	---

Standard TAT is requested unless specific due date is requested => Due Date: 2 WEEKS Initials: MH

Analysis	Expiration	Comments
Sample ID: IOB2065-01 Water	Sampled: 02/25/05 10:42	Instant Notification
1613-Dioxin-HR	03/04/05 10:42	J flags, 17 congeners, no TEQ, sub to Pacc-MN
EDD + Level 4	03/25/05 10:42	Excel EDD email to pm, Include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IOB2065-01G)		
1 L Amber (IOB2065-01H)		

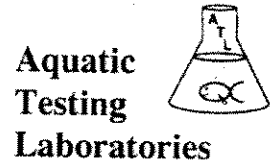
*Sampler = P.P.  
 MH 3/2/05*

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** March 5, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05022603-001/002  
**Sample I.D.:** IOB2065-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 02/25/05  
Date Received: 02/26/05  
Date Tested: 02/26/05 to 03/04/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director



# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05022603-001  
 Client/ID: Del Mar IOB2065-01

Start Date: 02/26/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 9 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050208.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.2	9.1	7.8	0	0	<i>[Signature]</i> 1030
	100%	19.3	9.8	6.9	0	0	
24 Hr	Control	19.4	7.8	7.6	0	0	<i>[Signature]</i> 1000
	100%	19.4	7.4	7.1	0	0	
48 Hr	Control	19.6	6.9	7.6	0	0	<i>[Signature]</i> 1100
	100%	19.5	7.0	7.1	0	0	
Renewal	Control	19.4	8.2	7.7	0	0	<i>[Signature]</i> 1100
	100%	19.7	8.9	7.1	0	0	
72 Hr	Control	19.1	7.8	7.5	0	0	<i>[Signature]</i> 1030
	100%	19.1	7.9	7.3	0	0	
96 Hr	Control	19.3	8.2	7.5	0	0	<i>[Signature]</i> 1030
	100%	19.2	8.1	7.3	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 6.9; Conductivity: 132 umho; Temp: 4°C;  
 DO: 9.8 mg/l; Alkalinity: 42 mg/l; Hardness: 54 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No.  
 Control: Alkalinity: 55 mg/l; Hardness: 93 mg/l; Conductivity: 295 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes /  No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05022603  
Client/ID: Del Mar IOB2065-01

Date Tested: 02/26/05 to 03/04/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050225.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	29.1
6.25%	100%	28.5
12.5%	100%	29.0
25%	100%	28.3
50%	100%	30.4
100%	100%	28.4

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (29.1 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 9.2%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight response at conc. tested)



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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Suncoast Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3020 Fax (702) 798-3821

## SUBCONTRACT ORDER - PROJECT # IOB2065

<p style="text-align: center;"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine        17461 Derian Avenue, Suite 100        Irvine, CA 92614        Phone: (949) 261-1022        Fax: (949) 261-1228        Project Manager: Michele Harper</p>	<p style="text-align: center;"><b>RECEIVING LABORATORY:</b></p> <p>Aquatic Testing Laboratories-SUB        4350 Transport Street, Unit 107        Ventura, CA 93003        Phone : (805) 650-0546        Fax: (805) 650-0756</p>
--	--

Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB2065-01 Water</b>	<b>Sampled: 02/25/05 10:42</b>	<b>Instant Notification</b>
413.1 Oil and Grease	03/25/05 10:42	Boeing, permit, J flags
Bioassay-7 dy Chrmic	02/26/05 22:42	ceriodaphnia, 13267
Bioassay-Acute 96hr	02/26/05 22:42	fathead minnow, 13267

**Containers Supplied:**  
 1 gal Poly (IOB2065-01AO)  
 1 gal Poly (IOB2065-01AP)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 4°C

*[Signature]* 2/26/05 0530  
 Released By      Date      Time
 

*[Signature]* 2/26/05 0530  
 Received By      Date      Time

*[Signature]* 2/26/05 0745  
 Released By      Date      Time
 

*[Signature]* 2-26-05 0745  
 Received By      Date      Time



March 24, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB2065  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503010-8305

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 1, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/mjv*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG #305	Client <u>DEL MAR ANAL</u>
Work Order <u>R503010-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB2065-01	8305-001	02/25/05	03/15/05	GrossAlpha	1.50 ± 0.89	pCi/L	1.05
			03/15/05	Gross Beta	2.27 ± 1.2	pCi/L	1.77
			03/17/05	H3	-45.7 ± 150	pCi/L	259
			03/18/05	Sr90	0.206 ± 0.25	pCi/L	0.451

Certified by <u>[Signature]</u>
Report Date <u>03/24/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8305</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503010-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8305-002	GrossAlpha	10.5 ± 1.2	pCi/Smpl	11.2	0.436	94% recovery
		Gross Beta	11.2 ± 0.81	pCi/Smpl	12.1	0.584	93% recovery
		H3	266 ± 25	pCi/Smpl	258	26.2	103% recovery
		Sr90	12.2 ± 0.57	pCi/Smpl	11.1	0.236	110% recovery
<u>BLANK</u>							
	8305-003	GrossAlpha	-0.070 ± 0.17	pCi/Smpl	NA	0.417	<MDA
		Gross Beta	-0.046 ± 0.31	pCi/Smpl	NA	0.545	<MDA
		H3	1.77 ± 15	pCi/Smpl	NA	26.0	<MDA
		Sr90	-0.098 ± 0.12	pCi/Smpl	NA	0.224	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8305-004	GrossAlpha	0.325 ± 0.53	0.874
	Gross Beta	2.92 ± 1.2	1.82
	H3	-91.7 ± 150	260
	Sr90	-0.070 ± 0.21	0.441

<u>ORIGINALS</u>					
Sample ID	Results ± 2σ	MDA	3σ		
Sample ID	Results ± 2σ	MDA	RPD (Tot)	Eval	
8305-001	1.50 ± 0.89	1.05	129	178	satis.
	2.27 ± 1.2	1.77	25	103	satis.
	-45.7 ± 150	259	-	0	satis.
	0.206 ± 0.25	0.451	-	0	satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8305-005	GrossAlpha	74.5 ± 5.1	0.951
	Gross Beta	82.2 ± 3.8	1.89
	H3	31400 ± 690	263

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8305-001	1.50 ± 0.89	1.05	76.6	95	
	2.27 ± 1.2	1.77	73.8	108	
	-45.7 ± 150	259	31400	100	

Certified by <u><i>[Signature]</i></u> Report Date <u>03/24/05</u> Page 2
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 9530 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #5, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOB2065**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB2065-01 Water</b>	<b>Sampled: 02/25/05 10:42</b>	<b>Instant Notification</b>
EDD + Level 4-OUT	03/25/05 10:42	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	02/25/06 10:42	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/25/06 10:42	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/25/06 10:42	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/25/06 10:42	905.0
Tritium-O	02/25/06 10:42	906

**Containers Supplied:**

- 1 L Amber (IOB2065-01AQ) *w/6KNO3*
- 1 L Amber (IOB2065-01AR) "
- 1 L Amber (IOB2065-01AS) "
- 1 L Amber (IOB2065-01AT) "
- 40 ml Voa Vial (IOB2065-01AU)
- 40 ml Voa Vial (IOB2065-01AV)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: *[Signature]* Date: 2-28-05 Time: 1700      Received By: *[Signature]* Date: 3/1/05 Time: 16:00

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_      Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



**EBERLINE**  
SERVICES

**RICHMOND, CA LABORATORY**

**SAMPLE RECEIPT CHECKLIST**

Client DEL. MAR City IRVINE State CA  
 Date/Time received 3/1/05 10:00 CoC No. IOB 2065

---

Container I.D. No. DEL. MAR COLTON Requested TAT (Days) STAND P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]  
 2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]  
 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [  ]  
 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [  ]  
 5. Packing material is: Wet [  ] Dry [ ]  
 6. Number of samples in shipping container: 1 Sample Matrix WATER  
 7. Number of containers per sample: 6 (Or see CoC \_\_\_\_\_)  
 8. Samples are in correct container Yes [  ] No [ ]  
 9. Paperwork agrees with samples? Yes [  ] No [ ]  
 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [  ]  
 11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]  
 12. Samples are: Preserved [  ] Not preserved [ ] pH 2 Preservative HNO3  
 13. Describe any anomalies: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
 15. Inspected by AK Date: 3/1/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 8, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* **Del Mar Analytical**  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

*Attention:* **Michele Harper**

*Project Name:* **IOB2065**  
*Date Received:* **02/28/05**

*Truesdail Project:* **940178**

## **Samples Cross-reference**

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
940178-1	IOB2065-01	Water	02/25/05	1042	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K.R.P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

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(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

*Attention:* Michele Harper

*Project Name:* IOB2065  
*Date Received:* 02/28/05

*Truesdail Project:* 940178

## Case Narrative

*Sample Receipt* The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

*Analysis* The analysis was performed as requested on the chain-of-custody.

*Quality Control* The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

*Comments* The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

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Established 1931

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## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB2065  
**P.O. Number:** IOB2065  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940178  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 4, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl	
		Hydrazine	Hydrazine	Hydrazine	Hydrazine
704807-MB	Method Blank	ND	ND	ND	ND
940178	IOB2065-01	ND	ND	ND	ND
MDL		1.2	0.27	0.39	
PQL		5.0	5.0	1.0	

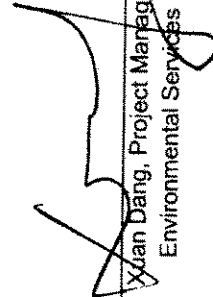
MDL: Method Detection Limit, ug/L

PQL: Practical Quantitation Limit, ug/L

ND: Not Detected at or above the MDL value.

N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Juan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008  
 (714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOB2065  
**P.O. Number:** IOB2065  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2994; Analysis: 372  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704807  
**Project Lab. No.:** 940178  
**Spiked Sample ID:** 940178  
**Report Date:** March 8, 2005  
**Sampling Date:** February 26, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 3-4, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	26.3	105	85-115	PASS
u-Dimethyl Hydrazine	25.0	23.2	93.0	85-115	PASS
Hydrazine	5.0	5.10	102	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	50.0	47.4	94.7	85-115	PASS
u-Dimethyl Hydrazine	50.0	48.3	96.6	85-115	PASS
Hydrazine	10.0	8.62	86.2	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

#### LCS/LCSD

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		LCS/LCSD		Control Limits		Flag
	ug/L	MSD	LCS	MB	LCS	LCSD	%D	%D	% Rec.		
Monomethyl Hydrazine	50.0	54.5	58.7	0.0	109	117	7.54%	PASS	20	70-130	
u-Dimethyl Hydrazine	50.0	50.1	50.4	0.0	100	101	0.58%	PASS	20	70-130	
Hydrazine	10.0	10.2	10.3	0.0	102	103	1.08%	PASS	20	70-130	

#### MS/MSD

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		MS/MSD		Control Limits	
	ug/L	MSD	MSD	MS	MSD	% D	% D	% Rec.		
Monomethyl Hydrazine	50.0	20.4	19.8	0.0	40.8	39.6	2.93%	PASS	20	0-150
u-Dimethyl Hydrazine	50.0	38.2	38.3	0.0	76.4	76.6	0.24%	PASS	20	0-150
Hydrazine	10.0	8.21	8.32	0.0	82.1	83.2	1.36%	PASS	20	0-150

ICV: Initial Calibration Verification

QCS: Quality Control Standard

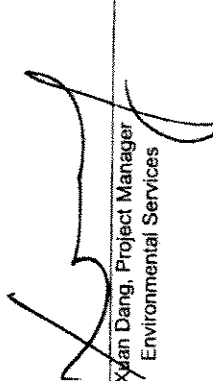
LCS: Laboratory Control Spike

MS: Matrix Spike

%D: Percent Difference

Flag: "Pass" if within Control Limits, otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
 Xuan Dang, Project Manager  
 Environmental Services

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Del Mar Analytical

940178

SUBCONTRACT ORDER - PROJECT # IOB2065

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone : (714) 730-6239  
 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOB2065-01 Water	Sampled: 02/25/05 10:42	Instant Notification
Hydrazine-OUT	02/28/05 10:42	Sub Truesdail for Monomethylhydrazine, 13267
Level 4 Data Package	03/25/05 10:42	

**Containers Supplied:**  
 1 L Amber (IOB2065-01AJ)  
 1 L Amber (IOB2065-01AK)

Rec'd 02/28/05  
 s2b 940178

**ALERT!!**  
**Level IV QC**

**For Sample Conditions  
 See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): \_\_\_\_\_

Released By: *[Signature]* Date: 2/28/05 Time: 0900  
 Received By: *[Signature]* Date: 2/28/05 Time: 0900  
 Released By: *[Signature]* Date: 2/28/05 Time: 0925  
 Received By: *[Signature]* Date: 2/28/05 Time: 9:25



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 940178

Date Delivered: 2/28/05 Time: 9:25 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)?      °C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc..)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client  Other
12. Were samples pH checked? pH =       Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Other
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Shabunina

ALERT!!  
Level IN QC



TRUESDAIL LABORATORIES, INC.

# Internal Chain of Custody Logbook

Lab Number: 940178  
 Client Name: Del Mar

Storage Temperature: 4.0°C

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				2/28/05	09:50		L. Stubbins	[Signature]
	Hydrozine	022805	1230	022805	1400	300ML	PLS GER	[Signature]

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

# **APPENDIX A**

## **Section 30**

Outfall 011, February 25, 2005

MEC<sup>X</sup> Data Validation Reports



**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

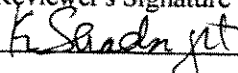
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF32  
 Task Order 313150010  
 SDG No. Multiple

No. of Analyses 6

Laboratory Alta  
 Reviewer K. Shadowlight  
 Analysis/Method Dioxins

Date: March 16, 2005

Reviewer's Signature  


<b>ACTION ITEMS*</b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were assigned for the following:
Holding Times	* Detects below the lower method calibration level
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple SDGs  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: March 16, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 001	IOB2098-01	25812-001	water	1613
Outfall 002	IOB2063-01	25811-001	water	1613
Outfall 011	IOB2066-01	25815-001	water	1613
Outfall 011 Composite	IOB2064-01	25816-001	water	1613
Outfall 011 Grab	IOB2065-01	25814-001	water	1613
Outfall 018	IOB2099-01	25813-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All of the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were shipped to Alta for dioxin/furan analyses and the samples were received below the temperature limits at  $0.8^{\circ}\text{C}$  and  $1.1^{\circ}\text{C}$ ; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. The sample collector's name is not routinely provided on the transfer COC; however, the name of the sample collector was provided in the Sample Acceptance Form dated 03/01/05 for sample Outfall 011 Composite. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.



### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 08/30/04. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (6571-MB001) was extracted and analyzed with the samples in these SDGs. There were no detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6571-OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration level (MCL) were qualified as estimated, "J;" however, as Alta analyzed an additional calibration standard, not all results below the method calibration level were appropriately qualified by the laboratory. These results were qualified as estimated, "J," by the reviewer. No further qualifications were required.



Sample ID: IOB2064-01 Outfall oil Composite		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 25816-001	Date Received: 1-Mar-05				
Project: IOB2064	Sample Size: 1.028 L	QC Batch No.: 6571	Date Extracted: 4-Mar-05				
Date Collected: 25-Feb-05		Date Analyzed DB-5: 8-Mar-05	Date Analyzed DB-225: NA				
Time Collected: 1340							
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.958		IS 13C-2,3,7,8-TCDD	68.7	25 - 164	
1,2,3,7,8-PeCDD	ND	1.11		13C-1,2,3,7,8-PeCDD	57.9	25 - 181	
1,2,3,4,7,8-HxCDD	ND	3.06		13C-1,2,3,4,7,8-HxCDD	55.7	32 - 141	
1,2,3,6,7,8-HxCDD	ND	3.12		13C-1,2,3,6,7,8-HxCDD	57.2	28 - 130	
1,2,3,7,8,9-HxCDD	ND	3.08		13C-1,2,3,4,6,7,8-HpCDD	57.4	23 - 140	
1,2,3,4,6,7,8-HpCDD	6.35			13C-OCDD	52.0	17 - 157	
OCDD	62.1			13C-2,3,7,8-TCDF	68.1	24 - 169	
2,3,7,8-TCDF	ND	1.25		13C-1,2,3,7,8-PeCDF	55.9	24 - 185	
1,2,3,7,8-PeCDF	ND	1.88		13C-2,3,4,7,8-PeCDF	55.6	21 - 178	
2,3,4,7,8-PeCDF	ND	1.79		13C-1,2,3,4,7,8-HxCDF	44.0	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.822		13C-1,2,3,6,7,8-HxCDF	48.8	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.751		13C-2,3,4,6,7,8-HxCDF	47.1	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.905		13C-1,2,3,7,8,9-HxCDF	49.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.25		13C-1,2,3,4,6,7,8-HpCDF	47.5	28 - 143	
2,3,4,6,7,8-HpCDF	ND	2.11		13C-1,2,3,4,7,8,9-HpCDF	52.2	26 - 138	
1,2,3,4,6,7,8-HpCDF	ND	2.23		13C-OCDF	56.4	17 - 157	
OCDF	ND	4.47		CRS 37Cl-2,3,7,8-TCDD	78.8	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.958					
Total PeCDD	ND	1.11					
Total HxCDD	ND	3.09					
Total HpCDD	15.0						
Total TCDF	ND	1.25					
Total PeCDF	ND	1.83					
Total HxCDF	ND	0.914					
Total HpCDF	ND	2.16					

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JM  
 Approved By: Martha M. Maier 10-Mar-2005 10:37

AMEC VALIDATED LEVEL IV



Sample ID: **IOB2065-01** *Outfall oil Grab*

**EPA Method 1613**

Client Data		Sample Data		Laboratory Data	
Name Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 25814-001	Date Analyzed DB-5: 8-Mar-05	Date Received: 1-Mar-05	Date Analyzed DB-225: NA
Project: IOB2065	Sample Size: 1.030 L	QC Batch No.: 6571	Date Analyzed DB-5: 8-Mar-05	Date Extracted: 4-Mar-05	
Date Collected: 25-Feb-05					
Time Collected: 1042					
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.921		IS 13C-2,3,7,8-TCDD	74.9 25 - 164
1,2,3,7,8-PeCDD	ND	1.26		13C-1,2,3,7,8-PeCDD	64.1 25 - 181
1,2,3,4,7,8-HxCDD	ND	2.84		13C-1,2,3,4,7,8-HxCDD	65.1 32 - 141
1,2,3,6,7,8-HxCDD	ND	2.65		13C-1,2,3,6,7,8-HxCDD	67.9 28 - 130
1,2,3,7,8,9-HxCDD	ND	2.73		13C-1,2,3,4,6,7,8-HpCDD	67.6 23 - 140
1,2,3,4,6,7,8-HpCDD	9.15		J	13C-OCDD	60.5 17 - 157
OCDD	81.2			13C-2,3,7,8-TCDF	77.3 24 - 169
2,3,7,8-TCDF	ND	1.46		13C-1,2,3,7,8-PeCDF	61.6 24 - 185
1,2,3,7,8-PeCDF	ND	1.91		13C-2,3,4,7,8-PeCDF	62.0 21 - 178
2,3,4,7,8-PeCDF	ND	1.74		13C-1,2,3,4,7,8-HxCDF	52.8 26 - 152
1,2,3,4,7,8-HxCDF	ND	1.18		13C-1,2,3,6,7,8-HxCDF	59.7 26 - 123
1,2,3,6,7,8-HxCDF	ND	1.11		13C-2,3,4,6,7,8-HxCDF	57.4 28 - 136
2,3,4,6,7,8-HxCDF	ND	1.27		13C-1,2,3,7,8,9-HxCDF	58.7 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.81		13C-1,2,3,4,6,7,8-HpCDF	55.8 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	2.06		13C-1,2,3,4,7,8,9-HpCDF	62.9 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	2.09		13C-OCDF	63.2 17 - 157
OCDF	3.94			CRS 37Cl-2,3,7,8-TCDD	91.9 35 - 197
<b>Totals</b>			J		
Total TCDD	ND	0.921			
Total PeCDD	ND	1.26			
Total HxCDD	ND	2.73			
Total HpCDD	20.8				
Total TCDF	ND	1.46			
Total PeCDF	ND	1.82			
Total HxCDF	ND	1.31			
Total HpCDF	ND	2.07			

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH  
10/18/05

Approved By: Martha M. Maier 10-Mar-2005 10:14

Project 25814

**AMEC VALIDATED LEVEL IV**



Sample ID: IOB2098-01		Outfall 001		EPA Method 1613	
Client Data		Sample Data		Laboratory Data	
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Date Collected: 26-Feb-05	Sample Size: 1.015 L	Lab Sample: 25812-001	Date Received: 1-Mar-05
Project: IOB2098		Time Collected: 1010		QC Batch No.: 6571	Date Extracted: 4-Mar-05
				Date Analyzed DB-5: 8-Mar-05	Date Analyzed DB-225: NA
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.873		IS 13C-2,3,7,8-TCDD	62.6 25 - 164
1,2,3,7,8-PeCDD	ND	0.921		13C-1,2,3,7,8-PeCDD	55.9 25 - 181
1,2,3,4,7,8-HxCDD	ND	1.50		13C-1,2,3,4,7,8-HxCDD	58.3 32 - 141
1,2,3,6,7,8-HxCDD	ND	1.59		13C-1,2,3,6,7,8-HxCDD	59.7 28 - 130
1,2,3,7,8,9-HxCDD	ND	1.54		13C-1,2,3,4,6,7,8-HpCDD	58.5 23 - 140
1,2,3,4,6,7,8-HpCDD	4.28			13C-OCDD	53.8 17 - 157
OCDD	34.4		J	13C-2,3,7,8-TCDF	65.7 24 - 169
2,3,7,8-TCDF	ND	1.04		13C-1,2,3,7,8-PeCDF	54.8 24 - 185
1,2,3,7,8-PeCDF	ND	1.73		13C-2,3,4,7,8-PeCDF	56.1 21 - 178
2,3,4,7,8-PeCDF	ND	1.59		13C-1,2,3,4,7,8-HxCDF	43.4 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.742		13C-1,2,3,6,7,8-HxCDF	47.8 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.690		13C-2,3,4,6,7,8-HxCDF	48.9 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.778		13C-1,2,3,7,8,9-HxCDF	50.5 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.12		13C-1,2,3,4,6,7,8-HpCDF	48.0 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	1.59		13C-1,2,3,4,7,8,9-HpCDF	53.3 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	1.62		13C-OCDF	58.5 17 - 157
OCDF	ND	2.71		CRS 37Cl-2,3,7,8-TCDD	82.0 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.873			
Total PeCDD	ND	0.921			
Total HxCDD	ND	1.54			
Total HpCDD	9.41				
Total TCDF	ND	1.04			
Total PeCDF	ND	1.66			
Total HxCDF	ND	0.819			
Total HpCDF	ND	1.60			

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH

Approved By: Martha M. Maier 10-Mar-2005 08:12

Project 25812

AMEC VALIDATED

LEVEL IV



Sample ID: IOB2099-01 Oct-fall 018		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 25813-001	Date Received: 1-Mar-05	QC Batch No.: 6571	Date Extracted: 4-Mar-05
Date Collected: 26-Feb-05	Sample Size: 1.009 L	Date Analyzed DB-5: 8-Mar-05	Date Analyzed DB-225: NA		
Time Collected: 0930					
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.958			76.5 25 - 164
1,2,3,7,8-PeCDD	ND	1.02			63.0 25 - 181
1,2,3,4,7,8-HxCDD	ND	3.47			64.7 32 - 141
1,2,3,6,7,8-HxCDD	ND	3.48			62.9 28 - 130
1,2,3,7,8,9-HxCDD	ND	3.47			62.6 23 - 140
1,2,3,4,6,7,8-HpCDD	13.7			J	55.0 17 - 157
OCDD	146				80.4 24 - 169
2,3,7,8-TCDF	ND	1.30			61.1 24 - 185
1,2,3,7,8-PeCDF	ND	1.89			64.1 21 - 178
2,3,4,7,8-PeCDF	ND	1.64			49.7 26 - 152
1,2,3,4,7,8-HxCDF	ND	1.37			55.4 26 - 123
1,2,3,6,7,8-HxCDF	ND	1.26			54.2 28 - 136
2,3,4,6,7,8-HxCDF	ND	1.49			54.2 29 - 147
1,2,3,7,8,9-HxCDF	ND	2.11			51.2 28 - 143
1,2,3,4,6,7,8-HpCDF	2.74			J	56.1 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	2.07			58.2 17 - 157
OCDF	8.35			J	87.9 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.958			
Total PeCDD	ND	1.02			
Total HxCDD	ND	3.48			
Total HpCDD	28.4				
Total TCDF	2.63				
Total PeCDF	ND	1.76			
Total HxCDF	ND	1.53			
Total HpCDF	2.74		7.18		

**Footnotes**  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Analyst: JMH  
 Approved By: Martha M. Maier 10-Mar-2005 09:31

AMEC VALIDATED  
 J. DWYER IV  
 Project 25813



Sample ID: IOB2063-01 Out-fall 002

Client Data		Sample Data		Laboratory Data		EPA Method 1613	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25811-001	Date Received:	1-Mar-05
Project:	IOB2063	Sample Size:	1.008 L	QC Batch No.:	6571	Date Extracted:	4-Mar-05
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05	Date Analyzed DB-225:	NA
Time Collected:	1016						
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.953			IS 13C-2,3,7,8-TCDD	65.8	25 - 164
1,2,3,7,8-PeCDD	ND	1.05			13C-1,2,3,7,8-PeCDD	61.7	25 - 181
1,2,3,4,7,8-HxCDD	ND	2.33			13C-1,2,3,4,7,8-HxCDD	64.3	32 - 141
1,2,3,6,7,8-HxCDD	ND	2.28			13C-1,2,3,6,7,8-HxCDD	64.4	28 - 130
1,2,3,7,8,9-HxCDD	ND	2.30			13C-1,2,3,4,6,7,8-HpCDD	65.7	23 - 140
1,2,3,4,6,7,8-HpCDD	2.99				13C-OCDD	62.8	17 - 157
OCDD	8.97			J	13C-2,3,7,8-TCDF	69.1	24 - 169
2,3,7,8-TCDF	ND	1.32		J	13C-1,2,3,7,8-PeCDF	58.2	24 - 185
1,2,3,7,8-PeCDF	ND	1.45			13C-2,3,4,7,8-PeCDF	60.2	21 - 178
2,3,4,7,8-PeCDF	ND	1.24			13C-1,2,3,4,7,8-HxCDF	46.3	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.597			13C-1,2,3,6,7,8-HxCDF	52.5	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.535			13C-2,3,4,6,7,8-HxCDF	51.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.637			13C-1,2,3,7,8,9-HxCDF	52.8	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.891			13C-1,2,3,4,6,7,8-HpCDF	54.5	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	1.22			13C-1,2,3,4,7,8,9-HpCDF	58.4	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	1.34			13C-OCDF	64.6	17 - 157
OCDF	ND	2.80			CRS 37Cl-2,3,7,8-TCDD	78.2	35 - 197
<b>Totals</b>							
Total TCDD	5.07						
Total PeCDD	6.12						
Total HxCDD	3.64						
Total HpCDD	2.99		4.54				
Total TCDF	ND	1.32					
Total PeCDF	ND	1.34					
Total HxCDF	ND	0.653					
Total HpCDF	ND	1.27					

Footnotes:  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Approved By: Martha M. Maier 10-Mar-2005 08:05

Analyse: JMH Pm 4/12/05

Project 25811 AMEC VALIDATED

REVERI, IV



Sample ID: IOB2066-01		Del Mar Analytical, Irvine		EPA Method 1613	
Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25815-001
Project:	IOB2066	Sample Size:	1.033 L	QC Batch No.:	6571
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05
Time Collected:	1510			Date Analyzed DB-225:	NA
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.905		13C-2,3,7,8-TCDD	74.2 25 - 164
1,2,3,7,8-PeCDD	ND	1.03		13C-1,2,3,7,8-PeCDD	63.7 25 - 181
1,2,3,4,7,8-HxCDD	ND	2.32		13C-1,2,3,4,7,8-HxCDD	63.2 32 - 141
1,2,3,6,7,8-HxCDD	ND	2.20		13C-1,2,3,6,7,8-HxCDD	65.0 28 - 130
1,2,3,7,8,9-HxCDD	ND	2.25		13C-1,2,3,4,6,7,8-HpCDD	66.4 23 - 140
1,2,3,4,6,7,8-HpCDD	8.02			13C-OCDD	55.5 17 - 157
OCDD	65.3			13C-2,3,7,8-TCDF	76.7 24 - 169
2,3,7,8-TCDF	ND	1.15		13C-1,2,3,7,8-PeCDF	62.4 24 - 185
1,2,3,7,8-PeCDF	ND	1.53		13C-2,3,4,7,8-PeCDF	63.9 21 - 178
2,3,4,7,8-PeCDF	ND	1.41		13C-1,2,3,4,7,8-HxCDF	47.5 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.891		13C-1,2,3,6,7,8-HxCDF	53.7 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.854		13C-2,3,4,6,7,8-HxCDF	53.8 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.939		13C-1,2,3,7,8,9-HxCDF	56.1 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.32		13C-1,2,3,4,6,7,8-HpCDF	53.3 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	2.10		13C-1,2,3,4,7,8,9-HpCDF	59.3 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	2.01		13C-OCDF	61.9 17 - 157
OCDF	ND	5.26		CRS 37CI-2,3,7,8-TCDD	96.2 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.905			
Total PeCDD	ND	1.03			
Total HxCDD	ND	2.25			
Total HpCDD	17.1				
Total TCDF	ND	1.15			
Total PeCDF	ND	1.47			
Total HxCDF	ND	0.987			
Total HpCDF	ND	2.05			

IOB2066-01 Out Cell oil

Labeled Standard

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH  
IC 4/1/05

Approved By: Martha M. Maier 10-Mar-2005 10:26

MAVERICK IV

MEC VALIDATED


Project 25815



### CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ5  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 2  
 Date: 03/30/05  
 Reviewer's Signature  


Laboratory Truesdail

Reviewer P. Meeks

Analysis/Method Hydrazines

#### ACTION ITEMS<sup>a</sup>

- |   |   |
|---|---|
| 1. Case Narrative Deficiencies              |   |
| 2. Out of Scope Analyses                    |   |
| 3. Analyses Not Conducted                   |   |
| 4. Missing Hardcopy Deliverables            |   |
| 5. Incorrect Hardcopy Deliverables          |   |
| 6. Deviations from Analysis Protocol, e.g., | Results qualified for exceeded analytical holding time. |
| Holding Times                               |   |
| GC/MS Tune/Inst. Performance                |   |
| Calibrations                                |   |
| Blanks                                      |   |
| Surrogates                                  |   |
| Matrix Spike/Dup LCS                        |   |
| Field QC                                    |   |
| Internal Standard Performance               |   |
| Compound Identification and Quantitation    |   |
| System Performance                          |   |
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|   |   |

COMMENTS<sup>b</sup>

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: March 30, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOB2064, 65  
Analysis: Hydrazines

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Composite	IOB2064-01	940177	water	Hydrazines by 8315
Outfall 011 Grab	IOB2065-01	940178	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met. The samples were analyzed one day beyond the three-day analytical holding time; therefore, nondetected results in both samples were qualified as estimated, "UJ." No further qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 03/03/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Grab. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB2064  
**P.O. Number:** IOB2064  
**Method Number:** 6315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940177  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 4, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Dimethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine	
		Qual	Qty	Qual	Qty	Qual	Qty
704807-MB	Method Blank	ND	*	ND	ND	ND	ND
940177	Outfall Oil Composite IOB2064-01	ND	UJ	ND	UJ	ND	UJ
MDL		1.2	H	ND	H	ND	H
PQL		5.0		0.27		0.39	
				5.0		1.0	

pm 2/24/05

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

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This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or public relations matter without the written authority from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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## REPORT

**Client:** Del Mar Analytical  
17461 Dertian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB2065  
**P.O. Number:** IOB2065  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940178  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 4, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

### Analytical Results

Page 1 of 1

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine		Qual Code	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
704807-MB	Method Blank	ND	*	ND	*	ND	*	ND	*
940178	outfall oil Grab IOB2065-01	ND	UJ	ND	UJ	ND	UJ	ND	UJ
MDL		1.2	H	0.27	H	0.39	H	0.39	H
PQL		5.0		5.0		1.0		1.0	

*pm 3/8/05*

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xuan Dang*  
Xuan Dang, Project Manager  
Environmental Services

**AMEC VALIDATED**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT58  
 Task Order 313150010  
 SDG No. IOB2065, IOB2064  
 No. of Analyses 2

Laboratory Del Mar Analytical

Reviewer V. Henry

Analysis/Method Metals

Date: 4/04/05

Reviewer's Signature

*[Handwritten Signature]*

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: Analytes detected below the reporting limit was qualified as estimated, "J." Detects and negative results in the associated method and calibration blanks. Reporting limit check standard recoveries outside of control limits.
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: V. Henry  
Date of Review: March 31, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma - Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

DATA VALIDATION REPORT

Project: NPDES  
SDG No.: Multiple  
Analysis: MET

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Comp	Outfall 011 Comp	IOB2064-01	water	ILM04
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. A duplicate sample was submitted for sample Outfall 011 Grab; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS metals and 80-120% for mercury. The ICP reporting limit check standard was recovered within the AMEC control limits of 70-130%. Silver was recovered below the control limit in the ICP/MS 0.1 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, nondetected silver in both samples was qualified as estimated, "UJ." Arsenic from the 3/3/05 run was recovered above the control limit in the ICP/MS 1.0 ppb reporting limit check standard associated with Outfall 011 Grab and arsenic from the 3/7/05 run was recovered above the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp. Consequently, arsenic detected in both samples was qualified as estimated, "J." Vanadium was recovered above the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, the detect in Outfall 011 Grab was qualified as estimated, "J." Zinc was recovered below the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, zinc detected in both samples was qualified as estimated, "J." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130% and no further sample qualifications were required.

### 2.4 BLANKS

Boron was detected in a bracketing CCB at 0.013 mg/L; therefore, boron detected in Outfall 011 Composite and Outfall 011 Grab was qualified as estimated, "UJ." Antimony was detected in method blank 5C03085-BLK1 at 1.28 µg/L; therefore, antimony detected in Outfall 011 Grab and Outfall 011 Comp was qualified as estimated, "UJ." at a raised MDL of 1.3 µg/L. Chromium was detected in the CCBs bracketing Outfall 011 Grab and Outfall 011 Comp at approximately 1.4 µg/L; therefore, chromium detected in Outfall 011 Grab and Outfall 011 Composite was qualified as estimated, "UJ." Lead, nickel, and vanadium were reported in the CCB bracketing Outfall 011 Grab and Outfall 011 Comp at concentrations of -0.14, -0.6, and -0.9 µg/L, respectively. Consequently, the lead, nickel, and vanadium detects in Outfall 011 Grab were qualified as estimated, "J," the lead and nickel detects in Outfall 011 Comp were qualified as estimated, "J," and the vanadium nondetect in Outfall 011 Comp was qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferences sulfur, phosphorus, carbon, and chloride. Vanadium, manganese, cobalt, and cadmium were detected above the applicable reporting limit in the ICSA associated with Outfall 011 Grab and Outfall 011 Comp. The results for potassium were above the calibration range of the instrument in all the ICSA and ICSAB analyses associated with Outfall 011 Grab and Outfall 011 Comp; however, as potassium was found in the site samples at very low levels, no qualifications were required. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferences, Al, Ca, Fe, and Mg, and determined that the level of reported interferences were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferences and the other spiked analytes were within the control limits of 80-120%. In the ICSA analyses there were no positive or negative results that were above the applicable reporting limits. The validator reviewed the raw data for the site sample ICP analyses for the level of reported interferences, Al, Ca, Fe, and Mg, and determined that the level of reported interferences were not high enough to cause matrix effects. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5C03085-BS1, the ICP LCS sample was identified as 5C02083-BS1, and the mercury LCS sample was identified as 5C02089-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." Antimony was detected in the method blank, 5C03085-BLK1, at 1.28  $\mu\text{g/L}$ , which is a detect at approximately 3.5 $\times$  the level of antimony detected in the samples; therefore, the antimony detected in samples Outfall 011 Composite and Outfall 011 Grab was qualified as estimated "UJ" at a raised MDL of 1.3  $\mu\text{g/L}$ . No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: mg/l											
Barium	EPA 200.8	5C03085	0.00014	0.0010	0.020	1	03/03/05	03/03/05			
Boron	EPA 200.7	5C02083	0.0074	0.050	0.065	1	03/02/05	03/02/05			
Iron	EPA 200.8	5C03085	0.0032	0.010	0.46	1	03/03/05	03/03/05		UJ	B

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 9830 South 37th St., Suite B-120, Phoenix, AZ 85044 (602) 785-0443 FAX (602) 785-0444  
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MWH-Pasadena/Bocing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB2064

Sampled: 02/25/05

Received: 02/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Qual	Qual Cool
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5C03085	2.0	2.0	0.13	1	03/03/05	03/03/05	B, J	UJ	B, 8
Arsenic	EPA 200.8	5C03085	0.49	1.0	2.1	1	03/03/05	03/07/05		J	*3
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05		U	
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.091	1	03/03/05	03/03/05	J	J	DND
Chromium	EPA 200.8	5C03085	0.26	2.0	1.8	1	03/03/05	03/03/05	J	UJ	DND, B
Cobalt	EPA 200.8	5C03085	0.10	1.0	0.19	1	03/03/05	03/03/05	J	J	DND, Q
Copper	EPA 200.8	5C03085	0.49	2.0	3.3	1	03/03/05	03/03/05			
Lead	EPA 200.8	5C03085	0.13	1.0	0.30	1	03/03/05	03/03/05	J	J	B, DN
Manganese	EPA 200.8	5C03085	0.44	1.0	12	1	03/03/05	03/03/05			
Mercury	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05		U	
Nickel	EPA 200.8	5C03085	0.15	2.0	0.87	1	03/03/05	03/03/05	J	J	B, DN
Selenium	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05		U	
Silver	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05		UJ	*3
Thallium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05		U	
Vanadium	EPA 200.8	5C03085	0.86	2.0	ND	1	03/03/05	03/03/05		UJ	B
Zinc	EPA 200.8	5C03085	3.1	2.0	13	1	03/03/05	03/03/05	J	J	*3, D

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MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB2065  
 Attention: Bronwyn Kelly Sampled: 02:25:05  
 Received: 02:25:05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier	Data Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: mg/l										
Barium	EPA 200.8	5C03085	0.00014	0.0010	0.020	1	03/03/05	03/03/05		
Boron	EPA 200.7	5C02083	0.0074	0.050	0.062	1	03/02/05	03/02/05		
Iron	EPA 200.8	5C03085	0.0032	0.010	0.56	1	03/03/05	03/03/05		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Qual
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5C03085	0.13	2.0	0.13	1	03/03/05	03/03/05	B, J	UJ	B, J
Arsenic	EPA 200.8	5C03085	0.49	1.0	1.3	1	03/03/05	03/03/05		J	#3
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05		UJ	
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.10	1	03/03/05	03/03/05		J	DNQ
Cobalt	EPA 200.8	5C03085	0.26	2.0	0.90	1	03/03/05	03/03/05		J	
Copper	EPA 200.8	5C03085	0.10	1.0	0.23	1	03/03/05	03/03/05		J	
Lead	EPA 200.8	5C03085	0.49	2.0	3.2	1	03/03/05	03/03/05		J	DNQ
Manganese	EPA 200.8	5C03085	0.13	1.0	0.57	1	03/03/05	03/03/05		J	B, DNQ
Mercury	EPA 200.8	5C03085	0.44	1.0	13	1	03/03/05	03/03/05		J	
Nickel	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05		UJ	
Selenium	EPA 200.8	5C03085	0.15	2.0	1.0	1	03/03/05	03/03/05		J	B, DNQ
Silver	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05		UJ	
Thallium	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05		UJ	#3
Vanadium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05		UJ	
Zinc	EPA 200.8	5C03085	0.86	2.0	1.5	1	03/03/05	03/03/05		J	B, DNQ
			3.1	20	16	1	03/03/05	03/03/05		J	DNQ

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DATA VALIDATION

# DATA VALIDATION REPORT

NPDES Monitoring

## NPDES Monitoring

ANALYSIS: PEST

### ANALYSIS: PESTICIDES/PCBs

PPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared

Prepared by

AMEC Denver  
250 South Wadsworth Blvd  
Lakewood, Colo

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	608
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The coolers were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.



### 2.3.2 Initial Calibration

There was one initial calibration dated 03/02/05 associated with the pesticide analyses of the samples in these SDGs, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. One initial calibration dated 02/11/05 was associated with the PCB analyses of the samples in these SDGs which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The %Ds for beta-BHC in the continuing calibration analyzed 03/04/05 (exceeded 15% on the primary channel; therefore, beta-BHC was qualified as estimated, "UJ," in sample Outfall 011 Grab. The remaining applicable %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. Each of the PCB analyses for the samples in these SDGs was bracketed by two CCVs. The %D for Aroclor 1260 exceeded 15% in one of the continuing calibrations bracketing the sample analyses of these SDGs; therefore, the nondetect results for associated target compounds Aroclor 1248, Aroclor 1254, and Aroclor 1260 were qualified as estimated, "UJ," in samples Outfall 011 Composite and Outfall 011 Grab. The remaining %Ds for Aroclor 1016 and Aroclor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

Two water method blanks (5C02052-BLK1 and 5C04051-BLK1) were extracted and analyzed with these SDGs. Both samples were originally extracted with method blank 5C02052-BLK1; however, sample Outfall 011 Grab was reextracted with method blank 5C0404051-BLK1. A notation by the analyst indicated that sample Outfall 011 Grab was reextracted to confirm the 4,4'-DDT detect in the sample. Target compound 4,4'-DDT was reported below the reporting limit in method blank 5C02052-BLK1 at a concentration of 0.0332ug/l and in sample Outfall 011 Composite at 0.036ug/l. The result for 4,4'-DDT was therefore qualified as an estimated nondetect, "UJ," at the reporting limit in sample Outfall 011 Composite. There were no other pesticide target compounds or Aroclors detected in the above the MDL in the method blanks; however, it should be noted that target compound 4,4'-DDT was also present at a concentration below the MDL in method blank 5C0404051-BLK1. Review of the chromatograms showed no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C02052-BS1/BSD1) and one blank spike (5C04051-BS1) were extracted and analyzed with these SDGs. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits. The RPD for 4,4'-DDT exceeded 30% in the blank spike/blank spike duplicate pair; therefore, the nondetect (see section 2.4) was qualified as estimated, "UJ," in sample Outfall 011 Composite. The remaining RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of the samples were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with these SDGs. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

**DATA VALIDATION REPORT**

Project: NPDES  
SDG: IOB2064, IOB2065  
Analysis: Pest/PCB

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

**2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs and quantitation was verified by recalculating any sample detect and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volumes extracted. Results were reported in ug/L (ppb). Any reported detect between the MDL and the reporting limit was qualified as estimated, "J," by the laboratory. No further qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	UJ
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.952	03/02/05	03/03/05	UJ
Surrogate: Decachlorobiphenyl (45-120%)									
					59 %				

Handwritten notes: "Raw Qual" and "UJ" with arrows pointing to the data columns.

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 4124 Chesapeake Dr., Suite 803, San Diego, CA 92123 (619) 521-8396 FAX (619) 521-8394  
 4830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 735-4443 FAX (480) 735-4451  
 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-1000 FAX (702) 796-1001

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB2064

Sampled: 02/25/05

Received: 02/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Aldrin	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
alpha-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
beta-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
delta-BHC	EPA 608	5C02052	0.020	0.20	ND	0.952	03/02/05	03/03/05			
gamma-BHC (Lindane)	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Chlordane	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05			
4,4'-DDD	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
4,4'-DDE	EPA 608	5C02052	0.025	0.10	ND	0.952	03/02/05	03/03/05			
4,4'-DDT	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
Dieldrin	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan I	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan II	EPA 608	5C02052	0.040	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan sulfate	EPA 608	5C02052	0.015	0.20	ND	0.952	03/02/05	03/03/05			
Endrin	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Endrin aldehyde	EPA 608	5C02052	0.045	0.10	ND	0.952	03/02/05	03/03/05			
Endrin ketone	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Heptachlor	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
Heptachlor epoxide	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Methoxychlor	EPA 608	5C02052	0.035	0.10	ND	0.952	03/02/05	03/03/05			
Toxaphene	EPA 608	5C02052	1.5	5.0	ND	0.952	03/02/05	03/03/05			
Surrogate: Tetrachloro-m-xylene (35-120%)					54%						
Surrogate: Decachlorobiphenyl (45-120%)					64%						

Handwritten notes and signatures in the right margin:  
 - A vertical line with a downward arrow.  
 - "B.I" written near the arrow.  
 - "LLJ" written near the arrow.  
 - "B, 75" written near the arrow.  
 - "Rev Qual" and "Qual Code" written vertically at the top right.

**AMEC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

Handwritten date: 03/04/05



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Aldrin	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05		
alpha-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05		
beta-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05		
delta-BHC	EPA 608	5C04051	0.020	0.20	ND	1	03/04/05	03/05/05		
gamma-BHC (Lindane)	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05		
Chlordane	EPA 608	5C04051	0.20	1.0	ND	1	03/04/05	03/05/05		
4,4'-DDD	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05		
4,4'-DDE	EPA 608	5C04051	0.025	0.10	ND	1	03/04/05	03/05/05		
4,4'-DDT	EPA 608	5C04051	0.030	0.10	0.038	1	03/04/05	03/05/05		
Dieldrin	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05		
Endosulfan I	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05		
Endosulfan II	EPA 608	5C04051	0.040	0.10	ND	1	03/04/05	03/05/05		
Endosulfan sulfate	EPA 608	5C04051	0.015	0.20	ND	1	03/04/05	03/05/05		
Endrin	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05		
Endrin aldehyde	EPA 608	5C04051	0.045	0.10	ND	1	03/04/05	03/05/05		
Endrin ketone	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05		
Heptachlor	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05		
Heptachlor epoxide	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05		
Methoxychlor	EPA 608	5C04051	0.035	0.10	ND	1	03/04/05	03/05/05		
Toxaphene	EPA 608	5C04051	1.5	5.0	ND	1	03/04/05	03/05/05		
Surrogate: Tetrachloro-m-xylene (35-120%)										61 %
Surrogate: Decachlorobiphenyl (45-120%)										76 %

Qual Code

Handwritten notes and arrows in the Qualifiers column, including 'u', 'J', and 'DNR'.

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**LEVEL IV**

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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Pub Qual	Anal Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.962	03/02/05	03/03/05		↓	
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05		↓	
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05		↓	
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05		↓	
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05		↓	
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.962	03/02/05	03/03/05		↓	
Surrogate: Decachlorobiphenyl (45-120%)					65 %						

**QC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA6  
 Task Order 313150010  
 SDG No. IOB2064, 65, 69

No. of Analyses 3

Laboratory Eberline

Date: 03/31/05

Reviewer P. Meeks

Reviewer's Signature

Analysis/Method Radionuclides

*P. Meeks*

**ACTION ITEMS<sup>a</sup>**

1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not	
Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from	
Analysis Protocol, e.g.,	<i>Qualifications were applied for:</i>
Holding Times	<i>1) <del>Exceed</del> detector efficiencies &lt; 20%</i>
GC/MS Tune/Inst.	<i>2) Preservation beyond the holding time</i>
Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard	
Performance	
Compound Identification	
and Quantitation	
System Performance	

**COMMENTS<sup>b</sup>**      *Acceptable as reviewed.*

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB2064, IOB2065 & IOB2069

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065, IOB2069  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 31, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Composite	IOB2064-01	8306-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab Unfiltered	IOB2065-01	8305-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab Filtered	IOB2065-03	8345-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003	IOB2069-01	8307-001	water	900.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition. All tritium samples were received unpreserved in glass containers. All gross alpha, gross beta, radium-226, radium-228, and strontium samples were received preserved, except for sample Outfall 011 Grab Unfiltered. Outfall 011 Grab Unfiltered was collected on 2/25/05 and received unpreserved on 3/22/05. Upon receipt, the laboratory filtered and then preserved the gross alpha, gross beta, radium-226, radium-228, and strontium aliquots. As sample Outfall 011 Grab Unfiltered was preserved beyond the five-day holding time, the gross alpha, gross beta, radium-226, radium-228, and strontium results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium samples and preserved gross alpha, gross beta, radium-226, radium-228, and strontium samples were analyzed within 180 days of collection. No qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The gross alpha detector efficiencies were all less than 20%; therefore, these results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The remaining detector efficiencies were above 20%.

#### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%. And the actinium chemical yields were greater than 50%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Aqueous blank spikes were analyzed in association with the samples in these SDGs. One strontium and one radium-228 recovery exceeded the 3-sigma limits; however, these recoveries, 110% and 125%, were deemed acceptable. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses on Outfall 011 Grab Unfiltered. The gross alpha and gross beta RPDs exceeded 20%; however, as the results were within the 3-sigma limits, they were deemed acceptable. The strontium and tritium results were within the 3-sigma limits and their RPDs were  $\leq 20\%$ . No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 Grab Unfiltered for gross alpha, gross beta, and tritium. The recovery for gross beta was above 3-sigma; however, the recovery of 108% was considered acceptable. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8305</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503010-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
		<i>Outfall Oil Grab Unfiltered</i>						
		8305-001	02/25/05	03/15/05	Gross Alpha	1.50 ± 0.89	pCi/L	1.05
				03/15/05	Gross Beta	2.27 ± 1.2	pCi/L	1.77
				04/22/05	Ra228	0.250 ± 0.23	pCi/L	0.595
				03/17/05	H3	-45.7 ± 150	pCi/L	259
				05/06/05	Ra226	0.081 ± 0.021	pCi/L	0.026
				03/18/05	Sr90	0.206 ± 0.25	pCi/L	0.451

*Am 5/15/05*

Det	Qual
Qual	Code
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U	

**AMEC VALIDATED**

**LEVEL 1**

Certified by <i>[Signature]</i>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8345</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503165-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
IOB2065-03		8345-001	02/25/05	04/02/05	GrossAlpha	0.662 ± 0.67	pCi/L	0.986	5 5 5 5 5	#1, R
				04/02/05	Gross Beta	2.27 ± 1.2	pCi/L	1.88		#1
				05/09/05	Ra-228	0.823 ± 0.32	pCi/L	0.666		#1
				04/07/05	Tritium	-22.3 ± 99	pCi/L	168		#1
				05/17/05	Ra-226	0.107 ± 0.036	pCi/L	0.047		#1
				04/05/05	Sr-90	-0.075 ± 0.26	pCi/L	0.514	#1	#1

PM 7/11/05

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Certified by <i>[Signature]</i>
Report Date <u>05/20/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8306</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501011-01</u>	Contract <u>PROJECT# IOB2054</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results $\pm 2\sigma$	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
<u>Outfall #011 Composite</u>	<u>8306-001</u>	<u>02/25/05</u>	<u>03/15/05</u>	<u>GrossAlpha</u>	<u>1.29 <math>\pm</math> 0.80</u>	<u>pCi/L</u>	<u>0.947</u>
<u>IOB2064-01</u>			<u>03/15/05</u>	<u>Gross Beta</u>	<u>2.12 <math>\pm</math> 1.2</u>	<u>pCi/L</u>	<u>1.89</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>0.494 <math>\pm</math> 0.29</u>	<u>pCi/L</u>	<u>0.658</u>
			<u>03/17/05</u>	<u>H3</u>	<u>-7.08 <math>\pm</math> 150</u>	<u>pCi/L</u>	<u>261</u>
			<u>05/06/05</u>	<u>Ra226</u>	<u>0.010 <math>\pm</math> 0.014</u>	<u>pCi/L</u>	<u>0.024</u>
			<u>03/18/05</u>	<u>Sr90</u>	<u>-0.059 <math>\pm</math> 0.24</u>	<u>pCi/L</u>	<u>0.459</u>

S/S/05

Raw Qual	Qual Code
J	R
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C	
C	

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LEVEL IV

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Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8307</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS03012-01</u>	Contract <u>PROJECT# IOB2069</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003		8307-001	02/25/05	03/15/05	GrossAlpha	1.11 ± 1.5	pCi/L	2.46
IOB2069-01				03/15/05	Gross Beta	8.61 ± 1.7	pCi/L	2.06
				03/17/05	H3	-14.1 ± 150	pCi/L	260
				03/18/05	Sr90	2.53 ± 0.40	pCi/L	0.404

PM 3/31/05

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**AMEC VALIDATED**

*[Faint signature]*

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/24/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

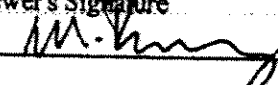
AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV37  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065  
 No. of Analyses 2

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Semivolatiles

Date: April 4, 2005  
 Reviewer's Signature 

**ACTION ITEMS\***

1. **Case Narrative**  
**Deficiencies**

2. **Out of Scope**  
**Analyses**

3. **Analyses Not Conducted**

4. **Missing Hardcopy**  
**Deliverables**

5. **Incorrect Hardcopy**  
**Deliverables**

6. **Deviations from Analysis**

**Protocol, e.g.,**

Holding Times

GC/MS Tune/Inst. Perform

Calibrations

Blanks

Surrogates

Matrix Spike/Dup LCS

Field QC

Internal Standard Performance

Compound Identification and

Quantitation

System Performance

Qualifications were required for calibration outliers and blank contamination.

**COMMENTS\***

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

\* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-composite	Outfall 011-composite	IOB2064-01	water	625
Outfall 011-grab	Outfall 011-grab	IOB2065-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibrations associated with this SDG were dated 02/15/05 and 02/24/05. For the initial calibration dated 02/15/05, the average RRF for benzidine was  $\geq 0.05$  and the %RSD for benzidine was  $\leq 35\%$  or  $r^2 \geq 0.995$ . For the initial calibration dated 02/24/05, the average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds except for the  $r^2$  values for benzoic acid and 4-nitroaniline. Benzoic acid and 4-nitroaniline were qualified as estimated nondetects, "UJ," in the samples of these SDGs. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted.

The continuing calibration associated with the sample analyses were analyzed 03/02/05 (10:35 and 15:11). For the continuing calibration dated 03/02/05 (10:35), the RRF and %D for benzidine were within the QC limits. For the continuing calibration dated 03/02/05 (15:11) the RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20$ . A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.4 BLANKS

One method blank (5B28001-BLK1) was extracted and analyzed with these SDGs. Butylbenzylphthalate, di-n-butylphthalate, and diethylphthalate were reported in the method blank. The butylbenzylphthalate and di-n-butylphthalate detects for sample Outfall 011-composite were qualified as nondetects, "U." Review of the raw data indicated no reportable false negatives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5B28001-BS1/BSD1) was extracted and analyzed with these SDGs. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples.

For the 5B28001-BS1/BSD1 pair, all percent recoveries and RPDs were within the laboratory QC limits except for benzidine which was not recovered in the BS and the RPD for benzidine. Both of the samples of these SDGs had benzidine qualified as estimated nondetects, "UJ."

A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples.

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.



### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

### 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

### 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

### 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

### 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

### 2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.



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 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Perf Qual	Am Cond
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)											
Reporting Units: ug/l											
Acenaphthene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05			
Acenaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05			
Aniline	EPA 625	5B28001	2.9	10	ND	0.943	02/28/05	03/02/05			
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05			
Benzidine	EPA 625	5B28001	3.2	5.0	ND	0.943	02/28/05	03/03/05	L2		
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.943	02/28/05	03/02/05			
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.943	02/28/05	03/02/05			
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.943	02/28/05	03/02/05			
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.943	02/28/05	03/02/05			
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.943	02/28/05	03/02/05			
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.943	02/28/05	03/02/05			
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.943	02/28/05	03/02/05			
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05			
Butyl benzyl phthalate	EPA 625	5B28001	0.34	5.0	ND	0.943	02/28/05	03/02/05	B, J		
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.943	02/28/05	03/02/05			
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05			
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.943	02/28/05	03/02/05			
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.943	02/28/05	03/02/05			
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05			
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05			
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05			
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05			
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.943	02/28/05	03/02/05			
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05			
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.943	02/28/05	03/02/05			
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.943	02/28/05	03/02/05			
5,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.943	02/28/05	03/02/05			
Diethyl phthalate	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05	B, J		
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.943	02/28/05	03/02/05			
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.943	02/28/05	03/02/05			
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.943	02/28/05	03/02/05			
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.943	02/28/05	03/02/05			
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.943	02/28/05	03/02/05			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.943	02/28/05	03/02/05			

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

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LEVEL IV

MWP 4.5.05



17461 Oxnard Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX: (949) 268-1287  
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MWH-Pasadena Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date	Data Qualifiers	Raw Data	Final Copy
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.943	02/28/05	03/02/05			
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05			
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.943	02/28/05	03/02/05			
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.943	02/28/05	03/02/05			
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.943	02/28/05	03/02/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.943	02/28/05	03/02/05			
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.943	02/28/05	03/02/05			
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.943	02/28/05	03/02/05			
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.943	02/28/05	03/02/05			
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.943	02/28/05	03/02/05			
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.943	02/28/05	03/02/05			
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.943	02/28/05	03/02/05			
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.943	02/28/05	03/02/05			
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.943	02/28/05	03/02/05			
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.943	02/28/05	03/02/05			
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.943	02/28/05	03/02/05			
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.943	02/28/05	03/02/05			
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.943	02/28/05	03/02/05			
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.943	02/28/05	03/02/05			
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.943	02/28/05	03/02/05			
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05			
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.943	02/28/05	03/02/05			
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
Surrogate: 2-Fluorophenol (30-120%)									77 %		
Surrogate: Phenol-d6 (35-120%)									81 %		
Surrogate: 2,4,6-Tribromophenol (45-120%)									101 %		
Surrogate: Nitrobenzene-d5 (45-120%)									80 %		
Surrogate: 2-Fluorobiphenyl (45-120%)									80 %		
Surrogate: Terphenyl-d14 (45-120%)									88 %		

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**AMEC VALIDATED**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	EW Qual	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
Accnaphthene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05			
Accnaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05			
Aniline	EPA 625	5B28001	2.9	10	ND	0.971	02/28/05	03/02/05			
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05			
Benzidine	EPA 625	5B28001	3.2	5.0	ND	0.971	02/28/05	03/03/05	12		
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.971	02/28/05	03/02/05			
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.971	02/28/05	03/02/05			
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.971	02/28/05	03/02/05			
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.971	02/28/05	03/02/05			
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.971	02/28/05	03/02/05			
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.971	02/28/05	03/02/05			
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.971	02/28/05	03/02/05			
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05			
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.971	02/28/05	03/02/05			
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05			
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.971	02/28/05	03/02/05			
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05			
Butyl benzyl phthalate	EPA 625	5B28001	0.34	5.0	ND	0.971	02/28/05	03/02/05			
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.971	02/28/05	03/02/05			
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05			
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.971	02/28/05	03/02/05			
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.971	02/28/05	03/02/05			
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05			
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05			
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05			
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05			
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.971	02/28/05	03/02/05			
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05			
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.971	02/28/05	03/02/05			
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.971	02/28/05	03/02/05			
3,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.971	02/28/05	03/02/05			
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.971	02/28/05	03/02/05			
Diethyl phthalate	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05			
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.971	02/28/05	03/02/05			
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.971	02/28/05	03/02/05			
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.971	02/28/05	03/02/05			
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.971	02/28/05	03/02/05			
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.971	02/28/05	03/02/05			
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.971	02/28/05	03/02/05			
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.971	02/28/05	03/02/05			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.971	02/28/05	03/02/05			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.971	02/28/05	03/02/05			
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05			
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.971	02/28/05	03/02/05			
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.971	02/28/05	03/02/05			
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.971	02/28/05	03/02/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.971	02/28/05	03/02/05			
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.971	02/28/05	03/02/05			
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.971	02/28/05	03/02/05			
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.971	02/28/05	03/02/05			
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.971	02/28/05	03/02/05			
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.971	02/28/05	03/02/05			
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.971	02/28/05	03/02/05			
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.971	02/28/05	03/02/05			
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.971	02/28/05	03/02/05			
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.971	02/28/05	03/02/05			
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.971	02/28/05	03/02/05			
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.971	02/28/05	03/02/05			
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.971	02/28/05	03/02/05			
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.971	02/28/05	03/02/05			
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.971	02/28/05	03/02/05			
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05			
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.971	02/28/05	03/02/05			
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
Surrogate: 2-Fluorophenol (30-120%)											75 %
Surrogate: Phenol-d6 (35-120%)											69 %
Surrogate: 2,4,6-Tribromophenol (45-120%)											97 %
Surrogate: Nitrobenzene-d5 (45-120%)											77 %
Surrogate: 2-Fluorobiphenyl (45-120%)											78 %
Surrogate: Terphenyl-d14 (45-120%)											83 %

Qual  
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DRAFT REPORT  
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LEVEL III

ALC VALIDATED

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF40  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 4

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Purgeable

Date April 6, 2005  
 Reviewer's Signature [Signature]

ACTION ITEMS*	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS*	Acceptable as reviewed

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/PURGEABLE

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



Table 1. Sample identification

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB2065-02	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB2064-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. The trip blank associated with Outfall 011 Composite (IOB2064) was not requested on the COC; however, as the laboratory analyzed and reported the sample Trip Blank, the results were validated. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

Two gasoline standard initial calibrations dated 08/20/04 and 08/26/04 were associated with these SDGs. The %RSDs for GRO (C4-C12) were within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for the CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

Two water method blanks (5C03008-BLK1 and 5C04004-BLK1) were associated with these SDGs. GRO (C4-C12) was not detected above the MDL in either of the method blanks. Review of the raw data indicated no false negative results. No qualifications were necessary.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water method blank spikes (5C03008-BS1 and 5C04004-BS1) were associated with these SDGs. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in

both of the blank spikes. The recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## **2.5 SURROGATE RECOVERY**

The samples and QC were fortified with the surrogate compound bromofluorobenzene (BFB). The surrogate recovery was within the laboratory QC limits of 65-140% for the samples. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed for these SDGs; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## **2.7 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.7.1 Trip Blanks, Field Blanks, and Equipment Rinsates**

Sample Trip Blank (IOB2064) and Trip Blank (IOB2065) were the trip blanks associated with the site samples in these SDGs. Target compound GRO was not detected in either of the trip blanks. There were no other field QC samples associated with these SDGs. No qualifications were required.

### **2.7.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

## **2.8 COMPOUND IDENTIFICATION**

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## **2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 740-3020 FAX (702) 798-2623

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont. Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	LL
Surrogate: 4-BFB (FID) (65-140%) 87 %									
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water) Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	LL
Surrogate: 4-BFB (FID) (65-140%) 86 %									

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**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	SC04004	50	100	ND	1	03/04/05	03/04/05	U
Surrogate: 4-BFB (FID) (65-140%) 87%									
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water) Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	SC04004	50	100	ND	1	03/04/05	03/04/05	U
Surrogate: 4-BFB (FID) (65-140%) 92%									

*Paul*  
*Case*

**AMEC VALIDATED**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE


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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF41  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Extractable

No. of Analyses 2  
 Date April 6, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	8015M/EFH
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 11/11/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One method blank (5C01045-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C01045-BS1/5C01045-BS1D) was extracted and analyzed with the samples in these SDGs. The laboratory reported the alkane range of C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120% and the RPD was  $\leq 5\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The samples and QC were fortified with the surrogate compound n-octacosane. The surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the samples in these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factors on the sample result summaries reflected the sample amount extracted. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

*Paul  
Quail*  
*Quail  
Cool*

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.943	03/01/05	03/02/05	u
Surrogate: n-Octacosane (40-125%)					66 %				

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9484 Chesapeake Dr., Suite 205, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9609  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Summit Rd. #3, Las Vegas, NV 89120 (702) 738-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers				
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.													
Reporting Units: mg/l													
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.99	03/01/05	03/02/05	<table border="1"> <tr> <td>Revised</td> <td>Qual</td> </tr> <tr> <td>u</td> <td>all</td> </tr> </table>	Revised	Qual	u	all
Revised	Qual												
u	all												
Surrogate: n-Octacosane (40-125%)					69%								

**ANALYSIS VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO66  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 4

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles

Date: April 5, 2005

Reviewer's Signature 

**ACTION ITEMS\***

1. **Case Narrative**  
**Deficiencies**

2. **Out of Scope**  
**Analyses**

3. **Analyses Not Conducted**

4. **Missing Hardcopy**  
**Deliverables**

5. **Incorrect Hardcopy**  
**Deliverables**

6. **Deviations from Analysis**

Qualifications were required for trip blank contamination and estimated nondetects for no calibration.

Protocol, e.g.,

Holding Times

GC/MS Tune/Inst. Perform

Calibrations

Blanks

Surrogates

Matrix Spike/Dup LCS

Field QC

Internal Standard Performance

Compound Identification and

Quantitation

System Performance

**COMMENTS\***

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

\* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 5, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	water	624
Trip Blank	Trip Blank	IOB2064-02	water	624
Outfall 011-Grab	Outfall 011-Grab	IOB2065-01	water	624
Trip Blank	Trip Blank	IOB2065-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Three initial calibrations dated 11/03/04 (acrolein, acrylonitrile, and Freon 113 only), 02/01/05, and 02/18/05 were associated with this SDG. The average RRFs were  $\geq 0.05$  for all compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for the target compounds analyzed by EPA Method 624, and the %RSD for trichlorotrifluoroethane (Freon 113) analyzed by EPA SW-846 Method 8260B was  $\leq 15\%$ . Six continuing calibrations associated with the sample analyses were analyzed 02/26/05 (07:25 and 07:56), 03/02/05 (19:16 and 19:47), and 03/04/05 (09:12 and 09:43). The RRFs were  $\geq 0.05$  in all of the continuing calibrations. The %Ds for the continuing calibrations associated with the site samples were all  $\leq 20\%$ . A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

Three water method blanks (5B26009-BLK1, 5C03036-BLK1, and 5C04021-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5B26009-BS1 and 5C03036-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample Outfall011-Composite was the MS/MSD analyses associated with these SDGs. All percent recoveries and RPDs were within the QC limits. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Samples Trip Blank (IOB2064-02) and Trip Blank (IOB2065-02) were the trip blank associated with these SDGs. No target compounds were reported in the Trip Blank IOB2064-02. Methylene chloride was reported in Trip Blank (IOB2065-02) at 0.94ug/L. The methylene chloride detect for sample Outfall 011-Grab was qualified as a nondetect, "U." No further qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in these SDGs were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## \* 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in the site samples of these SDGs. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. Detects below the reporting limits were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for these SDGs. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

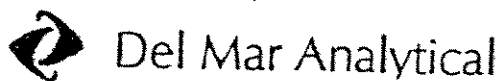
**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Qual
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont. Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05		UJ	*11
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05		UJ	*11
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water) Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05		U	
Cyclohexane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05		U	

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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IOB2064 <Page 10 of 61>  
 LEVEL IV



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-2620 FAX (702) 798-2621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 11267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)					106%				
Surrogate: Toluene-d8 (80-120%)					96%				
Surrogate: 4-Bromofluorobenzene (80-120%)					94%				

*Real Qual*  
*Real Cool*  
 CC

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IOB2064 <Page 9 of 61>

LEVEL IV



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Data	Anal Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05		↓	DNG
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05			
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05			
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05			
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05			
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05			
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05			
Methylene chloride	EPA 624	5B26009	0.48	5.0	1.1	1	02/26/05	02/26/05			
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05			
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05			
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05			
Surrogate: Dibromofluoromethane (80-120%)									106 %		
Surrogate: Toluene-d8 (80-120%)									96 %		
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %		

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 LEVEL IV



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 1014 E. Cooley Dr., Suite A, Corona, CA 92724 909 370-4667 FAX 949 270-1124  
 5434 Chesapeake Dr., Suite 803, San Diego, CA 92121 619 527-8596 FAX 619 527-0699  
 1830 South 93rd St., Suite B-120, Phoenix, AZ 85044 480 753-0143 FAX 480 753-0893  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 702 798-6020 FAX 702 798-6021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C03036	0.28	1.0	ND	1	03/03/05	03/03/05			
Bromodichloromethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
Bromoform	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05			
Bromomethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05			
Carbon tetrachloride	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05			
Chlorobenzene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05			
Chloroethane	EPA 624	5C03036	0.33	5.0	ND	1	03/03/05	03/03/05			
Chloroform	EPA 624	5C03036	0.33	2.0	ND	1	03/03/05	03/03/05			
Chloromethane	EPA 624	5C03036	0.30	5.0	ND	1	03/03/05	03/03/05			
Dibromochloromethane	EPA 624	5C03036	0.28	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichlorobenzene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05			
1,3-Dichlorobenzene	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05			
1,4-Dichlorobenzene	EPA 624	5C03036	0.37	2.0	ND	1	03/03/05	03/03/05			
1,1-Dichloroethane	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichloroethane	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05			
1,1-Dichloroethene	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05			
trans-1,2-Dichloroethene	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichloropropane	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05			
cis-1,3-Dichloropropene	EPA 624	5C03036	0.22	2.0	ND	1	03/03/05	03/03/05			
trans-1,3-Dichloropropene	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05			
Ethylbenzene	EPA 624	5C03036	0.25	2.0	ND	1	03/03/05	03/03/05			
Methylene chloride	EPA 624	5C03036	0.48	5.0	ND	1	03/03/05	03/03/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05			
Tetrachloroethene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05			
Toluene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05			
1,1,1-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
1,1,2-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
Trichloroethene	EPA 624	5C03036	0.26	2.0	ND	1	03/03/05	03/03/05			
Trichlorofluoromethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05			
Vinyl chloride	EPA 624	5C03036	0.26	0.50	ND	1	03/03/05	03/03/05			
Xylenes, Total	EPA 624	5C03036	0.52	4.0	ND	1	03/03/05	03/03/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05			
Surrogate: Dibromofluoromethane (80-120%)											105 %
Surrogate: Toluene-d8 (80-120%)											98 %
Surrogate: 4-Bromofluorobenzene (80-120%)											96 %

Rev Qual  
 Qual Code

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LEVEL IV





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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3620

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	U
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	U
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					98 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

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 9464 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8526 FAX (858) 505-9389  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB2065  
 Attention: Bronwyn Kelly  
 Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Data	Anal Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	U		
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	U		

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05			
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05			
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05			
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05			
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05			
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05			
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05			
Methylene chloride	EPA 624	5B26009	0.48	5.0	ND	1	02/26/05	02/26/05			
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05			
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05			
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05			
Surrogate: Dibromofluoromethane (80-120%)											106 %
Surrogate: Toluene-d8 (80-120%)											96 %
Surrogate: 4-Bromofluorobenzene (80-120%)											94 %

Handwritten notes and arrows on the right side of the table, including 'Qual' and 'Code' labels and a vertical arrow pointing downwards.

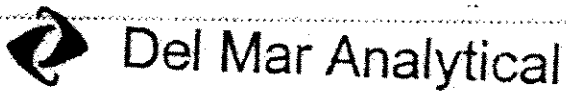
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 9484 Chesapeake Dr., Suite 605, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-8  
 5830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-36

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)										
Reporting Units: ug/l										
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	U	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	U	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	U	
Surrogate: Dibromofluoromethane (80-120%)					106 %				U	
Surrogate: Toluene-d8 (80-120%)					96 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	U	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	U	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	U	
Surrogate: Dibromofluoromethane (80-120%)					101 %				U	
Surrogate: Toluene-d8 (80-120%)					94 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05		U
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		U
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05		U
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05		U
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05		U
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05		U
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05		U
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05		U
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05		U
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05		U
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05		U
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05		U
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05		U
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05		U
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05		U
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05		U
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05		U
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05		U
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05		U
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05		U
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05		U
Methylene chloride	EPA 624	5B26009	0.48	5.0	0.94	1	02/26/05	02/26/05	J	DNQ
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05		U
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05		U
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05		U
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		U
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		U
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05		U
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05		U
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05		U
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05		U
Surrogate: Dibromofluoromethane (80-120%)										101 %
Surrogate: Toluene-d8 (80-120%)										94 %
Surrogate: 4-Bromofluorobenzene (80-120%)										94 %

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DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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IOB2065 <Page 8 of 58>

LEVEL IV



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 9630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB2065  
 Attention: Bronwyn Kelly  
 Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Data Qualifiers	Qual Case
<b>Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)</b>										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	U	
Surrogate: Dibromofluoromethane (80-120%)					105 %					
Surrogate: Toluene-d8 (80-120%)					100 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %					
<b>Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	U	
Surrogate: Dibromofluoromethane (80-120%)					105 %					
Surrogate: Toluene-d8 (80-120%)					99 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %					

**AMEC VALIDATED**

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 IOB2065 <Page 6 of 58>

**LEVEL IV**

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC93  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 2

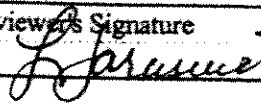
Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method Perchlorate

Date: 03/29/05

Reviewer's Signature



ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	
	Holding Times
	GC/MS Tune/Inst. Performance
	Calibrations
	Blanks
	Surrogates
	Matrix Spike/Dup LCS
	Field QC
	Internal Standard Performance
	Compound Identification and Quantitation
	System Performance

COMMENTS<sup>b</sup> Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLES DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Samples Delivery Group #: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 29, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Samples identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	Water	Perchlorate
Outfall 011- Grab	Outfall 011- Grab	IOB2065-01	Water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLES MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Samples Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the dates of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLES RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3020 FAX (702) 798-3021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	*
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	*
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	U

### AMEC VALIDATED

# LEVEL IV

Analysts Not Validated

DRAFT REPORT  
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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3622

MWH-Pasadena/Boeing	Project ID: 13267 (Study 1)	
300 North Lake Avenue, Suite 1200	Outfall 011	Sampled: 02/25/05
Pasadena, CA 91101	Report Number: IOB2065	Received: 02/25/05
Attention: Bronwyn Kelly		

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	U

REV  
 QUAL  
 OK

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC94  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 2

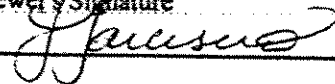
Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method General Minerals

Date: 03/29/05

Reviewer's Signature



**ACTION ITEMS\***

- 1. **Case Narrative Deficiencies**
- 2. **Out of Scope Analyses**
- 3. **Analyses Not Conducted**
- 4. **Missing Hardcopy Deliverables**
- 5. **Incorrect Hardcopy Deliverables**
- 6. **Deviations from Analysis Protocol, e.g.,**
  - Qualifications applied for detects below the reporting limit.
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS\***

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB2064/IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 29, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 330.5, 405.1, 335.2, 218.6, 418.1, 350.2, 413.1, 415.1, 160.5, 120.1, 160.2, and 180.1. Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	Water	General Minerals
Outfall 011-Grab	Outfall 011-Grab	IOB2065-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the analyses and samples presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for oil and grease, chloride, sulfate, fluoride, total organic carbon, conductivity, ammonia, and total recoverable hydrocarbons, the 14-day holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for turbidity, nitrate/nitrite, total settleable solids, surfactants, and biological oxygen demand, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . The initial and continuing calibration verification information was acceptable with %Rs within the control limits of 90-110%. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. The reporting limit check standards for cyanide, chloride, nitrate, fluoride, and sulfate were within the control limits of 70-130%. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total settleable solids, or total suspended solids. No qualifications were required.

### 2.3 BLANKS

Turbidity was detected in method blank SB26046-BLK1 at 0.0500 NTU; however, the method blank result was insufficient to qualify the Outfall 011-Composite and Outfall 011-Grab results. The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. Blank analyses are not applicable to residual chlorine, conductivity, and total settleable solids. No qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, total recoverable hydrocarbons, and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, total settleable solids, or residual chlorine. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## **2.6 LABORATORY DUPLICATES**

MS/MSD analyses were performed on sample Outfall 011-Composite for cyanide. The RPD was within the control limit of  $\leq 15\%$ . No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on sample Outfall 011-Composite for cyanide. The recoveries were within the laboratory-established control limits and no qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Flouride, BOD, and surfactant detected below the reporting limit in samples Outfall 011-Composite and Outfall 011-Grab were qualified as estimated, "J." No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 2220 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3630 FAX (702) 796-3632

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ml/vhr									
Total Settleable Solids	EPA 160.5	5B25097	0.10	0.10	ND	1	02/25/05	02/25/05	U

### AMEC VALIDATED

### LEVEL II

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 6830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 796-0044 FAX (480) 796-0045  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89119 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02-25-05  
 Received: 02-25-05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B26046	0.040	1.0	8.0	1	02/26/05	02/26/05	REV Q111 Q111

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4007 FAX (909) 370-1124  
 9494 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 515-8576 FAX (619) 501-1110  
 9030 South 51st St., Suite 3-730, Phoenix, AZ 85044 (480) 755-0043 FAX (480) 755-1064  
 2320 E. Sunset Bl. #3, Las Vegas, NV 89103 (702) 796-0610 FAX (702) 796-0612

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: umhos/cm										
Specific Conductance	EPA 120.1	SB28080	1.0	1.0	150	1	02/28/05	02/28/05		REV QUAL GAW LOD

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 3484 Chesapeake Dr., Suite 305, San Diego, CA 92123 (619) 505-8350 FAX (619) 505-0619  
 9830 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 705-0043 FAX (480) 782-4812  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3020 FAX (702) 797-4112

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	U
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	U
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	*

REV QUAL CODE  
 10/11/05

### AMEC VALIDATED

### LEVEL IV

Analytic Not Validated

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M:WH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03/07/05	U
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	0.76	1	02/25/05	03/02/05	J
Chloride	EPA 300.0	5B25042	0.26	0.50	5.1	1	02/25/05	02/25/05	J
Fluoride	EPA 300.0	5B25042	0.10	0.50	0.15	1	02/25/05	02/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	0.38	1	02/25/05	02/25/05	J
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03/02/05	U
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	U
Sulfate	EPA 300.0	5B25042	0.18	0.50	11	1	02/25/05	02/25/05	J
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	0.051	1	02/25/05	02/25/05	J
Total Dissolved Solids	SM2540C	5B28078	10	10	110	1	02/28/05	02/28/05	J
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	9.0	1	03/01/05	03/01/05	J
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03/03/05	U

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date	Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5B28069	0.31	1.0	ND	1	02/28/05	02/28/05	U

KEY LOW  
 02/28/05

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### LEVEL IV

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-6596 FAX (858) 505-6666  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0666  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3622

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ml/hr										
Total Suspended Solids	EPA 160.5	SB25097	0.10	0.10	ND	1	02/25/05	02/25/05	UL	REV QUAL QUL LOD

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-1043 FAX (480) 785-082  
 2520 E. Sunset Rd., #2, Las Vegas, NV 89120 (702) 793-3620 FAX (702) 793-352

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B26046	0.040	1.0	9.4	1	02/26/05	02/26/05	REV MUN COO

# AMEC VALIDATED

# LEVEL I

DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B23080	1.0	1.0	150	1	02/28/05	02/28/05	REV QUAL CODE

# AMEC VALIDATED

# LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03/07/05	U
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	0.68	1	02/25/05	03/02/05	J
Chloride	EPA 300.0	5B25042	0.26	0.50	5.1	1	02/25/05	02/25/05	J
Chromium VI	EPA 218.6	5B25125	0.00010	0.0010	ND	1	02/25/05	02/26/05	U
Total Cyanide	EPA 335.2	5B28115	0.0022	0.0050	ND	1	02/28/05	03/01/05	U
Fluoride	EPA 300.0	5B25042	0.10	0.50	0.17	1	02/25/05	02/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	0.38	1	02/25/05	02/25/05	J
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03/02/05	U
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	U
Sulfate	EPA 300.0	5B25042	0.18	0.50	11	1	02/25/05	02/25/05	J
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	0.054	1	02/25/05	02/25/05	J
Total Dissolved Solids	SM2540C	5B28078	10	10	100	1	02/28/05	02/28/05	J
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	11	1	03/01/05	03/01/05	J
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03/03/05	U

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**LEVEL 1**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 31**

Outfall 011, March 18, 2005

Del Mar Analytical Laboratory Report





LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/18/05  
Received: 03/18/05  
Issued: 04/12/05 19:10

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 8 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 6°C, on ice and with chain of custody documentation.
- HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-I' and reported.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOC1523-01	Outfall 011 GRAB	Water
IOC1523-02	Trip Blank	Water
IOC1523-03	Outfall 011 GRAB/filter	Water
IOC1523-04	Outfall 011 GRAB/Substrate	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C21048	0.082	0.50	ND	0.957	03/21/05	03/21/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					91 %				

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 Michele Harper  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	SC21006	0.050	0.10	ND	1	03/21/05	03/21/05	
Surrogate: 4-BFB (FID) (65-140%)					81 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)					115 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				
<b>Sample ID: IOC1523-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	
Surrogate: Dibromofluoromethane (80-120%)									114 %
Surrogate: Toluene-d8 (80-120%)									102 %
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-02 (Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	
Surrogate: Dibromofluoromethane (80-120%)					111 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	
<b>Sample ID: IOC1523-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water)</b>									<b>RL-3</b>
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	
Acenaphthylene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	
Aniline	EPA 625	5C20022	5.8	20	ND	1.94	03/20/05	03/22/05	
Anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	
Benzidine	EPA 625	5C20022	4.8	10	ND	1.94	03/20/05	03/22/05	L2
Benzoic acid	EPA 625	5C20022	7.4	40	ND	1.94	03/20/05	03/22/05	
Benzo(a)anthracene	EPA 625	5C20022	0.076	10	ND	1.94	03/20/05	03/22/05	
Benzo(a)pyrene	EPA 625	5C20022	0.28	4.0	ND	1.94	03/20/05	03/22/05	
Benzo(b)fluoranthene	EPA 625	5C20022	0.10	4.0	ND	1.94	03/20/05	03/22/05	
Benzo(g,h,i)perylene	EPA 625	5C20022	0.12	10	ND	1.94	03/20/05	03/22/05	
Benzo(k)fluoranthene	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	
Benzyl alcohol	EPA 625	5C20022	0.42	10	ND	1.94	03/20/05	03/22/05	
Bis(2-chloroethoxy)methane	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	
Bis(2-chloroethyl)ether	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	
Bis(2-chloroisopropyl)ether	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5C20022	2.2	10	ND	1.94	03/20/05	03/22/05	
4-Bromophenyl phenyl ether	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	
<b>Butyl benzyl phthalate</b>	EPA 625	5C20022	0.68	10	<b>1.1</b>	1.94	03/20/05	03/22/05	<b>B, J</b>
4-Chloroaniline	EPA 625	5C20022	0.40	4.0	ND	1.94	03/20/05	03/22/05	
2-Chloronaphthalene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05	
4-Chloro-3-methylphenol	EPA 625	5C20022	0.68	4.0	ND	1.94	03/20/05	03/22/05	
4-Chlorophenyl phenyl ether	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	
2-Chlorophenol	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	
Chrysene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	
Dibenz(a,h)anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	
Dibenzofuran	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05	
Di-n-butyl phthalate	EPA 625	5C20022	0.52	4.0	ND	1.94	03/20/05	03/22/05	
1,2-Dichlorobenzene	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	
1,3-Dichlorobenzene	EPA 625	5C20022	0.26	1.0	ND	1.94	03/20/05	03/22/05	
1,4-Dichlorobenzene	EPA 625	5C20022	0.10	1.0	ND	1.94	03/20/05	03/22/05	
3,3-Dichlorobenzidine	EPA 625	5C20022	1.9	10	ND	1.94	03/20/05	03/22/05	
2,4-Dichlorophenol	EPA 625	5C20022	0.42	4.0	ND	1.94	03/20/05	03/22/05	
<b>Diethyl phthalate</b>	EPA 625	5C20022	0.24	2.0	<b>0.43</b>	1.94	03/20/05	03/22/05	<b>B, J</b>
2,4-Dimethylphenol	EPA 625	5C20022	0.62	4.0	ND	1.94	03/20/05	03/22/05	
Dimethyl phthalate	EPA 625	5C20022	0.16	1.0	ND	1.94	03/20/05	03/22/05	
4,6-Dinitro-2-methylphenol	EPA 625	5C20022	0.76	10	ND	1.94	03/20/05	03/22/05	
2,4-Dinitrophenol	EPA 625	5C20022	5.4	10	ND	1.94	03/20/05	03/22/05	
2,4-Dinitrotoluene	EPA 625	5C20022	0.46	10	ND	1.94	03/20/05	03/22/05	
2,6-Dinitrotoluene	EPA 625	5C20022	0.48	10	ND	1.94	03/20/05	03/22/05	
Di-n-octyl phthalate	EPA 625	5C20022	0.34	10	ND	1.94	03/20/05	03/22/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C20022	0.17	2.0	ND	1.94	03/20/05	03/22/05	

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.94	03/20/05	03/22/05	RL-3
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05	
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.94	03/20/05	03/22/05	
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.94	03/20/05	03/22/05	
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.94	03/20/05	03/22/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.94	03/20/05	03/22/05	
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.94	03/20/05	03/22/05	
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.94	03/20/05	03/22/05	
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.94	03/20/05	03/22/05	
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.94	03/20/05	03/22/05	
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.94	03/20/05	03/22/05	
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.94	03/20/05	03/22/05	
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.94	03/20/05	03/22/05	
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.94	03/20/05	03/22/05	
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.94	03/20/05	03/22/05	
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.94	03/20/05	03/22/05	
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.94	03/20/05	03/22/05	
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.94	03/20/05	03/22/05	
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.94	03/20/05	03/22/05	
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05	
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.94	03/20/05	03/22/05	
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
Surrogate: 2-Fluorophenol (30-120%)					71 %				
Surrogate: Phenol-d6 (35-120%)					72 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					87 %				
Surrogate: Nitrobenzene-d5 (45-120%)					71 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					76 %				
Surrogate: Terphenyl-d14 (45-120%)					82 %				

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	
<b>4,4'-DDT</b>	EPA 608	5C19034	0.030	0.10	<b>0.039</b>	0.952	03/19/05	03/19/05	J
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	
Surrogate: Tetrachloro- <i>m</i> -xylene (35-115%)					57 %				
Surrogate: Decachlorobiphenyl (45-120%)					66 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					64 %				

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 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05	
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05	
Iron	EPA 200.8	5C19038	0.0032	0.010	0.29	1	03/19/05	03/21/05	B-1

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Sampled: 03/18/05  
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C19038	0.18	2.0	0.34	1	03/19/05	03/21/05	B, J
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.4	1	03/19/05	03/21/05	
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.085	1	03/19/05	03/21/05	B, J
Chromium	EPA 200.8	5C19038	0.26	2.0	1.0	1	03/19/05	03/21/05	J
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.35	1	03/19/05	03/21/05	J
Copper	EPA 200.8	5C19038	0.49	2.0	4.0	1	03/19/05	03/21/05	
Lead	EPA 200.8	5C19038	0.13	1.0	0.30	1	03/19/05	03/21/05	J
Manganese	EPA 200.8	5C19038	0.44	1.0	65	1	03/19/05	03/21/05	B-1
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	
Nickel	EPA 200.8	5C19038	0.15	2.0	2.5	1	03/19/05	03/21/05	B
Selenium	EPA 200.8	5C19038	0.36	2.0	0.55	1	03/19/05	03/21/05	J
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	
Vanadium	EPA 200.8	5C19038	0.86	2.0	2.0	1	03/19/05	03/21/05	
Zinc	EPA 200.8	5C19038	3.1	20	12	1	03/19/05	03/21/05	J

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 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	ND	1	03/22/05	03/22/05	
<b>Biochemical Oxygen Demand</b>	EPA 405.1	5C18070	0.59	2.0	<b>1.6</b>	1	03/18/05	03/23/05	J
<b>Chloride</b>	EPA 300.0	5C18104	0.26	0.50	<b>15</b>	1	03/18/05	03/18/05	
<b>Fluoride</b>	EPA 300.0	5C18104	0.10	0.50	<b>0.36</b>	1	03/18/05	03/18/05	B, J
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/18/05	
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	
Residual Chlorine	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	
<b>Sulfate</b>	EPA 300.0	5C18104	0.18	0.50	<b>42</b>	1	03/18/05	03/18/05	
<b>Surfactants (MBAS)</b>	SM5540-C	5C18107	0.044	0.10	<b>0.080</b>	1	03/18/05	03/18/05	J
<b>Total Dissolved Solids</b>	SM2540C	5C21073	10	10	<b>220</b>	1	03/21/05	03/21/05	
<b>Total Organic Carbon</b>	EPA 415.1	5C22101	0.25	1.0	<b>13</b>	1	03/22/05	03/22/05	
Total Suspended Solids	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
<b>Reporting Units: ml/hr</b>									
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	

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 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C19032	0.040	1.0	3.1	1	03/19/05	03/19/05	

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 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C18067	0.10	1.0	ND	1	03/18/05	03/18/05	
Total Cyanide	EPA 335.2	5C21083	2.2	5.0	ND	1	03/21/05	03/21/05	
Perchlorate	EPA 314.0	5C18121	0.80	4.0	ND	1	03/18/05	03/19/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	360	1	03/21/05	03/21/05	

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 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (Outfall 011 GRAB - Water) - cont.</b>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND	1	03/22/05	03/22/05	
Surrogate: Dibromofluoromethane (80-125%)					112 %				

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Sampled: 03/18/05  
 Received: 03/18/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID:	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 GRAB (IOC1523-01) - Water</b>					
EPA 160.5	2	03/18/2005 10:54	03/18/2005 20:10	03/19/2005 09:00	03/19/2005 10:00
EPA 180.1	2	03/18/2005 10:54	03/18/2005 20:10	03/19/2005 09:30	03/19/2005 10:30
EPA 218.6	1	03/18/2005 10:54	03/18/2005 20:10	03/18/2005 21:40	03/18/2005 21:44
EPA 300.0	2	03/18/2005 10:54	03/18/2005 20:10	03/18/2005 23:00	03/18/2005 23:48
EPA 330.5	1	03/18/2005 10:54	03/18/2005 20:10	03/19/2005 09:00	03/19/2005 10:00
EPA 405.1	2	03/18/2005 10:54	03/18/2005 20:10	03/18/2005 22:35	03/23/2005 12:30
EPA 624	3	03/18/2005 10:54	03/18/2005 20:10	03/20/2005 00:00	03/20/2005 16:38
SM5540-C	2	03/18/2005 10:54	03/18/2005 20:10	03/18/2005 22:01	03/18/2005 22:20
<b>Sample ID: Trip Blank (IOC1523-02) - Water</b>					
EPA 624	3	03/18/2005 16:20	03/18/2005 20:10	03/20/2005 00:00	03/20/2005 17:41

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Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C22091 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C22091-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 03/22/2005 (5C22091-BS1)</b>											
Total Recoverable Hydrocarbons	4.49	1.0	0.31	mg/l	5.00		90	65-120			M-NRI
<b>LCS Dup Analyzed: 03/22/2005 (5C22091-BSD1)</b>											
Total Recoverable Hydrocarbons	4.59	1.0	0.31	mg/l	5.00		92	65-120	2	20	

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Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21048 Extracted: 03/21/05</b>										
<b>Blank Analyzed: 03/21/2005 (5C21048-BLK1)</b>										
EFH (C13 - C22)	ND	0.50	0.082	mg/l						
EFH (C13 - C40)	ND	0.50	0.082	mg/l						
Surrogate: n-Octacosane	0.174			mg/l	0.200		87		40-125	
<b>LCS Analyzed: 03/21/2005 (5C21048-BS1)</b>										
EFH (C13 - C40)	0.738	0.50	0.082	mg/l	0.775		95		40-120	M-NR1
Surrogate: n-Octacosane	0.182			mg/l	0.200		91		40-125	
<b>LCS Dup Analyzed: 03/21/2005 (5C21048-BSD1)</b>										
EFH (C13 - C40)	0.688	0.50	0.082	mg/l	0.775		89	7	40-120	25
Surrogate: n-Octacosane	0.177			mg/l	0.200		88		40-125	

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Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

METHOD BLANK/QC DATA

VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21006 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21006-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00839			mg/l	0.0100		84	65-140			
<b>LCS Analyzed: 03/21/2005 (5C21006-BS1)</b>											
GRO (C4 - C12)	0.650	0.10	0.050	mg/l	0.800		81	70-140			
Surrogate: 4-BFB (FID)	0.0238			mg/l	0.0300		79	65-140			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21006-MS1) Source: IOC1526-01</b>											
GRO (C4 - C12)	0.220	0.10	0.050	mg/l	0.220	ND	100	60-140			
Surrogate: 4-BFB (FID)	0.00955			mg/l	0.0100		96	65-140			
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C21006-MSD1) Source: IOC1526-01</b>											
GRO (C4 - C12)	0.221	0.10	0.050	mg/l	0.220	ND	100	60-140	1	20	
Surrogate: 4-BFB (FID)	0.00960			mg/l	0.0100		96	65-140			

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/20/2005 (5C20002-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	27.7			ug/l	25.0		111	80-120			
Surrogate: Toluene-d8	25.5			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	23.8			ug/l	25.0		95	80-120			
<b>LCS Analyzed: 03/20/2005 (5C20002-BS1)</b>											
2-Chloroethyl vinyl ether	26.5	5.0	1.3	ug/l	25.0		106	20-175			
Surrogate: Dibromofluoromethane	27.8			ug/l	25.0		111	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19004 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19004-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.48	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	27.9			ug/l	25.0		112	80-120			
Surrogate: Toluene-d8	25.6			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	23.7			ug/l	25.0		95	80-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19004 Extracted: 03/19/05</b>											
<b>LCS Analyzed: 03/19/2005 (5C19004-BS1)</b>											
Benzene	23.6	1.0	0.28	ug/l	25.0		94	70-120			
Bromodichloromethane	23.8	2.0	0.30	ug/l	25.0		95	70-140			
Bromoform	23.2	5.0	0.32	ug/l	25.0		93	55-135			
Bromomethane	25.0	5.0	0.34	ug/l	25.0		100	60-140			
Carbon tetrachloride	23.1	0.50	0.28	ug/l	25.0		92	70-140			
Chlorobenzene	22.9	2.0	0.36	ug/l	25.0		92	80-125			
Chloroethane	23.6	5.0	0.33	ug/l	25.0		94	60-145			
Chloroform	26.0	2.0	0.33	ug/l	25.0		104	75-130			
Chloromethane	24.5	5.0	0.30	ug/l	25.0		98	40-145			
Dibromochloromethane	23.5	2.0	0.28	ug/l	25.0		94	65-145			
1,2-Dichlorobenzene	23.6	2.0	0.32	ug/l	25.0		94	80-120			
1,3-Dichlorobenzene	23.1	2.0	0.35	ug/l	25.0		92	80-120			
1,4-Dichlorobenzene	23.4	2.0	0.37	ug/l	25.0		94	80-120			
1,1-Dichloroethane	25.8	2.0	0.27	ug/l	25.0		103	70-135			
1,2-Dichloroethane	27.7	0.50	0.28	ug/l	25.0		111	60-150			
1,1-Dichloroethene	23.5	5.0	0.32	ug/l	25.0		94	75-135			
trans-1,2-Dichloroethene	24.4	2.0	0.27	ug/l	25.0		98	70-130			
1,2-Dichloropropane	24.6	2.0	0.35	ug/l	25.0		98	70-120			
cis-1,3-Dichloropropene	24.2	2.0	0.22	ug/l	25.0		97	75-130			
trans-1,3-Dichloropropene	24.7	2.0	0.24	ug/l	25.0		99	75-135			
Ethylbenzene	23.7	2.0	0.25	ug/l	25.0		95	80-120			
Methylene chloride	25.4	5.0	0.48	ug/l	25.0		102	60-135			
1,1,1,2-Tetrachloroethane	27.3	2.0	0.24	ug/l	25.0		109	60-135			
Tetrachloroethene	21.5	2.0	0.32	ug/l	25.0		86	75-125			
Toluene	23.3	2.0	0.36	ug/l	25.0		93	75-120			
1,1,1-Trichloroethane	25.0	2.0	0.30	ug/l	25.0		100	75-140			
1,1,2-Trichloroethane	24.7	2.0	0.30	ug/l	25.0		99	70-125			
Trichloroethene	22.4	2.0	0.26	ug/l	25.0		90	80-120			
Trichlorofluoromethane	25.2	5.0	0.34	ug/l	25.0		101	65-145			
Vinyl chloride	21.3	0.50	0.26	ug/l	25.0		85	50-130			
Surrogate: Dibromofluoromethane	28.0			ug/l	25.0		112	80-120			
Surrogate: Toluene-d8	25.6			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	25.0			ug/l	25.0		100	80-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19004 Extracted: 03/19/05</b>											
<b>Matrix Spike Analyzed: 03/19/2005 (5C19004-MS1)</b>						<b>Source: IOC1509-02</b>			<b>A-01</b>		
Benzene	22.4	1.0	0.28	ug/l	25.0	ND	90	70-120			
Bromodichloromethane	22.8	2.0	0.30	ug/l	25.0	ND	91	70-140			
Bromoform	21.2	5.0	0.32	ug/l	25.0	ND	85	55-140			
Bromomethane	24.0	5.0	0.34	ug/l	25.0	ND	96	50-145			
Carbon tetrachloride	37.5	0.50	0.28	ug/l	25.0	16	86	70-145			
Chlorobenzene	21.9	2.0	0.36	ug/l	25.0	ND	88	80-125			
Chloroethane	23.0	5.0	0.33	ug/l	25.0	ND	92	50-145			
Chloroform	45.8	2.0	0.33	ug/l	25.0	22	95	70-135			
Chloromethane	22.6	5.0	0.30	ug/l	25.0	ND	90	35-145			
Dibromochloromethane	21.9	2.0	0.28	ug/l	25.0	ND	88	65-145			
1,2-Dichlorobenzene	22.5	2.0	0.32	ug/l	25.0	ND	90	75-130			
1,3-Dichlorobenzene	22.2	2.0	0.35	ug/l	25.0	ND	89	75-130			
1,4-Dichlorobenzene	22.6	2.0	0.37	ug/l	25.0	ND	90	80-120			
1,1-Dichloroethane	24.3	2.0	0.27	ug/l	25.0	ND	97	65-135			
1,2-Dichloroethane	26.0	0.50	0.28	ug/l	25.0	ND	104	60-150			
1,1-Dichloroethene	21.3	5.0	0.32	ug/l	25.0	ND	85	65-140			
trans-1,2-Dichloroethene	22.6	2.0	0.27	ug/l	25.0	ND	90	65-135			
1,2-Dichloropropane	23.2	2.0	0.35	ug/l	25.0	ND	93	65-130			
cis-1,3-Dichloropropene	22.8	2.0	0.22	ug/l	25.0	ND	91	70-140			
trans-1,3-Dichloropropene	23.2	2.0	0.24	ug/l	25.0	ND	93	70-140			
Ethylbenzene	22.4	2.0	0.25	ug/l	25.0	ND	90	70-130			
Methylene chloride	23.9	5.0	0.48	ug/l	25.0	ND	96	60-135			
1,1,2,2-Tetrachloroethane	25.2	2.0	0.24	ug/l	25.0	ND	101	60-145			
Tetrachloroethene	21.1	2.0	0.32	ug/l	25.0	0.79	81	70-130			
Toluene	22.0	2.0	0.36	ug/l	25.0	ND	88	70-120			
1,1,1-Trichloroethane	23.7	2.0	0.30	ug/l	25.0	ND	95	75-140			
1,1,2-Trichloroethane	22.9	2.0	0.30	ug/l	25.0	ND	92	60-135			
Trichloroethene	32.6	2.0	0.26	ug/l	25.0	12	82	70-125			
Trichlorofluoromethane	60.8	5.0	0.34	ug/l	25.0	39	87	55-145			
Vinyl chloride	19.8	0.50	0.26	ug/l	25.0	ND	79	40-135			
Surrogate: Dibromofluoromethane	28.0			ug/l	25.0		112	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	24.9			ug/l	25.0		100	80-120			

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 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19004 Extracted: 03/19/05</b>										
<b>Blank Analyzed: 03/19/2005 (5C19004-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	0.600	5.0	0.34	ug/l							J
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	ND	2.0	0.26	ug/l							
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	0.220	1.0	0.12	ug/l							J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							N-I
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	ND	0.50	0.075	ug/l							
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	ND	1.0	0.13	ug/l							
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	ND	1.0	0.13	ug/l							
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	ND	0.50	0.071	ug/l							
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	12.3			ug/l	20.0		62	30-120			

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 Michele Harper  
 Project Manager

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 Outfall 011  
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Sampled: 03/18/05  
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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>											
Surrogate: Phenol-d6	12.0			ug/l	20.0		60	35-120			
Surrogate: 2,4,6-Tribromophenol	15.4			ug/l	20.0		77	45-120			
Surrogate: Nitrobenzene-d5	6.34			ug/l	10.0		63	45-120			
Surrogate: 2-Fluorobiphenyl	7.02			ug/l	10.0		70	45-120			
Surrogate: Terphenyl-d14	7.70			ug/l	10.0		77	45-120			
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>											
Acenaphthene	7.60	0.50	0.10	ug/l	10.0		76	55-120			
Acenaphthylene	7.76	0.50	0.10	ug/l	10.0		78	55-120			
Aniline	7.02	10	2.9	ug/l	10.0		70	35-120			J
Anthracene	7.94	0.50	0.083	ug/l	10.0		79	55-120			
Benzidine	ND	5.0	2.4	ug/l	10.0			20-160			L2
Benzoic acid	7.08	20	3.7	ug/l	10.0		71	35-120			J
Benzo(a)anthracene	8.78	5.0	0.038	ug/l	10.0		88	60-120			
Benzo(a)pyrene	8.28	2.0	0.14	ug/l	10.0		83	55-120			
Benzo(b)fluoranthene	7.98	2.0	0.050	ug/l	10.0		80	50-120			
Benzo(g,h,i)perylene	7.68	5.0	0.059	ug/l	10.0		77	40-125			
Benzo(k)fluoranthene	8.24	0.50	0.053	ug/l	10.0		82	50-120			
Benzyl alcohol	7.48	5.0	0.21	ug/l	10.0		75	45-120			
Bis(2-chloroethoxy)methane	7.56	0.50	0.072	ug/l	10.0		76	55-120			
Bis(2-chloroethyl)ether	6.46	0.50	0.084	ug/l	10.0		65	50-120			
Bis(2-chloroisopropyl)ether	6.98	0.50	0.11	ug/l	10.0		70	45-120			
Bis(2-ethylhexyl)phthalate	8.18	5.0	1.1	ug/l	10.0		82	60-130			
4-Bromophenyl phenyl ether	7.30	1.0	0.12	ug/l	10.0		73	50-120			
Butyl benzyl phthalate	8.02	5.0	0.34	ug/l	10.0		80	55-125			
4-Chloroaniline	6.88	2.0	0.20	ug/l	10.0		69	50-120			
2-Chloronaphthalene	7.82	0.50	0.059	ug/l	10.0		78	55-120			
4-Chloro-3-methylphenol	7.16	2.0	0.34	ug/l	10.0		72	60-120			
4-Chlorophenyl phenyl ether	7.94	0.50	0.056	ug/l	10.0		79	55-120			
2-Chlorophenol	6.82	1.0	0.12	ug/l	10.0		68	45-120			
Chrysene	8.32	0.50	0.072	ug/l	10.0		83	60-120			
Dibenz(a,h)anthracene	8.64	0.50	0.083	ug/l	10.0		86	45-130			
Dibenzofuran	7.52	0.50	0.075	ug/l	10.0		75	60-120			
Di-n-butyl phthalate	8.02	2.0	0.26	ug/l	10.0		80	55-125			
1,2-Dichlorobenzene	6.12	0.50	0.11	ug/l	10.0		61	35-120			
1,3-Dichlorobenzene	6.00	0.50	0.13	ug/l	10.0		60	35-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>											
1,4-Dichlorobenzene	5.96	0.50	0.050	ug/l	10.0		60	35-120			M-NR1
3,3-Dichlorobenzidine	7.18	5.0	0.93	ug/l	10.0		72	45-130			
2,4-Dichlorophenol	7.36	2.0	0.21	ug/l	10.0		74	55-120			
Diethyl phthalate	7.40	1.0	0.12	ug/l	10.0		74	55-120			
2,4-Dimethylphenol	6.64	2.0	0.31	ug/l	10.0		66	30-120			
Dimethyl phthalate	7.78	0.50	0.081	ug/l	10.0		78	60-120			
4,6-Dinitro-2-methylphenol	8.54	5.0	0.38	ug/l	10.0		85	50-120			
2,4-Dinitrophenol	7.42	5.0	2.7	ug/l	10.0		74	40-120			N-I
2,4-Dinitrotoluene	6.94	5.0	0.23	ug/l	10.0		69	60-120			
2,6-Dinitrotoluene	7.46	5.0	0.24	ug/l	10.0		75	60-120			
Di-n-octyl phthalate	9.76	5.0	0.17	ug/l	10.0		98	60-130			
1,2-Diphenylhydrazine/Azobenzene	7.98	1.0	0.087	ug/l	10.0		80	60-120			
Fluoranthene	8.32	0.50	0.089	ug/l	10.0		83	55-120			
Fluorene	8.12	0.50	0.075	ug/l	10.0		81	60-120			
Hexachlorobenzene	7.64	1.0	0.13	ug/l	10.0		76	50-120			
Hexachlorobutadiene	6.48	2.0	0.38	ug/l	10.0		65	40-120			
Hexachlorocyclopentadiene	6.58	5.0	1.8	ug/l	10.0		66	15-120			
Hexachloroethane	6.08	3.0	0.51	ug/l	10.0		61	35-120			
Indeno(1,2,3-cd)pyrene	8.12	2.0	0.19	ug/l	10.0		81	40-130			
Isophorone	6.94	1.0	0.059	ug/l	10.0		69	50-120			
2-Methylnaphthalene	7.42	1.0	0.13	ug/l	10.0		74	50-120			
2-Methylphenol	7.02	2.0	0.28	ug/l	10.0		70	45-120			
4-Methylphenol	7.14	5.0	0.20	ug/l	10.0		71	45-120			
Naphthalene	7.10	1.0	0.13	ug/l	10.0		71	50-120			
2-Nitroaniline	7.92	5.0	0.18	ug/l	10.0		79	60-120			
3-Nitroaniline	7.18	5.0	0.35	ug/l	10.0		72	55-120			
4-Nitroaniline	7.68	5.0	0.49	ug/l	10.0		77	50-125			
Nitrobenzene	6.56	1.0	0.10	ug/l	10.0		66	50-120			
2-Nitrophenol	7.28	2.0	0.23	ug/l	10.0		73	55-120			
4-Nitrophenol	8.18	5.0	0.73	ug/l	10.0		82	45-120			
N-Nitrosodimethylamine	6.94	2.0	0.22	ug/l	10.0		69	40-120			
N-Nitroso-di-n-propylamine	6.80	2.0	0.18	ug/l	10.0		68	45-120			
N-Nitrosodiphenylamine	7.34	1.0	0.077	ug/l	10.0		73	55-120			
Pentachlorophenol	8.06	2.0	0.78	ug/l	10.0		81	50-120			
Phenanthrene	7.82	0.50	0.071	ug/l	10.0		78	55-120			

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 Project Manager

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>											
Phenol	7.76	1.0	0.14	ug/l	10.0		78	45-120			M-NR1
Pyrene	8.14	0.50	0.059	ug/l	10.0		81	50-120			
1,2,4-Trichlorobenzene	6.40	1.0	0.10	ug/l	10.0		64	45-120			
2,4,5-Trichlorophenol	8.04	2.0	0.075	ug/l	10.0		80	60-120			
2,4,6-Trichlorophenol	8.04	1.0	0.10	ug/l	10.0		80	60-120			
Surrogate: 2-Fluorophenol	13.1			ug/l	20.0		66	30-120			
Surrogate: Phenol-d6	13.0			ug/l	20.0		65	35-120			
Surrogate: 2,4,6-Tribromophenol	16.1			ug/l	20.0		80	45-120			
Surrogate: Nitrobenzene-d5	6.72			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.48			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	7.66			ug/l	10.0		77	45-120			
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>											
Acenaphthene	7.52	0.50	0.10	ug/l	10.0		75	55-120	1	20	
Acenaphthylene	7.54	0.50	0.10	ug/l	10.0		75	55-120	3	20	
Aniline	6.88	10	2.9	ug/l	10.0		69	35-120	2	25	J
Anthracene	7.78	0.50	0.083	ug/l	10.0		78	55-120	2	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-160		35	L2
Benzoic acid	6.18	20	3.7	ug/l	10.0		62	35-120	14	30	J
Benzo(a)anthracene	8.48	5.0	0.038	ug/l	10.0		85	60-120	3	20	
Benzo(a)pyrene	8.12	2.0	0.14	ug/l	10.0		81	55-120	2	25	
Benzo(b)fluoranthene	7.90	2.0	0.050	ug/l	10.0		79	50-120	1	25	
Benzo(g,h,i)perylene	7.32	5.0	0.059	ug/l	10.0		73	40-125	5	25	
Benzo(k)fluoranthene	7.98	0.50	0.053	ug/l	10.0		80	50-120	3	20	
Benzyl alcohol	7.26	5.0	0.21	ug/l	10.0		73	45-120	3	20	
Bis(2-chloroethoxy)methane	7.42	0.50	0.072	ug/l	10.0		74	55-120	2	20	
Bis(2-chloroethyl)ether	6.10	0.50	0.084	ug/l	10.0		61	50-120	6	20	
Bis(2-chloroisopropyl)ether	6.98	0.50	0.11	ug/l	10.0		70	45-120	0	20	
Bis(2-ethylhexyl)phthalate	8.08	5.0	1.1	ug/l	10.0		81	60-130	1	20	
4-Bromophenyl phenyl ether	7.30	1.0	0.12	ug/l	10.0		73	50-120	0	25	
Butyl benzyl phthalate	8.02	5.0	0.34	ug/l	10.0		80	55-125	0	20	
4-Chloroaniline	6.62	2.0	0.20	ug/l	10.0		66	50-120	4	25	
2-Chloronaphthalene	7.54	0.50	0.059	ug/l	10.0		75	55-120	4	20	
4-Chloro-3-methylphenol	6.86	2.0	0.34	ug/l	10.0		69	60-120	4	25	
4-Chlorophenyl phenyl ether	8.16	0.50	0.056	ug/l	10.0		82	55-120	3	20	
2-Chlorophenol	6.74	1.0	0.12	ug/l	10.0		67	45-120	1	25	

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>											
Chrysene	8.10	0.50	0.072	ug/l	10.0		81	60-120	3	20	
Dibenz(a,h)anthracene	8.08	0.50	0.083	ug/l	10.0		81	45-130	7	25	
Dibenzofuran	7.54	0.50	0.075	ug/l	10.0		75	60-120	0	20	
Di-n-butyl phthalate	8.10	2.0	0.26	ug/l	10.0		81	55-125	1	20	
1,2-Dichlorobenzene	5.86	0.50	0.11	ug/l	10.0		59	35-120	4	25	
1,3-Dichlorobenzene	5.64	0.50	0.13	ug/l	10.0		56	35-120	6	25	
1,4-Dichlorobenzene	5.68	0.50	0.050	ug/l	10.0		57	35-120	5	25	
3,3-Dichlorobenzidine	6.88	5.0	0.93	ug/l	10.0		69	45-130	4	25	
2,4-Dichlorophenol	7.30	2.0	0.21	ug/l	10.0		73	55-120	1	20	
Diethyl phthalate	7.32	1.0	0.12	ug/l	10.0		73	55-120	1	20	
2,4-Dimethylphenol	6.42	2.0	0.31	ug/l	10.0		64	30-120	3	25	
Dimethyl phthalate	7.70	0.50	0.081	ug/l	10.0		77	60-120	1	20	
4,6-Dinitro-2-methylphenol	8.26	5.0	0.38	ug/l	10.0		83	50-120	3	25	
2,4-Dinitrophenol	7.02	5.0	2.7	ug/l	10.0		70	40-120	6	25	N-I
2,4-Dinitrotoluene	6.92	5.0	0.23	ug/l	10.0		69	60-120	0	20	
2,6-Dinitrotoluene	7.22	5.0	0.24	ug/l	10.0		72	60-120	3	20	
Di-n-octyl phthalate	9.76	5.0	0.17	ug/l	10.0		98	60-130	0	20	
1,2-Diphenylhydrazine/Azobenzene	8.02	1.0	0.087	ug/l	10.0		80	60-120	1	25	
Fluoranthene	8.28	0.50	0.089	ug/l	10.0		83	55-120	1	20	
Fluorene	8.34	0.50	0.075	ug/l	10.0		83	60-120	3	20	
Hexachlorobenzene	7.50	1.0	0.13	ug/l	10.0		75	50-120	2	20	
Hexachlorobutadiene	5.84	2.0	0.38	ug/l	10.0		58	40-120	10	25	
Hexachlorocyclopentadiene	6.76	5.0	1.8	ug/l	10.0		68	15-120	3	30	
Hexachloroethane	5.66	3.0	0.51	ug/l	10.0		57	35-120	7	25	
Indeno(1,2,3-cd)pyrene	7.86	2.0	0.19	ug/l	10.0		79	40-130	3	25	
Isophorone	6.12	1.0	0.059	ug/l	10.0		61	50-120	13	20	
2-Methylnaphthalene	7.12	1.0	0.13	ug/l	10.0		71	50-120	4	20	
2-Methylphenol	6.92	2.0	0.28	ug/l	10.0		69	45-120	1	20	
4-Methylphenol	7.06	5.0	0.20	ug/l	10.0		71	45-120	1	20	
Naphthalene	6.86	1.0	0.13	ug/l	10.0		69	50-120	3	20	
2-Nitroaniline	7.94	5.0	0.18	ug/l	10.0		79	60-120	0	20	
3-Nitroaniline	6.78	5.0	0.35	ug/l	10.0		68	55-120	6	25	
4-Nitroaniline	7.64	5.0	0.49	ug/l	10.0		76	50-125	1	20	
Nitrobenzene	6.62	1.0	0.10	ug/l	10.0		66	50-120	1	25	
2-Nitrophenol	7.20	2.0	0.23	ug/l	10.0		72	55-120	1	25	

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 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>											
4-Nitrophenol	7.96	5.0	0.73	ug/l	10.0	80	45-120	3	25		
N-Nitrosodimethylamine	6.82	2.0	0.22	ug/l	10.0	68	40-120	2	20		
N-Nitroso-di-n-propylamine	6.68	2.0	0.18	ug/l	10.0	67	45-120	2	20		
N-Nitrosodiphenylamine	7.28	1.0	0.077	ug/l	10.0	73	55-120	1	20		
Pentachlorophenol	7.92	2.0	0.78	ug/l	10.0	79	50-120	2	25		
Phenanthrene	7.68	0.50	0.071	ug/l	10.0	77	55-120	2	20		
Phenol	7.62	1.0	0.14	ug/l	10.0	76	45-120	2	25		
Pyrene	7.96	0.50	0.059	ug/l	10.0	80	50-120	2	25		
1,2,4-Trichlorobenzene	6.06	1.0	0.10	ug/l	10.0	61	45-120	5	20		
2,4,5-Trichlorophenol	7.66	2.0	0.075	ug/l	10.0	77	60-120	5	20		
2,4,6-Trichlorophenol	7.78	1.0	0.10	ug/l	10.0	78	60-120	3	20		
Surrogate: 2-Fluorophenol	12.8			ug/l	20.0	64	30-120				
Surrogate: Phenol-d6	12.9			ug/l	20.0	64	35-120				
Surrogate: 2,4,6-Tribromophenol	16.0			ug/l	20.0	80	45-120				
Surrogate: Nitrobenzene-d5	6.74			ug/l	10.0	67	45-120				
Surrogate: 2-Fluorobiphenyl	7.16			ug/l	10.0	72	45-120				
Surrogate: Terphenyl-d14	7.48			ug/l	10.0	75	45-120				

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19034 Extracted: 03/19/05</b>										
<b>Blank Analyzed: 03/19/2005 (5C19034-BLK1)</b>										
Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.020	ug/l						
4,4'-DDE	ND	0.10	0.025	ug/l						
4,4'-DDT	ND	0.10	0.030	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.020	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.320			ug/l	0.500		64	35-115		
Surrogate: Decachlorobiphenyl	0.403			ug/l	0.500		81	45-120		
<b>LCS Analyzed: 03/19/2005 (5C19034-BS1)</b>										
Aldrin	0.340	0.10	0.030	ug/l	0.500		68	40-115		M-NRI
alpha-BHC	0.351	0.10	0.015	ug/l	0.500		70	45-115		
beta-BHC	0.339	0.10	0.015	ug/l	0.500		68	50-115		
delta-BHC	0.351	0.20	0.020	ug/l	0.500		70	55-120		
gamma-BHC (Lindane)	0.357	0.10	0.020	ug/l	0.500		71	45-115		
4,4'-DDD	0.390	0.10	0.020	ug/l	0.500		78	60-120		
4,4'-DDE	0.380	0.10	0.025	ug/l	0.500		76	55-120		
4,4'-DDT	0.402	0.10	0.030	ug/l	0.500		80	60-120		
Dieldrin	0.380	0.10	0.015	ug/l	0.500		76	55-120		
Endosulfan I	0.359	0.10	0.015	ug/l	0.500		72	50-115		
Endosulfan II	0.377	0.10	0.040	ug/l	0.500		75	60-125		
Endosulfan sulfate	0.377	0.20	0.015	ug/l	0.500		75	60-120		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19034 Extracted: 03/19/05</b>											
<b>LCS Analyzed: 03/19/2005 (5C19034-BS1)</b>											
Endrin	0.378	0.10	0.020	ug/l	0.500		76	55-125			M-NR1
Endrin aldehyde	0.339	0.10	0.045	ug/l	0.500		68	55-115			
Endrin ketone	0.393	0.10	0.020	ug/l	0.500		79	60-115			
Heptachlor	0.357	0.10	0.030	ug/l	0.500		71	45-115			
Heptachlor epoxide	0.352	0.10	0.020	ug/l	0.500		70	50-115			
Methoxychlor	0.386	0.10	0.035	ug/l	0.500		77	60-120			
Surrogate: Tetrachloro-m-xylene	0.299			ug/l	0.500		60	35-115			
Surrogate: Decachlorobiphenyl	0.398			ug/l	0.500		80	45-120			
<b>LCS Dup Analyzed: 03/19/2005 (5C19034-BSD1)</b>											
Aldrin	0.380	0.10	0.030	ug/l	0.500		76	40-115	11	30	
alpha-BHC	0.391	0.10	0.015	ug/l	0.500		78	45-115	11	30	
beta-BHC	0.375	0.10	0.015	ug/l	0.500		75	50-115	10	30	
delta-BHC	0.391	0.20	0.020	ug/l	0.500		78	55-120	11	30	
gamma-BHC (Lindane)	0.393	0.10	0.020	ug/l	0.500		79	45-115	10	30	
4,4'-DDD	0.427	0.10	0.020	ug/l	0.500		85	60-120	9	30	
4,4'-DDE	0.423	0.10	0.025	ug/l	0.500		85	55-120	11	30	
4,4'-DDT	0.447	0.10	0.030	ug/l	0.500		89	60-120	11	30	
Dieldrin	0.416	0.10	0.015	ug/l	0.500		83	55-120	9	30	
Endosulfan I	0.395	0.10	0.015	ug/l	0.500		79	50-115	10	30	
Endosulfan II	0.409	0.10	0.040	ug/l	0.500		82	60-125	8	30	
Endosulfan sulfate	0.410	0.20	0.015	ug/l	0.500		82	60-120	8	30	
Endrin	0.415	0.10	0.020	ug/l	0.500		83	55-125	9	30	
Endrin aldehyde	0.373	0.10	0.045	ug/l	0.500		75	55-115	10	30	
Endrin ketone	0.425	0.10	0.020	ug/l	0.500		85	60-115	8	30	
Heptachlor	0.398	0.10	0.030	ug/l	0.500		80	45-115	11	30	
Heptachlor epoxide	0.389	0.10	0.020	ug/l	0.500		78	50-115	10	30	
Methoxychlor	0.427	0.10	0.035	ug/l	0.500		85	60-120	10	30	
Surrogate: Tetrachloro-m-xylene	0.309			ug/l	0.500		62	35-115			
Surrogate: Decachlorobiphenyl	0.433			ug/l	0.500		87	45-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19034 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19034-BLK1)</b>											
Aroclor 1016	ND	1.0	0.20	ug/l							
Aroclor 1221	ND	1.0	0.10	ug/l							
Aroclor 1232	ND	1.0	0.15	ug/l							
Aroclor 1242	ND	1.0	0.15	ug/l							
Aroclor 1248	ND	1.0	0.25	ug/l							
Aroclor 1254	ND	1.0	0.25	ug/l							
Aroclor 1260	ND	1.0	0.40	ug/l							
Surrogate: Decachlorobiphenyl	0.356			ug/l	0.500		71	45-120			
<b>LCS Analyzed: 03/19/2005 (5C19034-BS2)</b>											
Aroclor 1016	2.73	1.0	0.20	ug/l	4.00		68	50-115			M-NR1
Aroclor 1260	2.92	1.0	0.40	ug/l	4.00		73	55-115			
Surrogate: Decachlorobiphenyl	0.373			ug/l	0.500		75	45-120			
<b>LCS Dup Analyzed: 03/19/2005 (5C19034-BSD2)</b>											
Aroclor 1016	2.54	1.0	0.20	ug/l	4.00		64	50-115	7	30	
Aroclor 1260	2.83	1.0	0.40	ug/l	4.00		71	55-115	3	25	
Surrogate: Decachlorobiphenyl	0.348			ug/l	0.500		70	45-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19029 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19029-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 03/19/2005 (5C19029-BS1)</b>											
Mercury	8.50	0.20	0.063	ug/l	8.00		106	85-115			
<b>Matrix Spike Analyzed: 03/19/2005 (5C19029-MS1)</b>											
						<b>Source: IOC1454-01</b>					
Mercury	8.46	0.20	0.063	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C19029-MSD1)</b>											
						<b>Source: IOC1454-01</b>					
Mercury	8.44	0.20	0.063	ug/l	8.00	ND	106	70-130	0	20	
<b>Batch: 5C19038 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C19038-BLK1)</b>											
Antimony	1.25	2.0	0.18	ug/l							J
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	0.0170	1.0	0.015	ug/l							J
Chromium	ND	2.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.0190	0.010	0.0032	mg/l							B-I
Lead	ND	1.0	0.13	ug/l							
Manganese	6.36	1.0	0.44	ug/l							B-I
Nickel	0.555	2.0	0.15	ug/l							J
Selenium	ND	2.0	0.36	ug/l							
Silver	0.184	1.0	0.089	ug/l							J
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD Limit	Data Qualifiers
<b>Batch: 5C19038 Extracted: 03/19/05</b>										
<b>LCS Analyzed: 03/21/2005 (5C19038-BS1)</b>										
Antimony	81.3	2.0	0.18	ug/l	80.0		102	85-115		
Arsenic	86.3	1.0	0.49	ug/l	80.0		108	85-115		
Barium	0.0806	0.0010	0.00014	mg/l	0.0800		101	85-115		
Beryllium	74.7	0.50	0.037	ug/l	80.0		93	85-115		
Cadmium	78.9	1.0	0.015	ug/l	80.0		99	85-115		
Chromium	80.8	2.0	0.26	ug/l	80.0		101	85-115		
Cobalt	80.6	1.0	0.10	ug/l	80.0		101	85-115		
Copper	80.6	2.0	0.49	ug/l	80.0		101	85-115		
Iron	0.803	0.010	0.0032	mg/l	0.800		100	85-115		
Lead	81.1	1.0	0.13	ug/l	80.0		101	85-115		
Manganese	82.2	1.0	0.44	ug/l	80.0		103	85-115		
Nickel	81.5	2.0	0.15	ug/l	80.0		102	85-115		
Selenium	80.8	2.0	0.36	ug/l	80.0		101	85-115		
Silver	80.7	1.0	0.089	ug/l	80.0		101	85-115		
Thallium	80.8	1.0	0.075	ug/l	80.0		101	85-115		
Vanadium	79.6	2.0	0.86	ug/l	80.0		100	85-115		
Zinc	79.7	20	3.1	ug/l	80.0		100	85-115		

**Matrix Spike Analyzed: 03/21/2005 (5C19038-MS1)**

**Source: IOC1524-01**

Antimony	84.1	2.0	0.18	ug/l	80.0	0.64	104	70-130		
Arsenic	88.5	1.0	0.49	ug/l	80.0	1.2	109	70-130		
Barium	0.0958	0.0010	0.00014	mg/l	0.0800	0.013	104	70-130		
Beryllium	75.0	0.50	0.037	ug/l	80.0	ND	94	70-130		
Cadmium	80.3	1.0	0.015	ug/l	80.0	0.034	100	70-130		
Chromium	81.8	2.0	0.26	ug/l	80.0	1.2	101	70-130		
Cobalt	81.7	1.0	0.10	ug/l	80.0	0.25	102	70-130		
Copper	84.0	2.0	0.49	ug/l	80.0	3.3	101	70-130		
Iron	1.06	0.010	0.0032	mg/l	0.800	0.15	114	70-130		
Lead	82.7	1.0	0.13	ug/l	80.0	0.50	103	70-130		
Manganese	101	1.0	0.44	ug/l	80.0	19	102	70-130		
Nickel	82.5	2.0	0.15	ug/l	80.0	1.1	102	70-130		
Selenium	80.9	2.0	0.36	ug/l	80.0	0.39	101	70-130		
Silver	80.5	1.0	0.089	ug/l	80.0	ND	101	70-130		
Thallium	82.7	1.0	0.075	ug/l	80.0	0.13	103	70-130		
Vanadium	82.7	2.0	0.86	ug/l	80.0	2.7	100	70-130		
Zinc	89.8	20	3.1	ug/l	80.0	8.2	102	70-130		

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19038 Extracted: 03/19/05</b>											
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C19038-MSD1)</b>						<b>Source: IOC1524-01</b>					
Antimony	82.6	2.0	0.18	ug/l	80.0	0.64	102	70-130	2	20	
Arsenic	85.5	1.0	0.49	ug/l	80.0	1.2	105	70-130	3	20	
Barium	0.0950	0.0010	0.00014	mg/l	0.0800	0.013	102	70-130	1	20	
Beryllium	73.6	0.50	0.037	ug/l	80.0	ND	92	70-130	2	20	
Cadmium	78.6	1.0	0.015	ug/l	80.0	0.034	98	70-130	2	20	
Chromium	79.9	2.0	0.26	ug/l	80.0	1.2	98	70-130	2	20	
Cobalt	79.3	1.0	0.10	ug/l	80.0	0.25	99	70-130	3	20	
Copper	81.9	2.0	0.49	ug/l	80.0	3.3	98	70-130	3	20	
Iron	0.905	0.010	0.0032	mg/l	0.800	0.15	94	70-130	16	20	
Lead	81.9	1.0	0.13	ug/l	80.0	0.50	102	70-130	1	20	
Manganese	98.6	1.0	0.44	ug/l	80.0	19	100	70-130	2	20	
Nickel	79.8	2.0	0.15	ug/l	80.0	1.1	98	70-130	3	20	
Selenium	80.4	2.0	0.36	ug/l	80.0	0.39	100	70-130	1	20	
Silver	79.2	1.0	0.089	ug/l	80.0	ND	99	70-130	2	20	
Thallium	81.2	1.0	0.075	ug/l	80.0	0.13	101	70-130	2	20	
Vanadium	81.6	2.0	0.86	ug/l	80.0	2.7	99	70-130	1	20	
Zinc	84.2	20	3.1	ug/l	80.0	8.2	95	70-130	6	20	

### Batch: 5C19039 Extracted: 03/19/05

#### Blank Analyzed: 03/19/2005 (5C19039-BLK1)

Boron	ND	0.050	0.0074	mg/l
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#### LCS Analyzed: 03/19/2005 (5C19039-BS1)

Boron	0.473	0.050	0.0074	mg/l	0.500	95	85-115
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#### Matrix Spike Analyzed: 03/19/2005 (5C19039-MS1)

Boron	0.585	0.050	0.0074	mg/l	0.500	0.090	99	70-130
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19039 Extracted: 03/19/05</b>											
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C19039-MSD1)</b>						<b>Source: IOC1526-01</b>					
Boron	0.588	0.050	0.0074	mg/l	0.500	0.090	100	70-130	1	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C18067 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18067-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 03/18/2005 (5C18067-BS1)</b>											
Chromium VI	51.4	1.0	0.10	ug/l	50.0		103	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18067-MS1) Source: IOC1461-03</b>											
Chromium VI	51.9	1.0	0.10	ug/l	50.0	ND	104	90-110			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18067-MSD1) Source: IOC1461-03</b>											
Chromium VI	53.8	1.0	0.10	ug/l	50.0	ND	108	90-110	4	10	
<b>Batch: 5C18070 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/23/2005 (5C18070-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 03/23/2005 (5C18070-BS1)</b>											
Biochemical Oxygen Demand	202	100	30	mg/l	198		102	85-115			
<b>LCS Dup Analyzed: 03/23/2005 (5C18070-BSD1)</b>											
Biochemical Oxygen Demand	200	100	30	mg/l	198		101	85-115	1	20	
<b>Batch: 5C18104 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18104-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	0.103	0.50	0.10	mg/l							J
Nitrate/Nitrite-N	ND	0.11	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							

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Sampled: 03/18/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C18104 Extracted: 03/18/05</b>											
<b>LCS Analyzed: 03/18/2005 (5C18104-BS1)</b>											
Chloride	4.80	0.50	0.26	mg/l	5.00		96	90-110			
Fluoride	4.67	0.50	0.10	mg/l	5.00		93	90-110			
Sulfate	10.0	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18104-MS1) Source: IOC1500-06</b>											
Chloride	10.3	0.50	0.26	mg/l	5.00	6.1	84	80-120			
Fluoride	4.51	0.50	0.10	mg/l	5.00	0.39	82	80-120			
Sulfate	12.8	0.50	0.18	mg/l	10.0	3.8	90	80-120			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18104-MSD1) Source: IOC1500-06</b>											
Chloride	10.3	0.50	0.26	mg/l	5.00	6.1	84	80-120	0	20	
Fluoride	4.52	0.50	0.10	mg/l	5.00	0.39	83	80-120	0	20	
Sulfate	12.8	0.50	0.18	mg/l	10.0	3.8	90	80-120	0	20	
<b>Batch: 5C18107 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18107-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 03/18/2005 (5C18107-BS1)</b>											
Surfactants (MBAS)	0.237	0.10	0.044	mg/l	0.250		95	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18107-MS1) Source: IOC1443-01</b>											
Surfactants (MBAS)	0.263	0.10	0.044	mg/l	0.250	ND	105	50-125			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18107-MSD1) Source: IOC1443-01</b>											
Surfactants (MBAS)	0.263	0.10	0.044	mg/l	0.250	ND	105	50-125	0	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C18121 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C18121-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 03/19/2005 (5C18121-BS1)</b>											
Perchlorate	52.7	4.0	0.80	ug/l	50.0		105	85-115			
<b>Matrix Spike Analyzed: 03/19/2005 (5C18121-MS1)</b>											
Perchlorate	53.9	4.0	0.80	ug/l	50.0	ND	108	80-120			
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C18121-MSD1)</b>											
Perchlorate	54.1	4.0	0.80	ug/l	50.0	ND	108	80-120	0	20	
<b>Batch: 5C19030 Extracted: 03/19/05</b>											
<b>Duplicate Analyzed: 03/19/2005 (5C19030-DUP1)</b>											
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5C19032 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19032-BLK1)</b>											
Turbidity	0.0600	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 03/19/2005 (5C19032-DUP1)</b>											
Turbidity	0.110	1.0	0.040	NTU		0.12			9	20	J
<b>Batch: 5C21062 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21062-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							

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Sampled: 03/18/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21062 Extracted: 03/21/05</b>											
<b>LCS Analyzed: 03/21/2005 (5C21062-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NRI
<b>LCS Dup Analyzed: 03/21/2005 (5C21062-BSD1)</b>											
Oil & Grease	16.0	5.0	0.94	mg/l	20.0		80	65-120	7	20	
<b>Batch: 5C21068 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21068-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/21/2005 (5C21068-BS1)</b>											
Total Suspended Solids	942	10	10	mg/l	1000		94	85-115			
<b>Duplicate Analyzed: 03/21/2005 (5C21068-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l		Source: IOC1566-01 ND				10	
<b>Batch: 5C21073 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21073-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/21/2005 (5C21073-BS1)</b>											
Total Dissolved Solids	968	10	10	mg/l	1000		97	90-110			
<b>Duplicate Analyzed: 03/21/2005 (5C21073-DUP1)</b>											
Total Dissolved Solids	320	10	10	mg/l		Source: IOC1566-01 300			6	10	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21077 Extracted: 03/21/05</b>											
<b>Duplicate Analyzed: 03/21/2005 (5C21077-DUP1)</b>											
Specific Conductance	244	1.0	1.0	umhos/cm		Source: IOC1480-01 240			2	5	
<b>Batch: 5C21083 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21083-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 03/21/2005 (5C21083-BS1)</b>											
Total Cyanide	203	5.0	2.2	ug/l	200		102	90-110			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21083-MS1)</b>											
Total Cyanide	152	5.0	2.2	ug/l	200	ND	76	70-115			
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C21083-MSD1)</b>											
Total Cyanide	172	5.0	2.2	ug/l	200	ND	86	70-115	12	15	
<b>Batch: 5C22089 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C22089-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 03/22/2005 (5C22089-BS1)</b>											
Ammonia-N (Distilled)	9.24	0.50	0.30	mg/l	10.0		92	80-115			
<b>Matrix Spike Analyzed: 03/22/2005 (5C22089-MS1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	1.1	84	70-120			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C22089 Extracted: 03/22/05</b>											
<b>Matrix Spike Dup Analyzed: 03/22/2005 (5C22089-MSD1)</b>						<b>Source: IOC1175-01</b>					
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	1.1	90	70-120	6	15	
<b>Batch: 5C22101 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C22101-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 03/22/2005 (5C22101-BS1)</b>											
Total Organic Carbon	10.8	1.0	0.25	mg/l	10.0		108	90-110			
<b>Matrix Spike Analyzed: 03/22/2005 (5C22101-MS1)</b>						<b>Source: IOC1062-02</b>					
Total Organic Carbon	10.6	1.0	0.25	mg/l	5.00	5.8	96	80-120			
<b>Matrix Spike Dup Analyzed: 03/22/2005 (5C22101-MSD1)</b>						<b>Source: IOC1062-02</b>					
Total Organic Carbon	10.9	1.0	0.25	mg/l	5.00	5.8	102	80-120	3	20	

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## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: P5C2203 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (P5C2203-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.11			ug/l	1.00		111	80-125			
<b>LCS Analyzed: 03/22/2005 (P5C2203-BS1)</b>											
1,4-Dioxane	8.06	1.0	0.49	ug/l	10.0		81	70-130			
Surrogate: Dibromofluoromethane	1.12			ug/l	1.00		112	80-125			
<b>LCS Dup Analyzed: 03/22/2005 (P5C2203-BSD1)</b>											
1,4-Dioxane	10.2	1.0	0.49	ug/l	10.0		102	70-130	23	20	R-7
Surrogate: Dibromofluoromethane	1.09			ug/l	1.00		109	80-125			
<b>Matrix Spike Analyzed: 03/22/2005 (P5C2203-MS1) Source: POC0388-06</b>											
1,4-Dioxane	32.8	1.0	0.49	ug/l	10.0	25	78	70-150			
Surrogate: Dibromofluoromethane	1.06			ug/l	1.00		106	80-125			
<b>Matrix Spike Dup Analyzed: 03/22/2005 (P5C2203-MSD1) Source: POC0388-06</b>											
1,4-Dioxane	32.4	1.0	0.49	ug/l	10.0	25	74	70-150	1	25	
Surrogate: Dibromofluoromethane	1.07			ug/l	1.00		107	80-125			

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### DATA QUALIFIERS AND DEFINITIONS

- A-01** No results were reported for MSD due to the port leaking. Samples accepted based on BS1 recoveries.
- B** Analyte was detected in the associated Method Blank.
- B-1** Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- N-1** See case narrative.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- RL-3** Reporting limit raised due to high concentrations of non-target analytes.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



17461Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 803, San Diego, CA 92123 (658) 505-8596 FAX (658) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 783-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

### Certification Summary

#### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmlabs.com](http://www.dmlabs.com).

#### Subcontracted Laboratories

##### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOC1523-01

Analysis Performed: EDD + Level 4  
 Samples: IOC1523-01

##### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chrmic  
 Samples: IOC1523-01

#### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1523

Sampled: 03/18/05  
Received: 03/18/05

## **Aquatic Testing Laboratories-SUB** California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC1523-01

## **Del Mar Analytical - Phoenix** NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC1523-01

## **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC1523-01, IOC1523-03

Analysis Performed: Gamma Scan  
Samples: IOC1523-04

Analysis Performed: Gross Alpha  
Samples: IOC1523-01, IOC1523-03

Analysis Performed: Gross Beta  
Samples: IOC1523-01, IOC1523-03

Analysis Performed: Radium, Combined  
Samples: IOC1523-01, IOC1523-03

Analysis Performed: Strontium 90  
Samples: IOC1523-01, IOC1523-03

Analysis Performed: Tritium  
Samples: IOC1523-01, IOC1523-03

## **Truesdail Laboratories-SUB** California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC1523-01

Analysis Performed: Level 4 Data Package  
Samples: IOC1523-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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**IOC1523 <Page 53 of 53>**

1001523

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

Client Name/Address: <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: <b>Boeing-SSFL NPDES</b> <b>Outfall 011 - 13267</b>																					
Project Manager: Bronwyn Kelly		Perimeter Pond																					
Phone Number: (626) 568-6691		Phone Number: (626) 568-6691																					
Fax Number: (626) 568-6515		Fax Number: (626) 568-6515																					
Sampler: <i>Poleck</i>																							
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Ba, Cu, Pb, B, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V, Cr, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list + 1, 4 Dioxane	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PcBs	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + PP list	Field readings: Temp = <b>60.7</b> pH = <b>6.73</b>	Comments		
Outfall 011	W	Poly-1L	1	3-15-05 10:30 AM	HNO3	1A	X																
Outfall 011-Dup	W	Poly-1L	1		HNO3	1B	X																
Outfall 011	W	Poly-1L	1		None	2		X															
Outfall 011	W	VOAs	6		HCl	3A, 3B, 3C, 3D, 3E, 3F			X														
Outfall 011	W	1L Amber	2		None	4A, 4B				X													
Outfall 011	W	1L Amber	2		HCl	5A, 5B					X												
Outfall 011	W	Poly-500 ml	1		NaOH	6						X											
Outfall 011	W	Poly-1L	1		None	7							X										
Outfall 011	W	Poly-500 ml	2		None	8A, 8B								X									
Outfall 011	W	Poly-500 ml	2		None	9A, 9B									X								
Outfall 011	W	Poly-500 ml	2		None	10A, 10B										X							
Outfall 011	W	Poly-500 ml	1		H2SO4	11											X						
Outfall 011	W	1L Amber	2		None	12A, 12B												X					
Outfall 011	W	1L Amber	2		None	13A, 13B													X				
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C			X														
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
<i>Boeing</i>	3-15-05 1620		<i>Boeing</i>	3/18/05 1620		<i>Boeing</i>		3/18/05 1620		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>	
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
<i>Boeing</i>	3/15/05 205		<i>Boeing</i>	3/18/05 205		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>	
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
<i>Boeing</i>	3/15/05 205		<i>Boeing</i>	3/18/05 205		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>		3/18/05 2015		<i>Boeing</i>	
Turn around Time: (check)	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check) Intact	On Ice:																
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																

CHAIN OF CUSTODY FORM

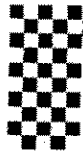
Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED										Comments			
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Residual Chlorine	TOC	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2C/E	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium		
Sample Description	Sample Matrix	Container Type	# of Containers	Preservative	Sampling Date/Time	Bottle #											
Outfall 011	W	150ml Brown Poly	1	None	3-18-05/17P	15	X										
Outfall 011	W	VOA	3	HCl		16A, 16B, 16C	X										
Outfall 011	W	500ml Poly	1	None		17		X									
Outfall 011	W	1L Amber	2	HCl		18A, 18B		X									
Outfall 011	W	1L Amber	2	None		19A, 19B			X								
Outfall 011	W	VOA	3	HCl		20A, 20B				X							
Outfall 011	W	1L Amber	2	None		21A, 21B					X						
Outfall 011	W	VOA	3	None		22A, 22B, 22C						X					
Outfall 011	W	Poly-1Gal	2	None		23A, 23B							X				
Outfall 011	W	1L Amber VOA	8	None		24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L								X		* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA >15pCi/L	
Trip Blanks	W	VOA	3	None		25A, 25B, 25C											
Trip Blanks	W	VOA	3	HCl		26A, 26B, 26C				X							
Relinquished By					Date/Time: 3-18-05												
Relinquished By					Date/Time: 3/18/05												
Relinquished By					Date/Time: 3/18/05												

DRP

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity: (Check) On Ice:  6°C





**F A X**




300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 03/21/05

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
 Krissi McIlvenna / MWH 925-975-3412

From: Bronwyn K. Kelly

sign: 

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 5  
(including cover)

**Per Request:**  
Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested on COC	Change(s) or Method (s) Now Requested
1001526	Outfall 011-13267 (Composite)	03/18/05	Metals: B and B; 8015-Gas; Monomethylhydrazine; Fluoride	B and Ba; Add 1,4-Dioxane analysis; 8015-Gas analysis for Trip Blanks; Monomethylhydrazine; Fluoride
1001523	Outfall 011-13267 (Grab)	03/18/05	1,4-Dioxane for Trip Blank	1,4-Dioxane not required on TBs

MH 3/21/05  
The reason for these changes:

- Incorrectly marked on COC form* \_\_\_\_\_ X \_\_\_\_\_
- Lack of sample volume* \_\_\_\_\_
- MWH office personnel require this change* \_\_\_\_\_
- Other: Containers mislabeled* \_\_\_\_\_

New COC's are attached for review.

Thank you



**CHAIN OF CUSTODY FORM**

Client Name/Address:		Project:		ANALYSIS REQUIRED		Field readings:													
Del Mar Analytical MVH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Project Manager: Bronwyn Kelly Sampler:		Boeiling-SSFL NPDES Outfall 011 - 13287 Perimeter Pond Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Total Recoverable Metals: Hg, Ba, Cu, Pb, Bi, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V, Cr, Hg		Temp = pH = Comments													
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (end all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	CH, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2)	Alpha BHC (608) + PP list	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list	
Outfall 011	W	Poly-1L	1		HNO3	1A													
Outfall 011-Dug	W	Poly-1L	1		HNO3	1B	X												
Outfall 011	W	Poly-1L	1		None	2													
Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C													
Outfall 011	W	1L Amber	2		None	4A, 4B			X										
Outfall 011	W	1L Amber	2		HCl	5A, 5B													
Outfall 011	W	Poly-500 ml	1		NaOH	6					X								
Outfall 011	W	Poly-1L	1		None	7													
Outfall 011	W	Poly-500 ml	2		None	8A, 8B							X						
Outfall 011	W	Poly-500 ml	2		None	9A, 9B													
Outfall 011	W	Poly-500 ml	2		None	10A, 10B									X				
Outfall 011	W	Poly-500 ml	1		H2SO4	11										X			
Outfall 011	W	1L Amber	2		None	12A, 12B													
Outfall 011	W	1L Amber	2		None	13A, 13B													
Outfall 011	W	1L Amber	2		None	14A, 14B, 14C													
Trip Blank	W	VOAs	3		HCl														
Relinquished By				Date/Time:															
Relinquished By				Date/Time:															
Relinquished By				Date/Time:															
Turn around Time: (check)		24 Hours		48 Hours		72 Hours		Patchibrate Only 72 Hours		Metals Only 72 Hours		Sample Integrity (Check) Intact		On Ice					

**CHAIN OF CUSTODY FORM**

Client Name/Address:				Project:				ANALYSIS REQUIRED										Comments										
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101				Boeing-SSFL NPDES Outfall 011 - 13267 Perimeter Pond				Sample Matrix	Container Type	# of Co ml	Sample Matrix	Sampling Date/Time	Preservative	Bottle #	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2C/E	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (908.0), Sr-90 (905.0), Total	Gross Alpha, Gross Beta, Tritium 228, Tritium	Comments		
Project Manager: Bronwyn Kelly				Phone Number: (626) 568-6691 Fax Number: (626) 568-6515				W	150ml Brown Poly	1	W		None	15	X													
Outfall 011	W	VOA	6	W		HCl	16A, 16B, 16C, 16D, 16E, 16G		X																			
Outfall 011	W	500ml Poly	1	W		None	17																					
Outfall 011	W	1L Amber	2	W		HCl	18A, 18B																					
Outfall 011	W	1L Amber	2	W		None	19A, 19B																					
Outfall 011	W	VOA	3	W		HCl	20A, 20B																					
Outfall 011	W	1L Amber	2	W		None	21A, 21B																					
Outfall 011	W	VOA	3	W		None	22A, 22B, 22C																					
Outfall 011	W	Poly - 1Gal	2	W		None	23A, 23B																					
Outfall 011	W	1L Amber VOA	4	W		None	24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L																					
Trip Blanks	W	VOA	3	W		None	25A, 25B, 25C																					
Trip Blanks	W	VOA	3	W		HCl	26A, 26B, 26C																					
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:										Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Pachyrhizae Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) _____ Intact _____ On Ice _____												
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:																						
Relinquished By	Date/Time:		Received By	Date/Time:		Date/Time:																						

\* ANALYZE FOR TOTAL COMBINED RA-228 & 228 ONLY IF GROSS ALPHA > 15pCi/L



2652 Aiton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 305, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

April 4, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/18/05  
 Del Mar Analytical Number: IOC1523

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

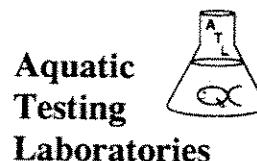
MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Grab	IOC1523-01	A-05031904-001/002	940883-1	25936-001	PENDING

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650- 0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** March 25, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05031904-001/002  
**Sample I.D.:** IOC1523-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 03/18/05  
Date Received: 03/19/05  
Date Tested: 03/19/05 to 03/25/05

**Sample Analysis:** The following analyses were performed on your sample:


Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

  
Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05031904-001  
 Client/ID: Del Mar - IOC1523-01

Start Date: 03/19/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 10 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050303.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.3	9.3	8.2	0	0	RM 1430
	100%	20.6	8.6	7.4	0	0	
24 Hr	Control	19.2	7.7	8.1	0	0	RM 1400
	100%	19.2	7.4	8.1	0	0	
48 Hr	Control	20.1	7.1	8.0	0	0	RM 1400
	100%	19.7	6.7	8.0	0	0	
Renewal	Control	19.9	8.4	8.2	0	0	RM 1400
	100%	20.0	8.4	7.6	0	0	
72 Hr	Control	20.1	6.6	7.8	0	0	RM 1200
	100%	20.0	6.5	7.9	0	0	
96 Hr	Control	19.9	6.9	7.9	0	0	RM 1330
	100%	19.8	7.0	7.9	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 7.4; Conductivity: 310 umho; Temp: 4°C;  
 DO: 8.6 mg/l; Alkalinity: 96 mg/l; Hardness: 84 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No.  
 Control: Alkalinity: 54 mg/l; Hardness: 90 mg/l; Conductivity: 290 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes /  No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05031904  
Client/ID: Del Mar IOC1523-01

Date Tested: 03/19/05 to 03/25/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050311.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	22.4
6.25%	100%	25.1
12.5%	100%	25.2
25%	100%	27.8
50%	100%	23.1
100%	100%	26.4

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female average	Pass (22.4 young)
≥60% surviving controls had 3 broods	Pass (90% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 18.1%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



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 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2620 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC1523

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone : (805) 650-0546 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOC1523-01 Water</b>	<b>Sampled: 03/18/05 11:10</b>	<b>Instant Notification</b>
Bioassay-7 dy Chronic	03/19/05 23:10	ceriodaphnia, 13267
Bioassay-Acute 96hr	03/19/05 23:10	fathead minnow, 13267
<b>Containers Supplied:</b>		
1 gal Poly (IOC1523-01AR)		
1 gal Poly (IOC1523-01AS)		

### SAMPLE INTEGRITY:

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 7°C

<i>[Signature]</i>	3/19/05	1145	<i>[Signature]</i>	3/19/05	1145
Released By	Date	Time	Received By	Date	Time
<i>[Signature]</i>	3/19/05	1400	<i>[Signature]</i>	3-19-05	1400
Released By	Date	Time	Received By	Date	Time



# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 25, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOC1523

**Truesdail Project:** 940883

**Date Received:** 03/21/05

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
940883-1	IOC1523-01	Water	03/18/05	1110	Hydrazines by EPA 8315M

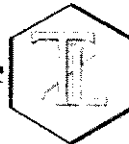
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

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**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOC1523  
**Date Received:** 03/21/05

**Truesdail Project:** 940883

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.

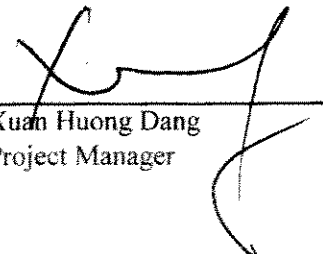
**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager



**REPORT**

**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Attention:** Michele Harper  
 Sample: Liquid / 1 Sample  
 Project Name: IOC1523  
 P.O. Number: IOC1523  
 Method Number: 8315 (Modified)  
 Investigation: Hydrazines in Liquid

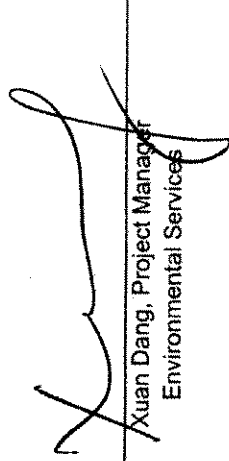
**Laboratory No:** 940883  
**Report Date:** March 25, 2005  
**Sampling Date:** March 18, 2005  
**Receiving Date:** March 21, 2005  
**Extraction Date:** March 21, 2005  
**Analysis Date:** March 23, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
704855-MB	Method Blank	ND	ND	ND	ND	ND
940883	IOC1523-01	ND	ND	ND	ND	ND
MDL		1.2	0.27			0.39
PQL		5.0	5.0			1.0

MDL: Method Detection Limit, ug/L  
 PQL: Practical Quantitation Limit, ug/L  
 ND: Not Detected at or above the MDL value.  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.



Xuan Dang, Project Manager  
 Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOC1523  
**P.O. Number:** IOC1523  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 3017; Analysis: 378  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704855  
**Project Lab. No.:** 940883  
**Spiked Sample ID:** 940884  
**Report Date:** March 25, 2005  
**Sampling Date:** March 18, 2005  
**Receiving Date:** March 21, 2005  
**Extraction Date:** March 21, 2005  
**Analysis Date:** March 23, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	28.0	112	85-115	PASS
u-Dimethyl Hydrazine	25.0	24.1	96.3	85-115	PASS
Hydrazine	5.0	4.96	99.2	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)		Measured Value (ug/L)	% Rec.	Control Limits	Flag
	Value	Rec.				
Monomethyl Hydrazine	50.0	111	55.4	111	85-115	PASS
u-Dimethyl Hydrazine	50.0	98.5	49.3	98.5	85-115	PASS
Hydrazine	10.0	102	10.2	102	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

#### LCS/LCSD

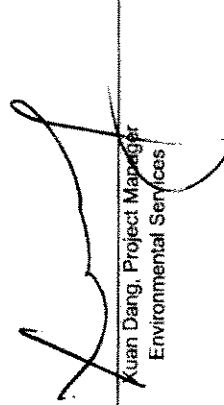
Parameter	Spiked Conc. ug/L	Recovered LCS	Concentration LCSD	MB	Recovery (%) LCS	Percent Recovery (%) LCSD	LCS	LCSD	%D	Flag	Control Limits	% Rec.
Monomethyl Hydrazine	50.0	52.7	54.8	0.0	105	110	3.92%	PASS	20	70-130	20	70-130
u-Dimethyl Hydrazine	50.0	47.9	48.0	0.0	95.8	96.0	0.27%	PASS	20	70-130	20	70-130
Hydrazine	10.0	10.2	10.2	0.0	102	102	0.60%	PASS	20	70-130	20	70-130

#### MS/MSD

Parameter	Spiked Conc. ug/L	Recovered MS	Concentration MSD	MSD	Recovery (%) MS	Percent Recovery (%) MSD	MS	MSD	% D	Flag	Control Limits	% Rec.
Monomethyl Hydrazine	50.0	42.9	40.4	0.0	85.7	80.9	5.83%	PASS	20	0-150	20	0-150
u-Dimethyl Hydrazine	50.0	37.9	37.0	0.0	75.8	73.9	2.56%	PASS	20	0-150	20	0-150
Hydrazine	10.0	7.15	7.43	0.0	71.5	74.3	3.81%	PASS	20	0-150	20	0-150

ICV: Initial Calibration Verification  
QCS: Quality Control Standard  
LCS: Laboratory Control Spike  
MS: Matrix Spike  
%D: Percent Difference  
Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.



Kuan Dang, Project Manager  
Environmental Services

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**Del Mar Analytical**  
**940 883**

**SUBCONTRACT ORDER - PROJECT # IOC1523**

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone: (714) 730-6239  
 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC1523-01 Water	Sampled: 03/18/05 11:10	Instant Notification
Hydrazine-OUT	03/21/05 11:10	J flags, Sub Truesdail for Monomethylhydrazine
Level 4 Data Package	04/15/05 11:10	

**Containers Supplied:**  
 1 L Amber (IOC1523-01AM)  
 1 L Amber (IOC1523-01AN)

Rec'd 03/21/05  
 s6c 940883

**ALERT!!**  
**Level IV QC**

**For Sample Conditions  
 See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By: [Signature] 3/21/05 0715      Received By: [Signature] 3/21/05 0715  
 Released By: [Signature] 3/21/05 0740      Received By: Rafael Davila T.I.F. 3/21/05 7:40



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 940883

Date Delivered: 3/21/05 Time: 7:40 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc..)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = Level IV OC  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A

Alert!!  
Level IV OC

15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other water

16. Comments: \_\_\_\_\_

17. Sample Check-In completed by Truesdail Log-In/Receiving: J Brown





March 24, 2005

**Alta Project I.D.: 25936**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 22, 2005 under your Project Name "IOC1523". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in cursive script, appearing to read "Martha M. Maier".

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640



**Section I: Sample Inventory Report**

**Date Received: 3/22/2005**

Alta Lab. ID

Client Sample ID

25936-001

IOC1523-01

**SECTION II**



Method Blank		EPA Method 1613					
Matrix:	Aqueous	QC Batch No.:	6624	Lab Sample:	0-MB001		
Sample Size:	1.000 L	Date Extracted:	22-Mar-05	Date Analyzed DB-5:	23-Mar-05		
				Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.841		IS 13C-2,3,7,8-TCDD	79.3	25 - 164	
1,2,3,7,8-PeCDD	ND	0.749		13C-1,2,3,7,8-PeCDD	75.2	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.49		13C-1,2,3,4,7,8-HxCDD	74.0	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.52		13C-1,2,3,6,7,8-HxCDD	80.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.50		13C-1,2,3,4,6,7,8-HpCDD	72.5	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	1.17		13C-OCDD	55.5	17 - 157	
OCDD	ND	3.33		13C-2,3,7,8-TCDF	82.1	24 - 169	
2,3,7,8-TCDF	ND	0.795		13C-1,2,3,7,8-PeCDF	74.6	24 - 185	
1,2,3,7,8-PeCDF	ND	1.67		13C-2,3,4,7,8-PeCDF	77.9	21 - 178	
2,3,4,7,8-PeCDF	ND	1.39		13C-1,2,3,4,7,8-HxCDF	62.7	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.474		13C-1,2,3,6,7,8-HxCDF	73.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.442		13C-2,3,4,6,7,8-HxCDF	71.1	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.510		13C-1,2,3,7,8,9-HxCDF	67.2	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.820		13C-1,2,3,4,6,7,8-HpCDF	67.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.929		13C-1,2,3,4,7,8,9-HpCDF	71.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.13		13C-OCDF	58.9	17 - 157	
OCDF	ND	2.74		CRS 37Cl-2,3,7,8-TCDD	83.9	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.841					
Total PeCDD	ND	0.749					
Total HxCDD	ND	1.51					
Total HpCDD	ND	1.17					
Total TCDF	ND	0.795					
Total PeCDF	ND	1.52					
Total HxCDF	ND	0.545					
Total HpCDF	ND	1.02					

**Footnotes**  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: JMH  
Approved By: Martha M. Maier 24-Mar-2005 09:37





OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	6624	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	22-Mar-05	Date Analyzed DB-5:	23-Mar-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	9.02	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	86.2	25 - 164
1,2,3,7,8-PeCDD	50.0	44.9	35 - 71	13C-1,2,3,7,8-PeCDD	83.6	25 - 181
1,2,3,4,7,8-HxCDD	50.0	45.7	35 - 82	13C-1,2,3,4,7,8-HxCDD	83.1	32 - 141
1,2,3,6,7,8-HxCDD	50.0	47.1	38 - 67	13C-1,2,3,6,7,8-HxCDD	90.5	28 - 130
1,2,3,7,8,9-HxCDD	50.0	47.2	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	80.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	49.7	35 - 70	13C-OCDD	60.0	17 - 157
OCDD	100	102	78 - 144	13C-2,3,7,8-TCDF	89.6	24 - 169
2,3,7,8-TCDF	10.0	9.28	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	82.2	24 - 185
1,2,3,7,8-PeCDF	50.0	49.7	40 - 67	13C-2,3,4,7,8-PeCDF	86.0	21 - 178
2,3,4,7,8-PeCDF	50.0	48.9	34 - 80	13C-1,2,3,4,7,8-HxCDF	69.1	26 - 152
1,2,3,4,7,8-HxCDF	50.0	52.4	36 - 67	13C-1,2,3,6,7,8-HxCDF	83.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.4	42 - 65	13C-2,3,4,6,7,8-HxCDF	80.9	28 - 136
2,3,4,6,7,8-HxCDF	50.0	51.3	35 - 78	13C-1,2,3,7,8,9-HxCDF	77.1	29 - 147
1,2,3,7,8,9-HxCDF	50.0	51.3	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	77.1	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	54.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	78.6	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	53.2	39 - 69	13C-OCDF	65.1	17 - 157
OCDF	100	103	63 - 170	CRS 37Cl-2,3,7,8-TCDD	89.8	35 - 197

Analyst: JMH

Approved By: Martha M. Maier 24-Mar-2005 09:37



Sample ID: IOC1523-01		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25936-001
Project:	IOC1523	Sample Size:	0.896 L	QC Batch No.:	6624
Date Collected:	18-Mar-05	DL <sup>a</sup>	EMPC <sup>b</sup>	Date Analyzed DB-5:	23-Mar-05
Time Collected:	1110	Conc. (pg/L)	Qualifiers	Date Analyzed DB-225:	NA
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.723		IS 13C-2,3,7,8-TCDD	84.7 25 - 164
1,2,3,7,8-PeCDD	ND	0.811		13C-1,2,3,7,8-PeCDD	81.8 25 - 181
1,2,3,4,7,8-HxCDD	ND	1.40		13C-1,2,3,4,7,8-HxCDD	88.6 32 - 141
1,2,3,6,7,8-HxCDD	ND	1.38		13C-1,2,3,6,7,8-HxCDD	95.7 28 - 130
1,2,3,7,8,9-HxCDD	ND	1.39		13C-1,2,3,4,6,7,8-HpCDD	87.9 23 - 140
1,2,3,4,6,7,8-HpCDD	2.62		J	13C-OCDD	66.5 17 - 157
OCDD	22.3		J	13C-2,3,7,8-TCDF	91.0 24 - 169
2,3,7,8-TCDF	ND	1.14		13C-1,2,3,7,8-PeCDF	84.4 24 - 185
1,2,3,7,8-PeCDF	ND	1.67		13C-2,3,4,7,8-PeCDF	85.8 21 - 178
2,3,4,7,8-PeCDF	ND	1.48		13C-1,2,3,4,7,8-HxCDF	73.8 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.575		13C-1,2,3,6,7,8-HxCDF	85.9 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.535		13C-2,3,4,6,7,8-HxCDF	82.9 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.610		13C-1,2,3,7,8,9-HxCDF	80.5 29 - 147
1,2,3,7,8,9-HxCDF	ND	0.976		13C-1,2,3,4,6,7,8-HpCDF	80.9 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.932		13C-1,2,3,4,7,8,9-HpCDF	85.4 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	1.07		13C-OCDF	72.6 17 - 157
OCDF	ND	3.17		CRS 37Cl-2,3,7,8-TCDD	85.7 35 - 197
Totals				Footnotes	
Total TCDD	ND	0.723		a. Sample specific estimated detection limit.	
Total PeCDD	ND	0.811		b. Estimated maximum possible concentration.	
Total HxCDD	ND	1.39		c. Method detection limit.	
Total HpCDD	5.93			d. Lower control limit - upper control limit.	
Total TCDF	ND	1.14			
Total PeCDF	ND	1.57			
Total HxCDF	ND	0.655			
Total HpCDF	ND	0.992			

Analyst: JMH

Approved By: Martha M. Maier 24-Mar-2005 09:37

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>P</b>	<b>Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that correspond to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.



## CURRENT CERTIFICATIONS

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NELAP — (Primary AA: California, Certificate No. 02102CA)  
Department of the Navy  
U.S. Army Corps of Engineers  
U.S. EPA Region 5  
Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)  
Commonwealth of Kentucky — (Certificate No. 90063)  
Commonwealth of Virginia — (Certificate No. 00013)  
State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)  
State of Arizona — (Certificate No. AZ0639)  
State of Arkansas, Department of Health — (Approval granted through CA certification)  
State of Arkansas, Department of Environmental Quality  
State of California — (Certificate No. 1640)  
State of Colorado  
State of Connecticut — (Certificate No. PH-0182)  
State of Florida — (Certificate No. 87456)  
State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)  
State of Louisiana, Department of Environmental Quality  
State of Maine  
State of Michigan (Certificate No. 81178087)  
State of Mississippi — (Approval granted through CA certification)  
State of Nevada — (Certificate No. CA413)  
State of New Jersey — (Certificate No. CA003)  
State of New York, Department of Health — (Certificate No. 11411)  
State of North Carolina — (Certification No. 06700)  
State of North Dakota, Department of Health — (Certificate No. R-078)  
State of New Mexico  
State of Oklahoma — (D9919)  
State of Oregon — (Certificate No. CA413)  
State of Pennsylvania — (Certificate No. 68-490)  
State of South Carolina — (Certificate No. 87002001)  
State of Tennessee — (Certificate No. 02996)  
State of Texas — (Certificate No. TX247-1000A)  
State of Utah — (Certificate No. E-201)  
State of Washington — (Certification No. C091)  
State of Wisconsin — (Certificate No. 998036160)  
State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25936

1. Date Samples Arrived:	<u>3/22/05 0945</u>	Initials:	<u>CV</u>	Location:	<u>WR-2</u>
2. Time / Date logged in:	<u>3/22/05 1115</u>	Initials:	<u>CV</u>	Location:	<u>WR-2</u>
3. Samples Arrived By: (circle)	<u>FedEx</u>	UPS	World Courier	Other:	
4. Shipping Preservation: (circle)	<u>Ice</u>	Blue Ice	Dry Ice	None	Temp °C <u>3.2</u>
5. Shipping Container(s) Intact? If not, describe condition in comment section.		YES	NO	NA	
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.		✓			
7. Shipping Documentation Present? (circle) Shipping Label Tracking Number	<u>7915 786A 570L</u>	✓			<u>Airbill</u>
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section.			✓	✓	
9. Sample Container Intact? If no, indicate sample condition in comment section.		✓			
10. Chain of Custody (COC) or other Sample Documentation Present?		✓			
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.		✓			
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed					
13. Container(s) and/or Bottle(s) Requested?			✓		
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted				✓	✓

Comments:

IOC1521-01  
 IOC1523-01  
 IOC1525-01  
 IOC1526-01  
 IOC1563-01

\* Sampler initials missing on label

ALTA Analytical Laboratory  
 El Dorado Hills, CA 95762



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Costley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9404 Chatsworth Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-6595 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 765-0043 Fax (480) 765-0651  
 2520 E. Sunset Rd., Suite #5, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

**SUBCONTRACT ORDER - PROJECT # IOC1523**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 933-0940

Standard TAT is requested unless specific due date is requested => Due Date: 5 DAY TAT Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOC1523-01 Water</b> 1613-Dioxin-HR EDD + Level 4	<b>Sampled: 03/18/05 11:10</b> 03/25/05 11:10 04/15/05 11:10	<b>Instant Notification</b> J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b> 1 L Amber (IOC1523-01J) 1 L Amber (IOC1523-01K)		

25936 320

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

 3-21-05 1700
  3/22/05 0945

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

STANDARD OPERATING PROCEDURE

Attachment 10.B.4

Chain of Custody Anomaly / Sample Acceptance Form

Client: Del Mar Analytical Project Number: 25936

Contact: Michele Harper Date Received: 3/22/05

Fax Number: (949) 260-3297 Documented by/date: W 3/22/05

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis. Thank You. (Fax #916-673-0106)

The following information or item is needed to proceed with the analysis:

- Completed Chain-of-Custody
- Test Method Requested
- Analyte List Requested
- Preservative
- Sample Identification
- Sample Collection Date /Time
- Collector's Name
- Sample Type
- Sample Location

The following anomalies were noted. Authorization is needed to proceed with the analysis:

Temperature outside  $\pm 2^{\circ}\text{C}$  range Samples Affected: \_\_\_\_\_  
 Temp \_\_\_\_\_  $^{\circ}\text{C}$  Ice Present? Yes No

Sample ID Discrepancy Samples Affected: \_\_\_\_\_

Sample holding time missed Samples Affected: \_\_\_\_\_

Custody seals broken Samples Affected: \_\_\_\_\_

Insufficient Sample Size Samples Affected: \_\_\_\_\_

Sample Container(s) Broken Samples Affected: \_\_\_\_\_

Incorrect Container Type Samples Affected: \_\_\_\_\_

Other \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Client Authorization:**

Proceed With Analysis: YES NO Signature and Date: W 3/24/05

Client Comments/Instructions: "P.P" per email from W Harper

ALTA Analytical Laboratory  
 El Dorado Hills, CA 95762

# **APPENDIX A**

## **Section 32**

Outfall 011, March 18, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF37  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 10

Laboratory Alta  
 Reviewer H. Chang  
 Analysis/Method Dioxin&Furans/1613

Date: April 4, 2005  
 Reviewer's Signature  
*H. Chang*

**ACTION ITEMS<sup>a</sup>**

1. Case Narrative  
 Deficiencies

2. Out of Scope  
 Analyses

3. Analyses Not Conducted

4. Missing Hardcopy  
 Deliverables

5. Incorrect Hardcopy  
 Deliverables

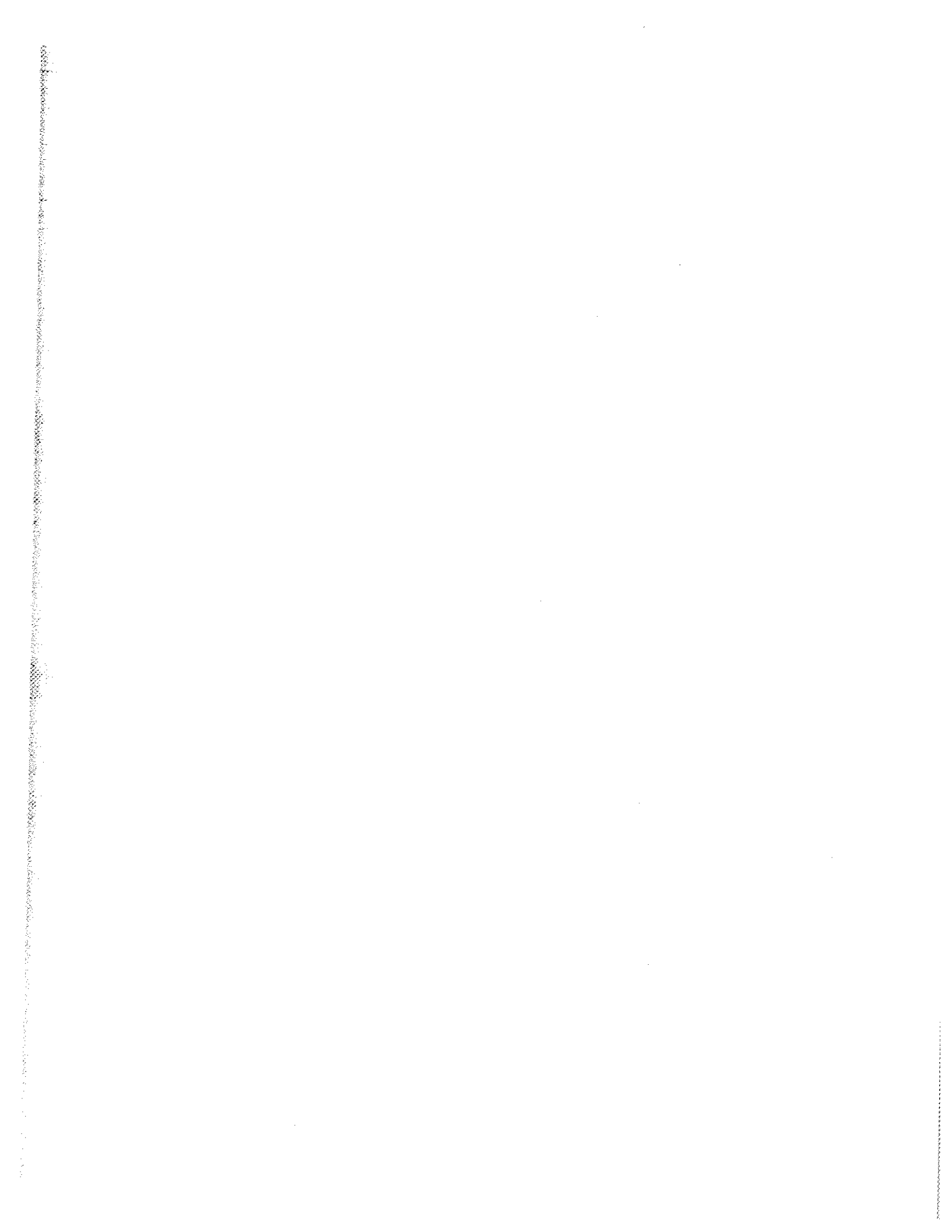
6. Deviations from Analysis

Detects below the calibration range were qualified "J."

- Protocol, e.g.,
- Holding Times
- GC/MS Tune/Inst. Perform
- Calibrations
- Blanks
- Surrogates
- Matrix Spike/Dup LCS
- Field QC
- Internal Standard Performance
- Compound Identification and
- Quantitation
- System Performance

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 10  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 002	IOC1521-01	25935-001	water	1613
Outfall 011	IOC1523-01	25936-001	water	1613
Outfall 005	IOC1524-01	25940-001	water	1613
Outfall 006	IOC1525-01	25937-001	water	1613
Outfall 011 Composite	IOC1526-01	25938-001	water	1613
Outfall 001	IOC1561-01	25941-001	water	1613
Outfall 004	IOC1563-01	25939-001	water	1613
Outfall 008	IOC1564-01	25942-001	water	1613
Outfall 003	IOC1565-01	25943-001	water	1613
Outfall 009	IOC1566-01	25944-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples Outfall 001, Outfall 004, and Outfall 008 were received at Del Mar Analytical outside the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . Due to non-volatile nature of the target compounds, no qualifications were required. The other samples were received with cooler temperatures within the limits. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 08/30/04. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0\_6624\_MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_6624\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### **2.7.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.7.2 Field Duplicates**

No field duplicate samples were identified for these SDGs.

## **2.8 INTERNAL STANDARDS**

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## **2.9 COMPOUND IDENTIFICATION**

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## **2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any reported EMPC was qualified as an estimated nondetect, "UJ." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." No further qualifications were required.

Sample ID: IOC1523-01		Duffell Oil		EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25936-001		
Project:	IOC1523	Sample Size:	0.896 L	QC Batch No.:	6624		
Date Collected:	18-Mar-05			Date Analyzed DB-5:	23-Mar-05		
Time Collected:	1110			Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.723		13C-2,3,7,8-TCDD	84.7	25 - 164	
1,2,3,7,8-PeCDD	ND	0.811		13C-1,2,3,7,8-PeCDD	81.8	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.40		13C-1,2,3,4,7,8-HxCDD	88.6	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.38		13C-1,2,3,6,7,8-HxCDD	95.7	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.39		13C-1,2,3,4,6,7,8-HpCDD	87.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	2.62			13C-OCDD	66.5	17 - 157	
OCDD	22.3		J	13C-2,3,7,8-TCDF	91.0	24 - 169	
2,3,7,8-TCDF	ND	1.14	J	13C-1,2,3,7,8-PeCDF	84.4	24 - 185	
1,2,3,7,8-PeCDF	ND	1.67		13C-2,3,4,7,8,PeCDF	85.8	21 - 178	
2,3,4,7,8-PeCDF	ND	1.48		13C-1,2,3,4,7,8-HxCDF	73.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.575		13C-1,2,3,6,7,8-HxCDF	85.9	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.535		13C-2,3,4,6,7,8-HxCDF	82.9	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.610		13C-1,2,3,7,8,9-HxCDF	80.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.976		13C-1,2,3,4,6,7,8-HpCDF	80.9	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.932		13C-1,2,3,4,7,8,9-HpCDF	85.4	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.07		13C-OCDF	72.6	17 - 157	
OCDF	ND	3.17		CRS 37Cl-2,3,7,8-TCDD	85.7	35 - 197	
Totals							
Total TCDD	ND	0.723					
Total PeCDD	ND	0.811					
Total HxCDD	ND	1.39					
Total HpCDD	5.93						
Total TCDF	ND	1.14					
Total PeCDF	ND	1.57					
Total HxCDF	ND	0.655					
Total HpCDF	ND	0.992					

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH

Approved By: Martha M. Maier 24-Mar-2005 09:37

ANALYTICAL

LEVEL IV

Project 25936

Sample ID: IOC1526-01		Duffell Oil Composite		EPA Method 1613	
Client Data		Sample Data		Laboratory Data	
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 25938-001	Date Received: 22-Mar-05	QC Batch No.: 6624	Date Extracted: 22-Mar-05
Project: IOC1526	Sample Size: 0.925 L	Date Analyzed DB-5: 23-Mar-05	Date Analyzed DB-225: NA		
Date Collected: 18-Mar-05					
Time Collected: 1440					
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.691			84.4 25 - 164
1,2,3,7,8-PeCDD	ND	0.658			81.5 25 - 181
1,2,3,4,7,8-HxCDD	ND	1.61			84.0 32 - 141
1,2,3,6,7,8-HxCDD	ND	1.53			91.3 28 - 130
1,2,3,7,8,9-HxCDD	ND	1.56			84.7 23 - 140
1,2,3,4,6,7,8-HpCDD	ND		1.56		67.5 17 - 157
OCDD	18.1				90.5 24 - 169
2,3,7,8-TCDF	ND	0.979			84.6 24 - 185
1,2,3,7,8-PeCDF	ND	1.91			85.0 21 - 178
2,3,4,7,8-PeCDF	ND	1.78			69.6 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.646			80.7 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.612			79.6 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.697			77.6 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.12			80.8 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.763			82.7 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.923			71.4 17 - 157
OCDF	ND	3.25			81.5 35 - 197
Totals					
Total TCDD	ND	0.691			
Total PeCDD	ND	0.658			
Total HxCDD	ND	1.57			
Total HpCDD	2.62		4.18		
Total TCDF	ND	0.979			
Total PeCDF	ND	1.84			
Total HxCDF	ND	0.749			
Total HpCDF	ND	0.832			

Approved By: Martha M. Maier 24-Mar-2005 09:41

**INVALID**

**LEVEL IV**

Analyst: JMH

Project 25938


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ11  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazines

Date: 04/11/05  
 Reviewer's Signature  


<b>ACTION ITEMS</b>	
<b>1. Case Narrative Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
	Holding Times
	GC/MS Tune/Inst. Performance
	Calibrations
	Blanks
	Surrogates
	Matrix Spike/Dup LCS
	Field QC
	Internal Standard Performance
	Compound Identification and Quantitation
	System Performance

**COMMENTS\*** Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No: IOC2063, 2064  
Analysis: Hydrazines

**Table 1. Sample Identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE - TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 - FAX (714) 730-6462 - www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOC2063

**P.O. Number:** IOC2063

**Method Number:** 6315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941100

**Report Date:** March 30, 2005

**Sampling Date:** March 25, 2005

**Receiving Date:** March 28, 2005

**Extraction Date:** March 28, 2005

**Analysis Date:** March 29, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Dimethyl Hydrazine	
		Qual	Rev	Qual	Rev	Qual	Rev
704871-MB	Method Blank	ND	*	ND	*	ND	*
941100	Outfall oil Grab IOC2063-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*pm 4/4/05*

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

# LEVEL IV

Xuan Dang, Project Manager  
Environmental Services

Analytic Not Validated

## AMEC VALIDATED

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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## REPORT

**Client:** Del Mar Analytical  
17461 Dertian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michela Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2064  
**P.O. Number:** IOC2064  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101	Outfall Oil Composite IOC2064-01	ND	U	ND	U	ND	U
MDL		12		0.27		0.39	
PQL		5.0		5.0		1.0	

*PM 4/6/05*

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantification Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuqiang Dang, Project Manager  
Environmental Services

## AMEC VALIDATED

Analyte Not Validated

# LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711MT72  
Task Order 313150010  
SDG No. IOC1526, IOC1523


No. of Analyses 2

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Metals

Date: 04/05/05

Reviewer's Signature  


**ACTION ITEMS<sup>a</sup>**

1. Case Narrative  
Deficiencies

2. Out of Scope  
Analyses

3. Analyses Not  
Conducted

4. Missing Hardcopy  
Deliverables

5. Incorrect Hardcopy  
Deliverables

6. Deviations from  
Analysis Protocol, e.g.,

Holding Times  
GC/MS Tune/Inst.  
Performance

Calibrations  
Blanks

Surrogates  
Matrix Spike/Dup LCS

Field QC  
Internal Standard  
Performance

Compound Identification  
and Quantitation  
System Performance

Qualifications applied for:

1. Detects below the reporting limit

2. Positive and negative results in the method blanks and CCBs

3. Reporting limit check standard recovery outlier

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 05, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	ILM04
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. Duplicate samples were submitted for the samples in these SDGs; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals, and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The 0.2 ppb reporting limit check standard for antimony was not recovered; therefore nondetected antimony in both site samples (see section 2.4) was qualified as estimated, "UJ." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

Nickel were detected in method blank 5C19038 at 555 µg/L; therefore, nickel detected in both site samples was qualified as estimated, "UJ." Chromium was reported in a bracketing method blank at -0.35 µg/L; therefore, chromium detected in both site samples was qualified as estimated, "J."

Due to the high level of antimony found in the method blank, 1.25 µg/L, the reviewer raised the antimony MDLs to the level of interference, 1.3 µg/L and qualified the results as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and boron, barium, beryllium, , selenium, thallium, vanadium, antimony and lead were not spiked into the ICSAB solution. Aluminum was recovered below the control limit in all the ICSA and ICSAB analyses; however, as aluminum was found at a low level in the site sample, no qualifications were required. Manganese, cobalt copper, and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the boron ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferents and the other spiked analytes were within the control limits of 80-120%. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS samples were identified as 5C21088-BS1 and 5C19038-BS1 and the ICP LCS sample was identified as 5C19039-BS1. The mercury LCS sample was identified as 5C19029-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

MS/MSD analyses were performed on Outfall 011 Composite for boron only. The RPD was within the control limit of 20% and no qualifications were required.



## 2.8 MATRIX SPIKE

MS/MSD analyses were performed on Outfall 011 Composite for boron only. The recoveries were within the AMEC control limits of 75-125% and no qualifications were required. Method accuracy for the remaining analytes was evaluated based on LCS results.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

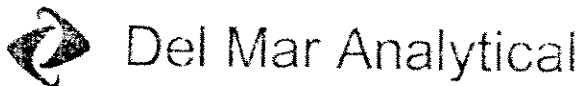
Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



17461 Derian Ave., Suite 100 Irvine, CA 92614 (949) 251-1020 FAX (949) 220-0111  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 970-4667 FAX (949) 570-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-8229  
 9800 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0340 FAX (480) 785-0211  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 795-0021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

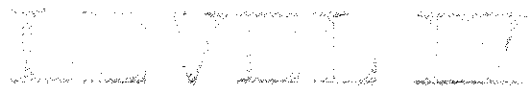
Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C19038	<del>0.18</del>	2.0	<del>0.34</del> 1.3	1	03/19/05	03/21/05	UJ B, J
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.4	1	03/19/05	03/21/05	B, A3
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	U
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.085	1	03/19/05	03/21/05	J B, J
Chromium	EPA 200.8	5C19038	0.26	2.0	1.0	1	03/19/05	03/21/05	J J
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.35	1	03/19/05	03/21/05	J J
Copper	EPA 200.8	5C19038	0.49	2.0	4.0	1	03/19/05	03/21/05	J J
Lead	EPA 200.8	5C19038	0.13	1.0	0.30	1	03/19/05	03/21/05	J J
Manganese	EPA 200.8	5C19038	0.44	1.0	65	1	03/19/05	03/21/05	B-1
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	U
Nickel	EPA 200.8	5C19038	0.15	2.0	2.5	1	03/19/05	03/21/05	UJ B
Selenium	EPA 200.8	5C19038	0.36	2.0	0.55	1	03/19/05	03/21/05	J J
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	U
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	U
Vanadium	EPA 200.8	5C19038	0.86	2.0	2.0	1	03/19/05	03/21/05	J J
Zinc	EPA 200.8	5C19038	3.1	20	12	1	03/19/05	03/21/05	J J

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05	Raw Qual
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05	Raw Qual
Iron	EPA 200.8	5C19038	0.0032	0.010	0.29	1	03/19/05	03/21/05	B-1

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C19038	<del>0.18</del> 1.3	2.0	<del>0.26</del> 1.3	1	03/19/05	03/21/05	UJ B, J B*
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.1	1	03/19/05	03/21/05	UJ B, J B*
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	U
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.079	1	03/19/05	03/21/05	J B, J DN
Chromium	EPA 200.8	5C19038	0.26	2.0	0.93	1	03/19/05	03/21/05	J J BN
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.33	1	03/19/05	03/21/05	J J DNG
Copper	EPA 200.8	5C19038	0.49	2.0	3.0	1	03/19/05	03/21/05	J J DNG
Lead	EPA 200.8	5C19038	0.13	1.0	0.39	1	03/19/05	03/21/05	J J DNG
Manganese	EPA 200.8	5C21088	0.44	1.0	56	1	03/21/05	03/21/05	J J DNG
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	U
Nickel	EPA 200.8	5C19038	0.15	2.0	1.9	1	03/19/05	03/21/05	UJ B, J B
Selenium	EPA 200.8	5C19038	0.36	2.0	0.43	1	03/19/05	03/21/05	J J DNG
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	U
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	U
Vanadium	EPA 200.8	5C19038	0.86	2.0	1.3	1	03/19/05	03/21/05	J J DNG
Zinc	EPA 200.8	5C19038	3.1	20	9.8	1	03/19/05	03/21/05	J J DNG

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05	Rev Qual   Qual Code
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05	
Iron	EPA 200.8	5C19038	0.0032	0.010	0.27	1	03/19/05	03/21/05	B-1

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP32  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 2

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method Pesticides/PCBs by Method 608

Date: April 11, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualifications assigned for surrogate recoveries below the QC limits. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
<b>COMMENTS<sup>b</sup></b>	_____
	_____
	_____
	_____
	_____

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.



\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOB1523, IOB1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1523, IOB1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB1523-01	water	608
Outfall 011 Composite	Outfall 011 Composite	IOB1526-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 03/02/05 associated with the pesticide analyses of the samples, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 02/11/05 associated with the PCB analyses of the samples which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing both the pesticide and PCB analyses of the samples, all %Ds were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5C19034-BLK1) was extracted and analyzed with these SDGs. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C19034-BS1/BSD1 for pesticides, -BS2/BSD2 for PCBs) was extracted and analyzed with these SDGs. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the both pesticide and PCB analysis were below the QC limits but  $\geq 10\%$  in sample Outfall 011 Composite. Notations on the laboratory extraction benchsheet and sample raw data indicated an emulsion in the extract of the

sample. Results were qualified as estimated, "UJ," for nondetects and "J," for detects. All surrogate recoveries for sample Outfall 011 Grab were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with these SDGs. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volume extracted. Results

DATA VALIDATION REPORT

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reported above the MDL but below the reporting limit were qualified as estimated, "J," by the laboratory. Results were reported in ug/L (ppb). No further qualifications were required.





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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	u
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	u
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	u
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	u
4,4'-DDT	EPA 608	5C19034	0.030	0.10	0.039	0.952	03/19/05	03/19/05	J u
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	u
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	u
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	u
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	u
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	u
Surrogate: Tetrachloro-m-xylene (35-115%)					57%				
Surrogate: Decachlorobiphenyl (45-120%)					66%				

val qual code  
 u  
 J u  
 J DNR

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	u
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05	
Surrogate: Decachlorobiphenyl (45-120%)					64 %				

Handwritten notes: "rel qual" and "qual code" with arrows pointing to the Data Qualifiers column.

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# Del Mar Analytical

17461 Deriar Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9699  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 795-0043 FAX (480) 786-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

## DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	UJ S
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	UJ S
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	UJ S
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	UJ S
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	UJ S
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	UJ S
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	UJ S
4,4'-DDT	EPA 608	5C19034	0.030	0.10	0.11	0.952	03/19/05	03/19/05	UJ S
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	UJ S
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	UJ S
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	UJ S
Surrogate: Tetrachloro-m-xylene (35-115%)									31 % ZX
Surrogate: Decachlorobiphenyl (45-120%)									39 % ZX

### AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	rel qual WT	
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05	rel qual S	
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05		
Surrogate: Decachlorobiphenyl (45-120%)					37 %					ZX

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA8

Task Order 313150010

SDG No. Multiple


No. of Analyses 10

Laboratory Eberline

Reviewer P. Meeks

Analysis/Method Radionuclides

Date: 05/17/05

Reviewer's Signature  


<b>ACTION ITEMS*</b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	<u>Qualifications were applied for detector efficiency outliers and exceeded holding times.</u>
Holding Times	_____
GC/MS Tune/Inst. Performance	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
	_____
<b>COMMENTS<sup>b</sup></b>	
<small>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</small>	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064  
Project Manager: P. Costa  
Matrix: Water/Solid  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 11  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: May 17, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab/Unfiltered	IOC1523-01	8349-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC1523-03	8349-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Substrate	IOC1523-04	8350-001	solid	901.1
Outfall 011 Composite	IOC1526-01	8344-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Filtered	IOC1562-01	8351-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOC1562-02	8351-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOC1562-03	8352-001	solid	901.1
Outfall 011 Grab/Unfiltered	IOC2063-01	8381-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC2063-03	8381-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Substrate	IOC2063-04	8382-001	solid	901.1
Outfall 011 Composite	IOC2064-01	8383-001	water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

All samples were received unpreserved, in glass containers. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As instructed on the transfer COCs, Eberline filtered and then preserved samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063). The gross alpha, gross beta, strontium, radium-226, radium-228, and cesium-137 results for the remaining samples were not qualified for lack of preservation, as the methods specifies a five-day holding time for unpreserved samples.

No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. None of the COCs requested radium-226, radium-228, or cesium analyses. These analyses were requested by M. Harper of Del Mar Analytical, as per instructions in a letter from the LARWQCB dated 3/22/05. The original and transfer COCs accounted for the samples and remaining analyses presented in this data package.

Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

All tritium and cesium analyses, and all analyses for samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063) were performed within 180 days of collection. The remaining analyses were performed beyond the five day holding time for unpreserved samples; therefore, the gross alpha, gross beta, radium-226, radium-228, and strontium-90 for samples Outfall 011 Grab Unfiltered (IOC1523), Outfall 011 Grab Substrate (IOC1523), Outfall 011 Composite (IOC1526), Outfall 003 Unfiltered, Outfall 003 Substrate, Outfall 011 Grab Unfiltered (IOC2063), Outfall 011 Substrate (IOC2063), and Outfall 011 Composite (IOC2064) were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. All gross alpha detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in June 2002. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228, which was calibrated in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 80% and the actinium chemical yields were greater than 65%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Blank spikes were analyzed in association with the samples in these SDGs. Two gross alpha, three radium-228, two radium-226, one strontium-90, and one tritium LCS recoveries were outside the 3-sigma limits control limits, but all had acceptable recoveries ranging from 72- 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 011 Composite (IOC1526), for gross alpha, gross beta, tritium, strontium, radium-226, and radium-228 on Outfall 011 Grab Unfiltered (IOC2063), and for cesium on Outfall 011 Substrate. All results were within the 3-sigma limits and no qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, and radium-226 on Outfall 011 Grab Unfiltered (IOC2063). The Outfall 011 Grab Unfiltered gross alpha (114%), gross beta (104%), tritium (96%), and radium-226 (104%) were outside the 3-sigma control limits; however, as the recoveries were deemed acceptable, no qualifications were required. The Outfall 011 Composite gross alpha recovery outside the 3-sigma limits; however, as the 82% recovery was deemed acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>9349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	See Qual	Qual Code
Outfall Oil Grab Unfiltered IOC1523-01	8349-001	03/18/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39	UJ UJ UJ UJ UJ UJ UJ	R, H ↓ H H R	
				Gross Beta	2.09 ± 1.3	pCi/L	1.94			
				Ra228	0.453 ± 0.25	pCi/L	0.611			
				H3	-16.2 ± 98	pCi/L	166			
				Ra226	0.084 ± 0.020	pCi/L	0.023			
				Sr90	-0.108 ± 0.25	pCi/L	0.508			
Outfall Oil Grab Filtered IOC1523-03	8349-002	03/18/05	04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28	UJ UJ UJ UJ	R	
				Gross Beta	3.37 ± 1.3	pCi/L	1.79			
				H3	-63.2 ± 96	pCi/L	166			
				Sr90	0.029 ± 0.29	pCi/L	0.588			

AM 5/17/05

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/17/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	
IOC1523-01	8349-001	Outfall Oil Grab Unfiltered		03/18/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39
		04/02/05	Gross Beta	2.09 ± 1.3	pCi/L	1.94			
		04/22/05	Ra-228	0.453 ± 0.25	pCi/L	0.611			
		04/07/05	Tritium	18.2 ± 98	pCi/L	166			
		05/06/05	Ra-226	0.084 ± 0.020	pCi/L	0.023			
		04/05/05	Sr-90	-0.108 ± 0.25	pCi/L	0.508			
		04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28			
IOC1523-03	8349-002	Outfall Oil Grab Filtered		03/18/05	04/02/05	Gross Alpha	0.626 ± 0.83	pCi/L	1.28
		04/02/05	Gross Beta	3.37 ± 1.3	pCi/L	1.79			
		06/08/05	Ra-228	0.340 ± 0.18	pCi/L	0.450			
		04/07/05	Tritium	-63.2 ± 96	pCi/L	166			
		06/09/05	Ra-226	0.392 ± 0.44	pCi/L	0.717			
		04/05/05	Sr-90	0.029 ± 0.29	pCi/L	0.588			

Rev	Qual	Qual Code
03	J	R, H
04	J	H
05	J	H
06	J	H
07	J	H
08	J	R

PM 8/1/05

**AMEC VALIDATED**

**LEVEL 1**

Certified by <u>[Signature]</u>
Report Date <u>06/21/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8350</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503160-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
		<u>Outfall Oil Grab Substrate</u>						
IOC1523-04	8350-001		03/18/05	04/11/05	Cs137 (G)	U	pCi/Smpl	9.67

Rev	Qual
Qual	Code
us	N

Am 5/17/05  
 Eric 8/6/05

AMEC VALIDATED  
 LEVEL IV

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Report Date <u>05/04/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MOA
<u>Sample ID</u>	<u>Sample ID</u>						
Outfall on Composite IOC1526	8344-001	03/18/05	04/02/05	GrossAlpha	0.305 ± 0.81	pCi/L	1.20
			04/02/05	Gross Beta	1.96 ± 1.1	pCi/L	1.80
			04/22/05	Ra228	0.359 ± 0.23	pCi/L	0.576
			04/07/05	H3	-31.0 ± 98	pCi/L	166
			05/06/05	Ra226	0.063 ± 0.020	pCi/L	0.024
			04/05/05	Sr90	0.032 ± 0.22	pCi/L	0.442

Am 5/17/05

Per Qual  
Qual Code  
SHS  
SHS  
SHS  
R, H  
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H  
H

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Report Date <u>05/10/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG 8351	Client DEL MAR ANAL
Work Order R503161-01	Contract PROJECT# IOC1562
Received Date 03/22/05	Matrix WATER

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 Filtered IOC1562-01	8351-001	03/19/05	04/08/05	GrossAlpha	8.96 ± 3.3	pCi/L	2.54	
				Gross Beta	18.0 ± 3.1	pCi/L	3.73	
				Ra228	0.448 ± 0.53	pCi/L	0.961	
				H3	-43.7 ± 96	pCi/L	164	
				Ra226	0.091 ± 0.026	pCi/L	0.034	
				Sr90	5.49 ± 0.58	pCi/L	0.445	
Outfall 003 Unfiltered IOC1562-02	8351-002	03/19/05	04/06/05	GrossAlpha	5.03 ± 3.0	pCi/L	3.27	
				Gross Beta	19.0 ± 3.7	pCi/L	4.56	
				Ra228	0.386 ± 0.56	pCi/L	0.897	
				H3	-34.3 ± 99	pCi/L	168	
				Ra226	0.145 ± 0.028	pCi/L	0.031	
				Sr90	5.49 ± 0.56	pCi/L	0.404	

*Rev Qual* | *Qual Code*  
 H | R  
 C |  
 C |  
 H | R, H  
 H | H  
 H | H  
 ← H ←

AM 3/17/05

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Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R50162-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
Outfall 003 Substrate IOC1562-03	8352-001	03/19/05	04/25/05	Cs137 (G)	U	pCi/Smpl	5.55

Rev Qual	Qual Code
UT	H

pm 5/17/05  
for 8352

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Report Date <u>05/03/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analvzed	Nuclide	Results ± 2σ	Units	MDA
<u>Outfall Oil Grab Unfiltered</u>							
IOC2063-01	8381-001	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
			04/18/05	Sr90	-0.052 ± 0.37	pCi/L	0.658
<u>Outfall Oil Grab Filtered</u>							
IOC2063-03	8381-002	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
			04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535

Raw Qual	Qual Code
S	R, H
F	H
S	H
S	H
S	H
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pm 5/17/05

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Report Date <u>05/11/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8382</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503231-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>SOLID</u>

Client	Lab	Collected	Analyzed	Nuclide	Results $\pm 2\sigma$	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
Outfall 011	Substrate						
10C2063-04	8382-001	03/25/05	04/19/05	Cs137 (G)	U	pCi/G	19.4

Rev	Qual
Qual	Code
U	

Am 8/3/05

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Report Date <u>07/06/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS03212-01</u>	Contract <u>PROJECT# IOC2064</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
Outfall 011 Composite	8383-001	03/25/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
IOC2064-01			04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
			05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
			04/21/05	H3	83.4 ± 170	pCi/L	278
			04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
			04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

Am 5/17/05

Dev	Qual	Qual
	Code	Code
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	S	H
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Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV50  
 Task Order 313150010  
 SDG No. IOC1523, 1526  
 No. of Analyses 2

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

Date: April 10, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications required for calibration and LCS outliers and for blank contamination.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	





# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 10, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	water	625
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 03/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds listed on the sample summary form, except for the  $r^2$  values for benzoic acid and 4,6-dinitro-2-methylphenol. Benzoic acid and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the samples of these SDGs. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 03/22/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$  except for the %D for 3,3'-dichlorobenzidine. 3,3'-Dichlorobenzidine was qualified as an estimated nondetect, "UJ," in the samples of these SDGs. A representative number of RRFs,  $r^2$  values, and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

### 2.4 BLANKS

One method blank (5C20022-BLK1) was extracted and analyzed with this SDG. Butylbenzylphthalate and diethylphthalate were reported in the method blank and were qualified as nondetects, "U," in the samples of these SDGs. Review of the raw data indicated no reportable false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C20022-BS1/5C20022-BSD1) was extracted and analyzed with this SDG. All percent recoveries and RPDs were within the laboratory QC limits, except for benzidine which was not recovered in either the BS or BSD. Benzidine was rejected, "R," in the samples of these SDGs. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	U	
Acenaphthylene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	U	
Aniline	EPA 625	5C20022	5.8	20	ND	1.94	03/20/05	03/22/05	U	
Anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	U	
Benzidine	EPA 625	5C20022	4.8	10	ND	1.94	03/20/05	03/22/05	R	L2 L
Benzoic acid	EPA 625	5C20022	7.4	40	ND	1.94	03/20/05	03/22/05	U	
Benzo(a)anthracene	EPA 625	5C20022	0.076	10	ND	1.94	03/20/05	03/22/05	J	C
Benzo(a)pyrene	EPA 625	5C20022	0.28	4.0	ND	1.94	03/20/05	03/22/05	U	
Benzo(b)fluoranthene	EPA 625	5C20022	0.10	4.0	ND	1.94	03/20/05	03/22/05	U	
Benzo(g,h,i)perylene	EPA 625	5C20022	0.12	10	ND	1.94	03/20/05	03/22/05	U	
Benzo(k)fluoranthene	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	U	
Benzyl alcohol	EPA 625	5C20022	0.42	10	ND	1.94	03/20/05	03/22/05	U	
Bis(2-chloroethoxy)methane	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	U	
Bis(2-chloroethyl)ether	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	U	
Bis(2-chloroisopropyl)ether	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	U	
Bis(2-ethylhexyl)phthalate	EPA 625	5C20022	2.2	10	ND	1.94	03/20/05	03/22/05	U	
4-Bromophenyl phenyl ether	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	U	
Butyl benzyl phthalate	EPA 625	5C20022	0.68	10	ND	1.94	03/20/05	03/22/05	U	B, J B
4-Chloroaniline	EPA 625	5C20022	0.40	4.0	ND	1.94	03/20/05	03/22/05	U	
2-Chloronaphthalene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05	U	
4-Chloro-3-methylphenol	EPA 625	5C20022	0.68	4.0	ND	1.94	03/20/05	03/22/05	U	
4-Chlorophenyl phenyl ether	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	U	
2-Chlorophenol	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	U	
Chrysene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	U	
Dibenz(a,h)anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	U	
Dibenzofuran	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05	U	
Di-n-butyl phthalate	EPA 625	5C20022	0.52	4.0	ND	1.94	03/20/05	03/22/05	U	
1,2-Dichlorobenzene	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	U	
1,3-Dichlorobenzene	EPA 625	5C20022	0.26	1.0	ND	1.94	03/20/05	03/22/05	U	
1,4-Dichlorobenzene	EPA 625	5C20022	0.10	1.0	ND	1.94	03/20/05	03/22/05	U	
3,3-Dichlorobenzidine	EPA 625	5C20022	1.9	10	ND	1.94	03/20/05	03/22/05	U	
2,4-Dichlorophenol	EPA 625	5C20022	0.42	4.0	ND	1.94	03/20/05	03/22/05	U	
Diethyl phthalate	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	U	
2,4-Dimethylphenol	EPA 625	5C20022	0.62	4.0	ND	1.94	03/20/05	03/22/05	U	
Dimethyl phthalate	EPA 625	5C20022	0.16	1.0	ND	1.94	03/20/05	03/22/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5C20022	0.76	10	ND	1.94	03/20/05	03/22/05	U	
2,4-Dinitrophenol	EPA 625	5C20022	5.4	10	ND	1.94	03/20/05	03/22/05	U	
2,4-Dinitrotoluene	EPA 625	5C20022	0.46	10	ND	1.94	03/20/05	03/22/05	U	
2,6-Dinitrotoluene	EPA 625	5C20022	0.48	10	ND	1.94	03/20/05	03/22/05	U	
Di-n-octyl phthalate	EPA 625	5C20022	0.34	10	ND	1.94	03/20/05	03/22/05	U	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C20022	0.17	2.0	ND	1.94	03/20/05	03/22/05	U	

DRAFT REPORT MP 4-10-05  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# Del Mar Analytical

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 9630 South 51st St. Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2523 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.94	03/20/05	03/22/05	U
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05	
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.94	03/20/05	03/22/05	
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.94	03/20/05	03/22/05	
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.94	03/20/05	03/22/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.94	03/20/05	03/22/05	
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.94	03/20/05	03/22/05	
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.94	03/20/05	03/22/05	
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.94	03/20/05	03/22/05	
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05	
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.94	03/20/05	03/22/05	
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.94	03/20/05	03/22/05	
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.94	03/20/05	03/22/05	
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.94	03/20/05	03/22/05	
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.94	03/20/05	03/22/05	
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.94	03/20/05	03/22/05	
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.94	03/20/05	03/22/05	
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.94	03/20/05	03/22/05	
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.94	03/20/05	03/22/05	
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.94	03/20/05	03/22/05	
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05	
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.94	03/20/05	03/22/05	
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05	
Surrogate: 2-Fluorophenol (30-120%)									71 %
Surrogate: Phenol-d6 (35-120%)									72 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									87 %
Surrogate: Nitrobenzene-d5 (45-120%)									71 %
Surrogate: 2-Fluorobiphenyl (45-120%)									76 %
Surrogate: Terphenyl-d14 (45-120%)									82 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									ED QUAL	RL-3 CODE
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5C20022	0.20	1.0	ND	1.9	03/20/05	03/22/05	U	
Acenaphthylene	EPA 625	5C20022	0.20	1.0	ND	1.9	03/20/05	03/22/05	U	
Aniline	EPA 625	5C20022	5.8	20	ND	1.9	03/20/05	03/22/05	U	
Anthracene	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	U	
Benzidine	EPA 625	5C20022	4.8	10	ND	1.9	03/20/05	03/22/05	R	L2 L
Benzoic acid	EPA 625	5C20022	7.4	40	ND	1.9	03/20/05	03/22/05	U	C
Benzo(a)anthracene	EPA 625	5C20022	0.076	10	ND	1.9	03/20/05	03/22/05	U	
Benzo(a)pyrene	EPA 625	5C20022	0.28	4.0	ND	1.9	03/20/05	03/22/05	U	
Benzo(b)fluoranthene	EPA 625	5C20022	0.10	4.0	ND	1.9	03/20/05	03/22/05	U	
Benzo(g,h,i)perylene	EPA 625	5C20022	0.12	10	ND	1.9	03/20/05	03/22/05	U	
Benzo(k)fluoranthene	EPA 625	5C20022	0.11	1.0	ND	1.9	03/20/05	03/22/05	U	
Benzyl alcohol	EPA 625	5C20022	0.42	10	ND	1.9	03/20/05	03/22/05	U	
Bis(2-chloroethoxy)methane	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	U	
Bis(2-chloroethyl)ether	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	U	
Bis(2-chloroisopropyl)ether	EPA 625	5C20022	0.22	1.0	ND	1.9	03/20/05	03/22/05	U	
Bis(2-ethylhexyl)phthalate	EPA 625	5C20022	2.2	10	ND	1.9	03/20/05	03/22/05	U	
4-Bromophenyl phenyl ether	EPA 625	5C20022	0.24	2.0	ND	1.9	03/20/05	03/22/05	U	
Butyl benzyl phthalate	EPA 625	5C20022	0.68	10	ND	1.9	03/20/05	03/22/05	U	B, J B
4-Chloroaniline	EPA 625	5C20022	0.40	4.0	ND	1.9	03/20/05	03/22/05	U	
2-Chloronaphthalene	EPA 625	5C20022	0.12	1.0	ND	1.9	03/20/05	03/22/05	U	
4-Chloro-3-methylphenol	EPA 625	5C20022	0.68	4.0	ND	1.9	03/20/05	03/22/05	U	
4-Chlorophenyl phenyl ether	EPA 625	5C20022	0.11	1.0	ND	1.9	03/20/05	03/22/05	U	
2-Chlorophenol	EPA 625	5C20022	0.24	2.0	ND	1.9	03/20/05	03/22/05	U	
Chrysene	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	U	
Dibenz(a,h)anthracene	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	U	
Dibenzofuran	EPA 625	5C20022	0.15	1.0	ND	1.9	03/20/05	03/22/05	U	
Di-n-butyl phthalate	EPA 625	5C20022	0.52	4.0	ND	1.9	03/20/05	03/22/05	U	
1,2-Dichlorobenzene	EPA 625	5C20022	0.22	1.0	ND	1.9	03/20/05	03/22/05	U	
1,3-Dichlorobenzene	EPA 625	5C20022	0.26	1.0	ND	1.9	03/20/05	03/22/05	U	
1,4-Dichlorobenzene	EPA 625	5C20022	0.10	1.0	ND	1.9	03/20/05	03/22/05	U	
3,3-Dichlorobenzidine	EPA 625	5C20022	1.9	10	ND	1.9	03/20/05	03/22/05	U	C
2,4-Dichlorophenol	EPA 625	5C20022	0.42	4.0	ND	1.9	03/20/05	03/22/05	U	
Diethyl phthalate	EPA 625	5C20022	0.24	2.0	ND	1.9	03/20/05	03/22/05	U	B, J B
2,4-Dimethylphenol	EPA 625	5C20022	0.62	4.0	ND	1.9	03/20/05	03/22/05	U	
Dimethyl phthalate	EPA 625	5C20022	0.16	1.0	ND	1.9	03/20/05	03/22/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5C20022	0.76	10	ND	1.9	03/20/05	03/22/05	U	C
2,4-Dinitrophenol	EPA 625	5C20022	5.4	10	ND	1.9	03/20/05	03/22/05	U	N-1
2,4-Dinitrotoluene	EPA 625	5C20022	0.46	10	ND	1.9	03/20/05	03/22/05	U	
2,6-Dinitrotoluene	EPA 625	5C20022	0.48	10	ND	1.9	03/20/05	03/22/05	U	
Di-n-octyl phthalate	EPA 625	5C20022	0.34	10	ND	1.9	03/20/05	03/22/05	U	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C20022	0.17	2.0	ND	1.9	03/20/05	03/22/05	U	

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LEVEL IV



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.9	03/20/05	03/22/05	REV QUAL
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.9	03/20/05	03/22/05	REV QUAL
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.9	03/20/05	03/22/05	REV QUAL
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.9	03/20/05	03/22/05	REV QUAL
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.9	03/20/05	03/22/05	REV QUAL
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.9	03/20/05	03/22/05	REV QUAL
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.9	03/20/05	03/22/05	REV QUAL
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.9	03/20/05	03/22/05	REV QUAL
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	REV QUAL
Surrogate: 2-Fluorophenol (30-120%)					68 %				
Surrogate: Phenol-d6 (35-120%)					67 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					79 %				
Surrogate: Nitrobenzene-d5 (45-120%)					68 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					70 %				
Surrogate: Terphenyl-d14 (45-120%)					78 %				

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LEVEL IV

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF55  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 2

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method EFH by Method 8015B

Date: April 11, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	<hr/> <hr/>
2. Out of Scope Analyses	<hr/> <hr/>
3. Analyses Not Conducted	<hr/> <hr/>
4. Missing Hardcopy Deliverables	<hr/> <hr/>
5. Incorrect Hardcopy Deliverables	<hr/> <hr/>
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<hr/> <hr/>	
<hr/>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	8015B/EFH
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	8015B/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analyses was analyzed on 03/11/05. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5C21048-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C21048-BS1/BSD1) was extracted and analyzed with the samples in these SDGs. The laboratory reported recoveries of alkane range C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound n-octacosane. The sample surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses performed on the samples of these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by Method 8015B. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in mg/L (ppm). No qualifications were required.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont. Reporting Units: mg/l									
EFH (C13 - C22) Surrogate: n-Octacosane (40-125%)	EPA 8015B	5C21048	0.082	0.50	ND 91%	0.957	03/21/05	03/21/05	U

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C21048	0.082	0.50	ND	0.943	03/21/05	03/21/05	u
Surrogate: n-Octacosane (40-125%)					81 %				

very good  
 good

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 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF57  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 3

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method GRO by Method 8015M

Date: April 11, 2005  
 Reviewer's Signature L. Calvin

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: Total Petroleum Hydrocarbons: Purgeable

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. Mellvaine  
Matrix: Water  
Analysis: TPH-Purgable  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC1526-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COCs indicated the samples were properly preserved, with the exception of the trip blank, which was an unpreserved aliquot. Information regarding lack of headspace in the VOA vials was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water site samples were analyzed within 14 days of collection, and the unpreserved sample (Trip Blank) was analyzed within seven days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/26/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5C21006-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5C21006-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound 4-bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140%. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on site sample Outfall 011 Composite. Recoveries for GRO (C4-C12) were within the laboratory QC limits of 60-140%, and the RPD was within the QC limit of  $\leq 20\%$ . No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011 Composite. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. Sample Outfall 011 Grab had no associated trip blank analysis. There were no field blank or equipment rinsate samples associated with these SDGs. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in units of  $\mu\text{g/L}$  (ppb). No qualifications were required.





# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u
Surrogate: 4-BFB (FID) (65-140%)									
					80 %				

*rel qual lead*

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u	new qual code
Surrogate: 4-BFB (FID) (65-140%)					81 %					
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u	P1
Surrogate: 4-BFB (FID) (65-140%)					76 %					

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO85  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 4

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method Volatiles by 624

Date April 8, 2005  
 Reviewer's Signature K. Shadowlight

<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative</b>	
<b>Deficiencies</b>	
<b>2. Out of Scope</b>	
<b>Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy</b>	
<b>Deliverables</b>	
<b>5. Incorrect Hardcopy</b>	
<b>Deliverables</b>	
<b>6. Deviations from Analysis</b>	Qualifications were assigned for the following:
GC/MS Tune/Inst. Perform	* Average RRF <0.05 in the initial calibration
Calibrations	* RRF <0.05 in the continuing calibrations
Blanks	* Continuing calibration %D outliers
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 8, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624, SW846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	624
Trip Blank	Trip Blank	IOC1523-02	water	624
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	624
Trip Blank	Trip Blank	IOC1526-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in EPA Method 624, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 03/04/05 and 03/16/05 (trichlorotrifluoroethane, acrolein, and acrylonitrile only) were associated with these SDGs. The average RRF for acrolein was  $<0.05$  in the initial calibration dated 03/16/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The average RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for all applicable target compounds. Two continuing calibrations dated 03/19/05 and 03/20/05 were associated with the sample analyses in these SDGs. The %Ds for bromomethane, chloromethane, chloroethane, 1,1-dichloroethane, 1,2-dichloroethane, and trichlorofluoromethane exceeded 20% in the continuing calibration dated 03/19/05; therefore, the nondetect results for the aforementioned target compounds were qualified as estimated, "UJ," in sample Outfall 011 Grab. No qualifications were required for the Trip Blank. The RRF for acrolein was  $<0.05$  in the continuing calibration 03/20/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. A representative

number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blanks (5C20002-BLK1 and 5C19004-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spike (5C20002-BS1 and 5C19004-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed for these SDGs. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOC1523) and Trip Blank (IOC1526) were the trip blanks associated with this SDG. There were no target compounds detected above the MDLs in the trip blanks. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in these SDGs were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane. The laboratory was calibrated for target compound 1,2-dichloro-1,1,2-trifluoroethane; however, the calibration was not used for identification. Target compound cyclohexane was not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

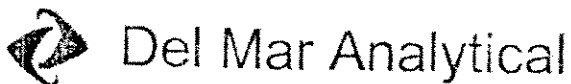
Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not utilized for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for these compounds. Nondetects for both compounds were qualified as estimated, "UJ," in sample Outfall 011 Grab and 011 Composite. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for these SDGs. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	U
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	U
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	U
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	U
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	U
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	U
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	U
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	U
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	U
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	U
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	U
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	U
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	U
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	U
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	U
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	U
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	U
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	U
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	U
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	U
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	U
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	U
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	U
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	U
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	U
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	U
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	U
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	U
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	U
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

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**LEVEL IV**

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	u
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	
Surrogate: Dibromofluoromethane (80-120%)					111 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

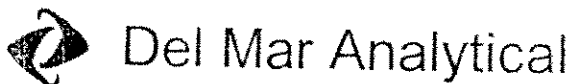
Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont. Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R Qual
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	R Qual
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U Qual
Surrogate: Dibromofluoromethane (80-120%)					115 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				
Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water) Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R Qual
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	U Qual
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U Qual
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U S
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U S
<b>Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0651  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
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Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.  
 Reporting Units: ug/l

Benzene	EPA 624	5C20002	0.28	1.0	ND	1	03/20/05	03/20/05	
Bromodichloromethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Bromoform	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
Bromomethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Carbon tetrachloride	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
Chlorobenzene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
Chloroethane	EPA 624	5C20002	0.33	5.0	ND	1	03/20/05	03/20/05	
Chloroform	EPA 624	5C20002	0.33	2.0	ND	1	03/20/05	03/20/05	
Chloromethane	EPA 624	5C20002	0.30	5.0	ND	1	03/20/05	03/20/05	
Dibromochloromethane	EPA 624	5C20002	0.28	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichlorobenzene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
1,3-Dichlorobenzene	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
1,4-Dichlorobenzene	EPA 624	5C20002	0.37	2.0	ND	1	03/20/05	03/20/05	
1,1-Dichloroethane	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloroethane	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
1,1-Dichloroethene	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
trans-1,2-Dichloroethene	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloropropane	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
cis-1,3-Dichloropropene	EPA 624	5C20002	0.22	2.0	ND	1	03/20/05	03/20/05	
trans-1,3-Dichloropropene	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Ethylbenzene	EPA 624	5C20002	0.25	2.0	ND	1	03/20/05	03/20/05	
Methylene chloride	EPA 624	5C20002	0.48	5.0	ND	1	03/20/05	03/20/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Tetrachloroethene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
Toluene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
1,1,1-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
1,1,2-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Trichloroethene	EPA 624	5C20002	0.26	2.0	ND	1	03/20/05	03/20/05	
Trichlorofluoromethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Vinyl chloride	EPA 624	5C20002	0.26	0.50	ND	1	03/20/05	03/20/05	
Xylenes, Total	EPA 624	5C20002	0.52	4.0	ND	1	03/20/05	03/20/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C20002	1.2	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)					116 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

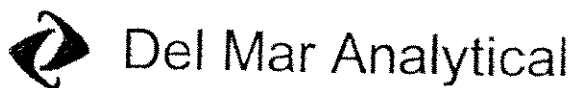
Handwritten notes: "New Pur", "Pur", "L", and a vertical arrow pointing downwards.

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C20002	0.28	1.0	ND	1	03/20/05	03/20/05	ll
Bromodichloromethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Bromoform	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
Bromomethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Carbon tetrachloride	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
Chlorobenzene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
Chloroethane	EPA 624	5C20002	0.33	5.0	ND	1	03/20/05	03/20/05	
Chloroform	EPA 624	5C20002	0.33	2.0	ND	1	03/20/05	03/20/05	
Chloromethane	EPA 624	5C20002	0.30	5.0	ND	1	03/20/05	03/20/05	
Dibromochloromethane	EPA 624	5C20002	0.28	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichlorobenzene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
1,3-Dichlorobenzene	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
1,4-Dichlorobenzene	EPA 624	5C20002	0.37	2.0	ND	1	03/20/05	03/20/05	
1,1-Dichloroethane	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloroethane	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
1,1-Dichloroethene	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
trans-1,2-Dichloroethene	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloropropane	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
cis-1,3-Dichloropropene	EPA 624	5C20002	0.22	2.0	ND	1	03/20/05	03/20/05	
trans-1,3-Dichloropropene	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Ethylbenzene	EPA 624	5C20002	0.25	2.0	ND	1	03/20/05	03/20/05	
Methylene chloride	EPA 624	5C20002	0.48	5.0	ND	1	03/20/05	03/20/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Tetrachloroethene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
Toluene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
1,1,1-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
1,1,2-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Trichloroethene	EPA 624	5C20002	0.26	2.0	ND	1	03/20/05	03/20/05	
Trichlorofluoromethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Vinyl chloride	EPA 624	5C20002	0.26	0.50	ND	1	03/20/05	03/20/05	
Xylenes, Total	EPA 624	5C20002	0.52	4.0	ND	1	03/20/05	03/20/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C20002	1.2	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)					112 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	U
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U
Surrogate: Dibromofluoromethane (80-120%)					116 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Rev Qual | Pur Qual  
 R | R  
 U | U

UNCLASSIFIED

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	uS
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	uS
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	u
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	u

Rev  
 2491  
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 \*11  
 \*11

### ANALYSIS VALIDATED

## LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

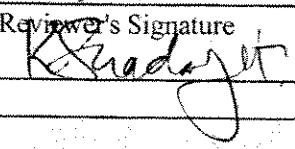
The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711V088  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method 1,4-Dioxane by 8260

Date April 8, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 2  
No. of Recanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 8, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No. Del Mar, CA	Lab No. Del Mar, AZ	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	POC0620-01	water	8260B
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	POC0614-01	water	8260B

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were subcontracted to Del Mar (Phoenix) for 1,4-dioxane analysis. The samples were properly preserved. The COCs and transfer COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were signed by field and laboratory personnel. As the samples were couriered directly to the laboratory from the field, custody seals were not required. According to the transfer COCs, there were no custody seals present on the coolers received by Del Mar Analytical in Arizona. The EPA IDs were added to the sample result summary reports by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the samples were analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 03/19/05, was associated with these SDGs. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the  $r^2$  value was  $\geq 0.995$ . The laboratory reported the continuing calibration and the blank spike (P5C2203-BS1) from the same analysis. As the analysis cannot be reported as both a CCV and a blank spike, the reviewer reported P5C2203-BS1 as the continuing calibration. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The  $r^2$  value and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

One water method blank (P5C2203-BLK1) was associated with these SDGs. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5C2203-BS1/BS1D) with these SDGs; however, P5C2203-BS1 was reported as the CCV (see section 2.3); therefore, P5C2203-BS1D was evaluated as a single blank spike. The recovery for 1,4-dioxane was within the QC limits of 70-130%. The recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recoveries for the samples were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The samples in these SDGs had no associated trip blank. No qualifications were required.

#### 2.8.1.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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 3520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 766-3621

Del Mar Analytical - Irvine  
 17461 Derian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1523

Report Number: POC0620

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0620-01 (IOC1523-01 - Water) <i>cut fall 011 Grab</i>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C0203	0.49	1.0	ND	1	03/22/05	03/22/05	<i>Key Qual</i>
Surrogate: Dibromofluoromethane (80-125%)					112 %				<i>cc</i>

**AMEC VALIDATED**  
*Level III*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

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Del Mar Analytical - Irvine  
 17461 Darian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1526

Report Number: POC0614

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0614-01 (IOC1526-01 - Water) <i>at all oil composite</i>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND 117%	1	03/22/05	03/22/05	<i>u</i>
<i>Surrogate: Dibromofluoromethane (80-125%)</i>									

**AMEC VALIDATED**

*Level IV*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

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POC0614 <Page 2 of 5>

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1646



CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711WC120

Task Order 313150010

SDG No. IOC1523/1526

No. of Analyses 2

Laboratory Del Mar Analytical

Date: 04/04/05

Reviewer L. Jarusewic

Reviewer's Signature

Analysis/Method General Minerals

ACTION ITEMS <sup>a</sup>	
1.	<b>Case Narrative Deficiencies</b>
2.	<b>Out of Scope Analyses</b>
3.	<b>Analyses Not Conducted</b>
4.	<b>Missing Hardcopy Deliverables</b>
5.	<b>Incorrect Hardcopy Deliverables</b>
6.	<b>Deviations from Analysis Protocol, e.g.,</b>  Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance
	Qualifications applied for:
	1) Detects below the reporting limit
	2) Method blank detects and negative results
	3) Irreproducible cyanide initial calibration curve
	4) Change of MDL to level of interference by reviewer
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*\*

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOB1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 4, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 218.6, 120.1, 160.2, 160.5, and 180.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	Water	General Minerals
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for all analyses present in these SDGs except fluoride for Outfall 011-Composite. The fluoride analysis was requested in a memo from MWH personnel dated 03/21/05 Outfall 011-Composite. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for surfactants, turbidity, nitrate/nitrite, biological oxygen demand, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ , except for cyanide. The reviewer could not reproduce the cyanide initial calibration curve. The  $r^2$  obtained by the reviewer was marginally less than 0.995; therefore, nondetected cyanide in samples Outfall 011-Grab and Outfall 011-Composite were qualified as estimated, "UJ." Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total suspended solids, or total settleable solids. The total cyanide reporting limit check standard was recovered within the control limits of 70-130%. No further qualifications were required.

### 2.3 BLANKS

Turbidity was detected in method blank 5C19032-BLK1 at 0.060 NTU; however, the method blank result was insufficient to qualify the Outfall 011-Grab and Outfall 011-Composite results. Fluoride was



detected in the method blank 5C18104-BLK1 at 0.103 mg/L; therefore, fluoride detected in Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." Cyanide was reported in method blank 5C21083-BLK1 at -0.0062 mg/L; therefore, nondetected cyanide in samples Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No further qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample and laboratory control sample duplicate (BOD, oil and grease, and total recoverable hydrocarbons only) recoveries and RPDs were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

A laboratory duplicate analysis was performed on sample Outfall 011-Grab for residual chlorine. The RPD was within the control limits of  $\leq 20\%$  and no qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Cyanide in Outfall 011-Grab and Outfall 011-Composite was reported in the raw data at -0.0053 and -0.0064 mg/L, respectively, and the method blank associated with Outfall 011-Grab and Outfall 011-Composite was reported at -0.0062 mg/L. Due to these negative results, the reviewer raised the MDL and the reporting limit on the Form Is to the level of interference. BOD and surfactant in Outfall 011-Grab and surfactant in Outfall 011-Composite detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	U

REV QUAL  
 QUAL CODE

# AMEC VALIDATED

# LEVEL IV

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	ND	1	03/22/05	03/22/05	u
Biochemical Oxygen Demand	EPA 405.1	5C18070	0.59	2.0	1.6	1	03/18/05	03/23/05	J
Chloride	EPA 300.0	5C18104	0.26	0.50	15	1	03/18/05	03/18/05	J
Chromium VI	EPA 218.6	5C18067	0.0010	0.0010	ND	1	03/18/05	03/18/05	u
Total Cyanide	EPA 335.2	5C21083	0.0022	0.0022	ND	1	03/21/05	03/21/05	u
Fluoride	EPA 300.0	5C18104	0.10	0.50	0.36	1	03/18/05	03/18/05	u
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/18/05	u
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	u
Residual Chlorine- Sulfate	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	u
Surfactants (MBAS)	EPA 300.0	5C18104	0.18	0.50	42	1	03/18/05	03/18/05	u
Total Dissolved Solids	SM5540-C	5C18107	0.044	0.10	0.080	1	03/18/05	03/18/05	J
Total Organic Carbon	SM2540C	5C21073	10	10	220	1	03/21/05	03/21/05	J
Total Suspended Solids	EPA 415.1	5C22101	0.25	1.0	13	1	03/22/05	03/22/05	u
	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	u

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**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	U

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C19032	0.040	1.0	3.1	1	03/19/05	03/19/05	REV QUAL CODE

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	360	1	03/21/05	03/21/05	REV QUAL QUAL CODE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	U

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	0.56	1	03/22/05	03/22/05	REV UML
Biochemical Oxygen Demand	EPA 405.1	5C18070	0.59	2.0	3.8	1	03/18/05	03/23/05	UML
Chloride	EPA 300.0	5C18104	0.26	0.50	15	1	03/18/05	03/19/05	UML
Chromium VI	EPA 218.6	5C18067	0.00010	0.0010	ND	1	03/18/05	03/18/05	U
Total Cyanide	EPA 335.2	5C21083	<del>0.002</del>	<del>0.002</del>	ND	1	03/21/05	03/21/05	U
Fluoride	EPA 300.0	5C18104	0.10	0.50	0.36	1	03/18/05	03/19/05	U
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/19/05	U
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	U
Residual Chlorine	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	U
Sulfate	EPA 300.0	5C18104	0.18	0.50	41	1	03/18/05	03/19/05	U
Surfactants (MBAS)	SM5540-C	5C18107	0.044	0.10	0.064	1	03/18/05	03/18/05	U
Total Dissolved Solids	SM2540C	5C21073	10	10	230	1	03/21/05	03/21/05	U
Total Organic Carbon	EPA 415.1	5C22101	0.25	1.0	13	1	03/22/05	03/22/05	U
Total Suspended Solids	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	U

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date	Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ml/vhr									
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	u

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Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: NTU										
Turbidity	EPA 180.1	5C19032	0.040	1.0	2.4	1	03/19/05	03/19/05		

### AMEC VALIDATED

### LEVEL IV

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	350	1	03/21/05	03/21/05	REV QUAL

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# LEVEL IV

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC123  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 2

Laboratory Del Mar Analytical

Date: 04/06/05

Reviewer L. Jarusewic

Reviewer's Signature *L. Jarusewic*

Analysis/Method Perchlorate

**ACTION ITEMS<sup>a</sup>**

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS<sup>b</sup>**      Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
S	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 6, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	Water	Perchlorate
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	Water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV, ICCS, and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	SC18121	0.80	4.0	ND	1	03/18/05	03/19/05	U

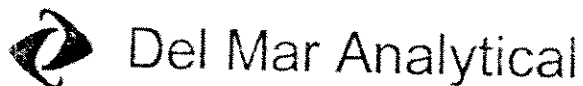
REV QUAL  
 DATE CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5C18121	0.80	4.0	ND	1	03/18/05	03/19/05	U

pol  
 QUAL  
 CODE

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 33**

Outfall 011, March 25, 2005

Del Mar Analytical Laboratory Report





### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/25/05  
Received: 03/25/05  
Issued: 04/13/05 16:23

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

#### CASE NARRATIVE

- SAMPLE RECEIPT:** Samples were received intact, at 2°C, on ice and with chain of custody documentation.
- HOLDING TIMES:** All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION:** Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA:** All analyses met method criteria, except as noted in the report with data qualifiers. The percent recovery for benzidine in the BS/BSD was below method acceptance limits. Benzidine is known to be a problematic compound and according to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor. All results reported for benzidine are potentially biased low and can be considered estimates only. Results for benzidine are reported with 'L2' qualifier. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported. The sample was then reanalyzed for 2,4-Dinitrophenol and the results are reported as an REI. Also, there was a low BSD recovery for the original batch for Oil & Grease and the lab re-extracted and re-analyzed the sample.
- COMMENTS:** Results that fall between the MDL and RL are 'J' flagged.
- SUBCONTRACTED:** Refer to the last page for specific subcontract laboratory information included in this report.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

LABORATORY ID	CLIENT ID	MATRIX
IOC2063-01	Outfall 011 Grab	Water
IOC2063-02	Trip Blank	Water
IOC2063-03	Outfall 011 Grab/filter	Water
IOC2063-04	Outfall 011-Grab/Substrate	Water

Reviewed By:

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

### CORRECTIVE ACTION REPORT

Department: Extractions  
Method: EPA 625  
QC Batch: 5C28041

Date: 03/31/2005  
Matrix: Water

#### Identification and Definition of Problem:

The percent recovery for benzidine in the LCS was below method acceptance limits.

#### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

#### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:



Dave Dawes

Date: 04/08/2005 03:42 PM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water)</b>									
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.952	03/26/05	03/29/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					95 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	
Surrogate: 4-BFB (FID) (65-140%)					104 %				
<b>Sample ID: IOC2063-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	
Surrogate: 4-BFB (FID) (65-140%)					103 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					108 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					101 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					94 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					108 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					100 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					92 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOC2063-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					92 %				

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
<b>Sample ID: IOC2063-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	
Aniline	EPA 625	5C28041	2.9	10	ND	0.971	03/28/05	03/31/05	
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	
Benzidine	EPA 625	5C28041	2.4	5.0	ND	0.971	03/28/05	03/31/05	L2
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.971	03/28/05	03/31/05	
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.971	03/28/05	03/31/05	
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.971	03/28/05	03/31/05	
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.971	03/28/05	03/31/05	
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.971	03/28/05	03/31/05	
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.971	03/28/05	03/31/05	
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.971	03/28/05	03/31/05	
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.971	03/28/05	03/31/05	
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.971	03/28/05	03/31/05	
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	
<b>Butyl benzyl phthalate</b>	EPA 625	5C28041	0.34	5.0	<b>0.68</b>	0.971	03/28/05	03/31/05	J
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.971	03/28/05	03/31/05	
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05	
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.971	03/28/05	03/31/05	
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.971	03/28/05	03/31/05	
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05	
<b>Di-n-butyl phthalate</b>	EPA 625	5C28041	0.26	2.0	<b>0.87</b>	0.971	03/28/05	03/31/05	J
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.971	03/28/05	03/31/05	
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.971	03/28/05	03/31/05	
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.971	03/28/05	03/31/05	
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.971	03/28/05	03/31/05	
<b>Diethyl phthalate</b>	EPA 625	5C28041	0.12	1.0	<b>0.23</b>	0.971	03/28/05	03/31/05	J
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.971	03/28/05	03/31/05	
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.971	03/28/05	03/31/05	
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.971	03/28/05	03/31/05	
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	03/31/05	N-1
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.971	03/28/05	03/31/05	
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.971	03/28/05	03/31/05	
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.971	03/28/05	03/31/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.971	03/28/05	03/31/05	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.971	03/28/05	03/31/05	
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05	
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.971	03/28/05	03/31/05	
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.971	03/28/05	03/31/05	
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.971	03/28/05	03/31/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.971	03/28/05	03/31/05	
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.971	03/28/05	03/31/05	
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.971	03/28/05	03/31/05	
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.971	03/28/05	03/31/05	
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.971	03/28/05	03/31/05	
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.971	03/28/05	03/31/05	
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.971	03/28/05	03/31/05	
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.971	03/28/05	03/31/05	
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.971	03/28/05	03/31/05	
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.971	03/28/05	03/31/05	
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.971	03/28/05	03/31/05	
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.971	03/28/05	03/31/05	
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.971	03/28/05	03/31/05	
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.971	03/28/05	03/31/05	
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.971	03/28/05	03/31/05	
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05	
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.971	03/28/05	03/31/05	
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	
Surrogate: 2-Fluorophenol (30-120%)									64 %
Surrogate: Phenol-d6 (35-120%)									65 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									85 %
Surrogate: Nitrobenzene-d5 (45-120%)									64 %
Surrogate: 2-Fluorobiphenyl (45-120%)									69 %
Surrogate: Terphenyl-d14 (45-120%)									84 %

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01RE1 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	04/11/05	
Surrogate: 2-Fluorophenol (30-120%)					60 %				
Surrogate: Phenol-d6 (35-120%)					63 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					84 %				
Surrogate: Nitrobenzene-d5 (45-120%)					62 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					66 %				
Surrogate: Terphenyl-d14 (45-120%)					79 %				

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
Reporting Units: ug/l									
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.971	03/28/05	03/29/05	
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/29/05	
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.971	03/28/05	03/29/05	
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.971	03/28/05	03/29/05	
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.971	03/28/05	03/29/05	
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.971	03/28/05	03/29/05	
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.971	03/28/05	03/29/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					31 %				ZX
Surrogate: Decachlorobiphenyl (45-120%)					36 %				ZX

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05	
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.971	03/28/05	03/30/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					40 %				ZX

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Sampled: 03/25/05  
 Received: 03/25/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C25116	0.00014	0.0010	<b>0.023</b>	1	03/25/05	03/28/05	
Boron	EPA 200.7	5C25111	0.0074	0.050	<b>0.092</b>	1	03/25/05	03/27/05	
Iron	EPA 200.8	5C25116	0.0032	0.010	<b>0.43</b>	1	03/25/05	03/28/05	

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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C25116	0.18	2.0	0.34	1	03/25/05	03/28/05	J
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.7	1	03/25/05	03/28/05	
Beryllium	EPA 200.8	5C25116	0.037	0.50	0.041	1	03/25/05	03/28/05	J
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.22	1	03/25/05	03/28/05	J
Chromium	EPA 200.8	5C25116	0.26	2.0	1.2	1	03/25/05	03/28/05	B, J
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05	J
Copper	EPA 200.8	5C25116	0.49	2.0	3.9	1	03/25/05	03/28/05	
Lead	EPA 200.8	5C25116	0.13	1.0	0.46	1	03/25/05	03/28/05	J
Manganese	EPA 200.8	5C25116	0.44	1.0	36	1	03/25/05	03/28/05	
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/26/05	03/26/05	
Nickel	EPA 200.8	5C25116	0.15	2.0	3.4	1	03/25/05	03/28/05	
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05	
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05	
Thallium	EPA 200.8	5C25116	0.075	1.0	0.21	1	03/25/05	03/28/05	J
Vanadium	EPA 200.8	5C25116	0.86	2.0	ND	1	03/25/05	03/28/05	
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05	J

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Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	<b>0.56</b>	1	03/28/05	03/28/05	
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	<b>0.91</b>	1	03/25/05	03/30/05	J
Chloride	EPA 300.0	5C25048	0.26	0.50	<b>8.4</b>	1	03/25/05	03/25/05	
Fluoride	EPA 300.0	5C25048	0.10	0.50	<b>0.25</b>	1	03/25/05	03/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	<b>0.14</b>	1	03/25/05	03/25/05	
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	
Sulfate	EPA 300.0	5C25048	0.18	0.50	<b>20</b>	1	03/25/05	03/25/05	
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	
Total Dissolved Solids	SM2540C	5C28078	10	10	<b>120</b>	1	03/28/05	03/28/05	
Total Organic Carbon	EPA 415.1	5C29079	0.25	1.0	<b>11</b>	1	03/29/05	03/29/05	
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	

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Sampled: 03/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01RE1 (Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	1.6	1	03/28/05	03/28/05	J

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Sampled: 03/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ml/l/hr</b>									
Total Settleable Solids	EPA 160.5	5C25105	0.10	0.10	ND	1	03/25/05	03/25/05	

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Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.4	1	03/26/05	03/26/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	

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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C28081	1.0	1.0	210	1	03/28/05	03/28/05	

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Sampled: 03/25/05  
 Received: 03/25/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5D0112	0.49	1.0	ND	1	04/01/05	04/01/05	
Surrogate: Dibromofluoromethane (80-125%)					118 %				

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Sampled: 03/25/05  
 Received: 03/25/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 Grab (IOC2063-01) - Water</b>					
EPA 160.5	2	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 21:10	03/25/2005 22:10
EPA 180.1	2	03/25/2005 12:00	03/25/2005 18:30	03/26/2005 13:00	03/26/2005 14:00
EPA 218.6	1	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 21:05	03/25/2005 21:16
EPA 300.0	2	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 20:00	03/25/2005 21:13
EPA 330.5	1	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 21:00	03/25/2005 21:15
EPA 405.1	2	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 21:30	03/30/2005 11:30
EPA 624	3	03/25/2005 12:00	03/25/2005 18:30	03/27/2005 00:00	03/27/2005 12:16
SM5540-C	2	03/25/2005 12:00	03/25/2005 18:30	03/25/2005 21:24	03/25/2005 22:05
<b>Sample ID: Trip Blank (IOC2063-02) - Water</b>					
EPA 624	3	03/25/2005 15:15	03/25/2005 18:30	03/27/2005 00:00	03/27/2005 11:45

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Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

METHOD BLANK/QC DATA

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26002 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C26002-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 03/26/2005 (5C26002-BS1)</b>											
Total Recoverable Hydrocarbons	4.72	1.0	0.31	mg/l	5.00		94	65-120			M-NR1
<b>LCS Dup Analyzed: 03/26/2005 (5C26002-BSD1)</b>											
Total Recoverable Hydrocarbons	4.84	1.0	0.31	mg/l	5.00		97	65-120	3	20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26001 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C26001-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.123			mg/l	0.200		62	40-125			
<b>LCS Analyzed: 03/28/2005 (5C26001-BS1)</b>											
EFH (C13 - C40)	0.348	0.50	0.082	mg/l	0.775		45	40-120			J
Surrogate: n-Octacosane	0.0990			mg/l	0.200		50	40-125			
<b>LCS Dup Analyzed: 03/28/2005 (5C26001-BSD1)</b>											
EFH (C13 - C40)	0.332	0.50	0.082	mg/l	0.775		43	40-120	5	25	J
Surrogate: n-Octacosane	0.0940			mg/l	0.200		47	40-125			

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Sampled: 03/25/05  
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**METHOD BLANK/QC DATA**

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26026 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C26026-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.0103			mg/l	0.0100		103	65-140			
<b>LCS Analyzed: 03/26/2005 (5C26026-BS1)</b>											
GRO (C4 - C12)	0.742	0.10	0.050	mg/l	0.800		93	70-140			
Surrogate: 4-BFB (FID)	0.0301			mg/l	0.0300		100	65-140			
<b>Matrix Spike Analyzed: 03/26/2005 (5C26026-MS1) Source: IOC1437-01</b>											
GRO (C4 - C12)	101	20	10	mg/l	44.0	49	118	60-140			
Surrogate: 4-BFB (FID)	2.71			mg/l	2.00		136	65-140			
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C26026-MSD1) Source: IOC1437-01</b>											
GRO (C4 - C12)	100	20	10	mg/l	44.0	49	116	60-140	1	20	
Surrogate: 4-BFB (FID)	2.69			mg/l	2.00		134	65-140			

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Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Blank Analyzed: 03/27/2005 (5C27003-BLK1)</b>											
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							
1,2-Dichloropropane	ND	2.0	0.35	ug/l							
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l							
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l							
Ethylbenzene	ND	2.0	0.25	ug/l							
Methylene chloride	ND	5.0	0.48	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l							
Tetrachloroethene	ND	2.0	0.32	ug/l							
Toluene	ND	2.0	0.36	ug/l							
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l							
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l							
Trichloroethene	ND	2.0	0.26	ug/l							
Trichlorofluoromethane	ND	5.0	0.34	ug/l							
Vinyl chloride	ND	0.50	0.26	ug/l							
Xylenes, Total	ND	4.0	0.52	ug/l							
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	22.8			ug/l	25.0		91	80-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>LCS Analyzed: 03/27/2005 (5C27003-BS1)</b>											
Benzene	24.0	1.0	0.28	ug/l	25.0		96	70-120			
Bromodichloromethane	23.4	2.0	0.30	ug/l	25.0		94	70-140			
Bromoform	22.6	5.0	0.32	ug/l	25.0		90	55-135			
Bromomethane	25.8	5.0	0.34	ug/l	25.0		103	60-140			
Carbon tetrachloride	24.2	0.50	0.28	ug/l	25.0		97	70-140			
Chlorobenzene	23.6	2.0	0.36	ug/l	25.0		94	80-125			
Chloroethane	24.1	5.0	0.33	ug/l	25.0		96	60-145			
Chloroform	25.1	2.0	0.33	ug/l	25.0		100	75-130			
Chloromethane	25.4	5.0	0.30	ug/l	25.0		102	40-145			
Dibromochloromethane	23.2	2.0	0.28	ug/l	25.0		93	65-145			
1,2-Dichlorobenzene	23.8	2.0	0.32	ug/l	25.0		95	80-120			
1,3-Dichlorobenzene	23.6	2.0	0.35	ug/l	25.0		94	80-120			
1,4-Dichlorobenzene	23.6	2.0	0.37	ug/l	25.0		94	80-120			
1,1-Dichloroethane	25.2	2.0	0.27	ug/l	25.0		101	70-135			
1,2-Dichloroethane	26.3	0.50	0.28	ug/l	25.0		105	60-150			
1,1-Dichloroethene	24.2	5.0	0.32	ug/l	25.0		97	75-135			
trans-1,2-Dichloroethene	24.8	2.0	0.27	ug/l	25.0		99	70-130			
1,2-Dichloropropane	24.4	2.0	0.35	ug/l	25.0		98	70-120			
cis-1,3-Dichloropropene	23.8	2.0	0.22	ug/l	25.0		95	75-130			
trans-1,3-Dichloropropene	23.5	2.0	0.24	ug/l	25.0		94	75-135			
Ethylbenzene	24.2	2.0	0.25	ug/l	25.0		97	80-120			
Methylene chloride	25.3	5.0	0.48	ug/l	25.0		101	60-135			
1,1,2,2-Tetrachloroethane	23.2	2.0	0.24	ug/l	25.0		93	60-135			
Tetrachloroethene	23.4	2.0	0.32	ug/l	25.0		94	75-125			
Toluene	23.8	2.0	0.36	ug/l	25.0		95	75-120			
1,1,1-Trichloroethane	24.6	2.0	0.30	ug/l	25.0		98	75-140			
1,1,2-Trichloroethane	23.4	2.0	0.30	ug/l	25.0		94	70-125			
Trichloroethene	23.9	2.0	0.26	ug/l	25.0		96	80-120			
Trichlorofluoromethane	25.9	5.0	0.34	ug/l	25.0		104	65-145			
Vinyl chloride	21.4	0.50	0.26	ug/l	25.0		86	50-130			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Matrix Spike Analyzed: 03/27/2005 (5C27003-MS1)</b>						<b>Source: IOC2063-01</b>					
Benzene	22.4	1.0	0.28	ug/l	25.0	ND	90	70-120			
Bromodichloromethane	22.6	2.0	0.30	ug/l	25.0	ND	90	70-140			
Bromoform	23.6	5.0	0.32	ug/l	25.0	ND	94	55-140			
Bromomethane	23.5	5.0	0.34	ug/l	25.0	ND	94	50-145			
Carbon tetrachloride	22.0	0.50	0.28	ug/l	25.0	ND	88	70-145			
Chlorobenzene	22.2	2.0	0.36	ug/l	25.0	ND	89	80-125			
Chloroethane	21.3	5.0	0.33	ug/l	25.0	ND	85	50-145			
Chloroform	23.4	2.0	0.33	ug/l	25.0	ND	94	70-135			
Chloromethane	22.6	5.0	0.30	ug/l	25.0	ND	90	35-145			
Dibromochloromethane	23.3	2.0	0.28	ug/l	25.0	ND	93	65-145			
1,2-Dichlorobenzene	22.9	2.0	0.32	ug/l	25.0	ND	92	75-130			
1,3-Dichlorobenzene	22.0	2.0	0.35	ug/l	25.0	ND	88	75-130			
1,4-Dichlorobenzene	22.4	2.0	0.37	ug/l	25.0	ND	90	80-120			
1,1-Dichloroethane	23.3	2.0	0.27	ug/l	25.0	ND	93	65-135			
1,2-Dichloroethane	25.8	0.50	0.28	ug/l	25.0	ND	103	60-150			
1,1-Dichloroethene	22.6	5.0	0.32	ug/l	25.0	ND	90	65-140			
trans-1,2-Dichloroethene	23.0	2.0	0.27	ug/l	25.0	ND	92	65-135			
1,2-Dichloropropane	23.5	2.0	0.35	ug/l	25.0	ND	94	65-130			
cis-1,3-Dichloropropene	23.2	2.0	0.22	ug/l	25.0	ND	93	70-140			
trans-1,3-Dichloropropene	23.6	2.0	0.24	ug/l	25.0	ND	94	70-140			
Ethylbenzene	21.8	2.0	0.25	ug/l	25.0	ND	87	70-130			
Methylene chloride	24.4	5.0	0.48	ug/l	25.0	ND	98	60-135			
1,1,2,2-Tetrachloroethane	25.4	2.0	0.24	ug/l	25.0	ND	102	60-145			
Tetrachloroethene	21.2	2.0	0.32	ug/l	25.0	ND	85	70-130			
Toluene	22.3	2.0	0.36	ug/l	25.0	ND	89	70-120			
1,1,1-Trichloroethane	22.1	2.0	0.30	ug/l	25.0	ND	88	75-140			
1,1,2-Trichloroethane	24.3	2.0	0.30	ug/l	25.0	ND	97	60-135			
Trichloroethene	22.2	2.0	0.26	ug/l	25.0	ND	89	70-125			
Trichlorofluoromethane	23.4	5.0	0.34	ug/l	25.0	ND	94	55-145			
Vinyl chloride	19.0	0.50	0.26	ug/l	25.0	ND	76	40-135			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			

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Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Matrix Spike Dup Analyzed: 03/27/2005 (5C27003-MSD1)</b>						<b>Source: IOC2063-01</b>					
Benzene	23.1	1.0	0.28	ug/l	25.0	ND	92	70-120	3	20	
Bromodichloromethane	23.6	2.0	0.30	ug/l	25.0	ND	94	70-140	4	20	
Bromoform	25.2	5.0	0.32	ug/l	25.0	ND	101	55-140	7	25	
Bromomethane	23.9	5.0	0.34	ug/l	25.0	ND	96	50-145	2	25	
Carbon tetrachloride	23.0	0.50	0.28	ug/l	25.0	ND	92	70-145	4	25	
Chlorobenzene	23.0	2.0	0.36	ug/l	25.0	ND	92	80-125	4	20	
Chloroethane	22.3	5.0	0.33	ug/l	25.0	ND	89	50-145	5	25	
Chloroform	24.0	2.0	0.33	ug/l	25.0	ND	96	70-135	3	20	
Chloromethane	23.0	5.0	0.30	ug/l	25.0	ND	92	35-145	2	25	
Dibromochloromethane	24.4	2.0	0.28	ug/l	25.0	ND	98	65-145	5	25	
1,2-Dichlorobenzene	23.5	2.0	0.32	ug/l	25.0	ND	94	75-130	3	20	
1,3-Dichlorobenzene	22.7	2.0	0.35	ug/l	25.0	ND	91	75-130	3	20	
1,4-Dichlorobenzene	23.1	2.0	0.37	ug/l	25.0	ND	92	80-120	3	20	
1,1-Dichloroethane	23.9	2.0	0.27	ug/l	25.0	ND	96	65-135	3	20	
1,2-Dichloroethane	26.6	0.50	0.28	ug/l	25.0	ND	106	60-150	3	20	
1,1-Dichloroethene	23.4	5.0	0.32	ug/l	25.0	ND	94	65-140	3	20	
trans-1,2-Dichloroethene	23.7	2.0	0.27	ug/l	25.0	ND	95	65-135	3	20	
1,2-Dichloropropane	24.1	2.0	0.35	ug/l	25.0	ND	96	65-130	3	20	
cis-1,3-Dichloropropene	23.9	2.0	0.22	ug/l	25.0	ND	96	70-140	3	20	
trans-1,3-Dichloropropene	24.4	2.0	0.24	ug/l	25.0	ND	98	70-140	3	25	
Ethylbenzene	22.6	2.0	0.25	ug/l	25.0	ND	90	70-130	4	20	
Methylene chloride	25.4	5.0	0.48	ug/l	25.0	ND	102	60-135	4	20	
1,1,1,2-Tetrachloroethane	26.3	2.0	0.24	ug/l	25.0	ND	105	60-145	3	30	
Tetrachloroethene	22.2	2.0	0.32	ug/l	25.0	ND	89	70-130	5	20	
Toluene	22.9	2.0	0.36	ug/l	25.0	ND	92	70-120	3	20	
1,1,1-Trichloroethane	22.7	2.0	0.30	ug/l	25.0	ND	91	75-140	3	20	
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0	ND	100	60-135	2	25	
Trichloroethene	22.9	2.0	0.26	ug/l	25.0	ND	92	70-125	3	20	
Trichlorofluoromethane	23.9	5.0	0.34	ug/l	25.0	ND	96	55-145	2	25	
Vinyl chloride	19.2	0.50	0.26	ug/l	25.0	ND	77	40-135	1	30	
Surrogate: Dibromofluoromethane	26.7			ug/l	25.0		107	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			

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Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Blank Analyzed: 03/27/2005 (5C27003-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	22.8			ug/l	25.0		91	80-120			
<b>LCS Analyzed: 03/27/2005 (5C27003-BS1)</b>											
2-Chloroethyl vinyl ether	24.8	5.0	1.3	ug/l	25.0		99	20-175			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			
<b>Matrix Spike Analyzed: 03/27/2005 (5C27003-MS1)</b>						<b>Source: IOC2063-01</b>					
2-Chloroethyl vinyl ether	26.6	5.0	1.3	ug/l	25.0	ND	106	20-175			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			
<b>Matrix Spike Dup Analyzed: 03/27/2005 (5C27003-MSD1)</b>						<b>Source: IOC2063-01</b>					
2-Chloroethyl vinyl ether	27.1	5.0	1.3	ug/l	25.0	ND	108	20-175	2	25	
Surrogate: Dibromofluoromethane	26.7			ug/l	25.0		107	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Blank Analyzed: 03/27/2005 (5C27003-BLK1)</b>											
Cyclohexane	ND	2.5	N/A	ug/l							
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l							

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Sampled: 03/25/05  
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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	0.760	5.0	0.34	ug/l							J
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	0.300	2.0	0.26	ug/l							J
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	0.220	1.0	0.12	ug/l							J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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 Outfall 011  
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Sampled: 03/25/05  
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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>										
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l						
2,4-Dinitrophenol	ND	5.0	2.7	ug/l						N-1
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l						
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l						
Di-n-octyl phthalate	ND	5.0	0.17	ug/l						
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l						
Fluoranthene	ND	0.50	0.089	ug/l						
Fluorene	ND	0.50	0.075	ug/l						
Hexachlorobenzene	ND	1.0	0.13	ug/l						
Hexachlorobutadiene	ND	2.0	0.38	ug/l						
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l						
Hexachloroethane	ND	3.0	0.51	ug/l						
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l						
Isophorone	ND	1.0	0.059	ug/l						
2-Methylnaphthalene	ND	1.0	0.13	ug/l						
2-Methylphenol	ND	2.0	0.28	ug/l						
4-Methylphenol	ND	5.0	0.20	ug/l						
Naphthalene	ND	1.0	0.13	ug/l						
2-Nitroaniline	ND	5.0	0.18	ug/l						
3-Nitroaniline	ND	5.0	0.35	ug/l						
4-Nitroaniline	ND	5.0	0.49	ug/l						
Nitrobenzene	ND	1.0	0.10	ug/l						
2-Nitrophenol	ND	2.0	0.23	ug/l						
4-Nitrophenol	ND	5.0	0.73	ug/l						
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l						
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l						
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l						
Pentachlorophenol	ND	2.0	0.78	ug/l						
Phenanthrene	ND	0.50	0.071	ug/l						
Phenol	ND	1.0	0.14	ug/l						
Pyrene	ND	0.50	0.059	ug/l						
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l						
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l						
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l						
Surrogate: 2-Fluorophenol	13.6			ug/l	20.0		68	30-120		

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>										
Surrogate: Phenol-d6	13.7			ug/l	20.0		68 35-120			
Surrogate: 2,4,6-Tribromophenol	16.5			ug/l	20.0		82 45-120			
Surrogate: Nitrobenzene-d5	6.94			ug/l	10.0		69 45-120			
Surrogate: 2-Fluorobiphenyl	7.28			ug/l	10.0		73 45-120			
Surrogate: Terphenyl-d14	8.40			ug/l	10.0		84 45-120			
<b>Blank Analyzed: 04/11/2005 (5C28041-BLK2)</b>										
2,4-Dinitrophenol	ND	5.0	2.7	ug/l						
Surrogate: 2-Fluorophenol	12.9			ug/l	20.0		64 30-120			
Surrogate: Phenol-d6	13.6			ug/l	20.0		68 35-120			
Surrogate: 2,4,6-Tribromophenol	17.1			ug/l	20.0		86 45-120			
Surrogate: Nitrobenzene-d5	6.98			ug/l	10.0		70 45-120			
Surrogate: 2-Fluorobiphenyl	7.68			ug/l	10.0		77 45-120			
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81 45-120			
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>										
Acenaphthene	8.28	0.50	0.10	ug/l	10.0		83 55-120			
Acenaphthylene	8.44	0.50	0.10	ug/l	10.0		84 55-120			
Aniline	7.32	10	2.9	ug/l	10.0		73 35-120			J
Anthracene	8.48	0.50	0.083	ug/l	10.0		85 55-120			
Benzidine	ND	5.0	2.4	ug/l	10.0					L2
Benzoic acid	6.74	20	3.7	ug/l	10.0		67 35-120			J
Benzo(a)anthracene	9.52	5.0	0.038	ug/l	10.0		95 60-120			
Benzo(a)pyrene	8.70	2.0	0.14	ug/l	10.0		87 55-120			
Benzo(b)fluoranthene	9.32	2.0	0.050	ug/l	10.0		93 50-120			
Benzo(g,h,i)perylene	8.16	5.0	0.059	ug/l	10.0		82 40-125			
Benzo(k)fluoranthene	9.24	0.50	0.053	ug/l	10.0		92 50-120			
Benzyl alcohol	7.62	5.0	0.21	ug/l	10.0		76 45-120			
Bis(2-chloroethoxy)methane	7.98	0.50	0.072	ug/l	10.0		80 55-120			
Bis(2-chloroethyl)ether	6.98	0.50	0.084	ug/l	10.0		70 50-120			
Bis(2-chloroisopropyl)ether	7.26	0.50	0.11	ug/l	10.0		73 45-120			
Bis(2-ethylhexyl)phthalate	9.16	5.0	1.1	ug/l	10.0		92 60-130			
4-Bromophenyl phenyl ether	8.10	1.0	0.12	ug/l	10.0		81 50-120			
Butyl benzyl phthalate	9.66	5.0	0.34	ug/l	10.0		97 55-125			
4-Chloroaniline	6.60	2.0	0.20	ug/l	10.0		66 50-120			
2-Chloronaphthalene	8.52	0.50	0.059	ug/l	10.0		85 55-120			

M-NR1

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 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>											
4-Chloro-3-methylphenol	7.18	2.0	0.34	ug/l	10.0		72	60-120			M-NR1
4-Chlorophenyl phenyl ether	8.88	0.50	0.056	ug/l	10.0		89	55-120			
2-Chlorophenol	7.12	1.0	0.12	ug/l	10.0		71	45-120			
Chrysene	9.14	0.50	0.072	ug/l	10.0		91	60-120			
Dibenz(a,h)anthracene	7.06	0.50	0.083	ug/l	10.0		71	45-130			
Dibenzofuran	8.18	0.50	0.075	ug/l	10.0		82	60-120			
Di-n-butyl phthalate	9.02	2.0	0.26	ug/l	10.0		90	55-125			
1,2-Dichlorobenzene	6.26	0.50	0.11	ug/l	10.0		63	35-120			
1,3-Dichlorobenzene	6.26	0.50	0.13	ug/l	10.0		63	35-120			
1,4-Dichlorobenzene	6.18	0.50	0.050	ug/l	10.0		62	35-120			
3,3-Dichlorobenzidine	6.98	5.0	0.93	ug/l	10.0		70	45-130			
2,4-Dichlorophenol	7.68	2.0	0.21	ug/l	10.0		77	55-120			
Diethyl phthalate	8.18	1.0	0.12	ug/l	10.0		82	55-120			
2,4-Dimethylphenol	5.28	2.0	0.31	ug/l	10.0		53	30-120			
Dimethyl phthalate	8.76	0.50	0.081	ug/l	10.0		88	60-120			
4,6-Dinitro-2-methylphenol	9.40	5.0	0.38	ug/l	10.0		94	50-120			
2,4-Dinitrophenol	8.70	5.0	2.7	ug/l	10.0		87	40-120			N-I
2,4-Dinitrotoluene	8.00	5.0	0.23	ug/l	10.0		80	60-120			
2,6-Dinitrotoluene	8.28	5.0	0.24	ug/l	10.0		83	60-120			
Di-n-octyl phthalate	9.46	5.0	0.17	ug/l	10.0		95	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.78	1.0	0.087	ug/l	10.0		88	60-120			
Fluoranthene	9.26	0.50	0.089	ug/l	10.0		93	55-120			
Fluorene	9.18	0.50	0.075	ug/l	10.0		92	60-120			
Hexachlorobenzene	8.42	1.0	0.13	ug/l	10.0		84	50-120			
Hexachlorobutadiene	6.40	2.0	0.38	ug/l	10.0		64	40-120			
Hexachlorocyclopentadiene	7.30	5.0	1.8	ug/l	10.0		73	15-120			
Hexachloroethane	6.26	3.0	0.51	ug/l	10.0		63	35-120			
Indeno(1,2,3-cd)pyrene	7.72	2.0	0.19	ug/l	10.0		77	40-130			
Isophorone	7.42	1.0	0.059	ug/l	10.0		74	50-120			
2-Methylnaphthalene	7.88	1.0	0.13	ug/l	10.0		79	50-120			
2-Methylphenol	6.98	2.0	0.28	ug/l	10.0		70	45-120			
4-Methylphenol	7.12	5.0	0.20	ug/l	10.0		71	45-120			
Naphthalene	7.36	1.0	0.13	ug/l	10.0		74	50-120			
2-Nitroaniline	8.62	5.0	0.18	ug/l	10.0		86	60-120			
3-Nitroaniline	7.82	5.0	0.35	ug/l	10.0		78	55-120			

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 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>											
4-Nitroaniline	8.16	5.0	0.49	ug/l	10.0		82	50-125			M-NR1
Nitrobenzene	6.90	1.0	0.10	ug/l	10.0		69	50-120			
2-Nitrophenol	7.58	2.0	0.23	ug/l	10.0		76	55-120			
4-Nitrophenol	7.60	5.0	0.73	ug/l	10.0		76	45-120			
N-Nitrosodimethylamine	7.40	2.0	0.22	ug/l	10.0		74	40-120			
N-Nitroso-di-n-propylamine	7.22	2.0	0.18	ug/l	10.0		72	45-120			
N-Nitrosodiphenylamine	7.98	1.0	0.077	ug/l	10.0		80	55-120			
Pentachlorophenol	8.86	2.0	0.78	ug/l	10.0		89	50-120			
Phenanthrene	8.56	0.50	0.071	ug/l	10.0		86	55-120			
Phenol	8.12	1.0	0.14	ug/l	10.0		81	45-120			
Pyrene	9.44	0.50	0.059	ug/l	10.0		94	50-120			
1,2,4-Trichlorobenzene	6.52	1.0	0.10	ug/l	10.0		65	45-120			
2,4,5-Trichlorophenol	8.30	2.0	0.075	ug/l	10.0		83	60-120			
2,4,6-Trichlorophenol	8.76	1.0	0.10	ug/l	10.0		88	60-120			
Surrogate: 2-Fluorophenol	13.3			ug/l	20.0		66	30-120			
Surrogate: Phenol-d6	13.1			ug/l	20.0		66	35-120			
Surrogate: 2,4,6-Tribromophenol	16.0			ug/l	20.0		80	45-120			
Surrogate: Nitrobenzene-d5	6.70			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.58			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81	45-120			
<b>LCS Analyzed: 04/11/2005 (5C28041-BS2)</b>											
2,4-Dinitrophenol	8.72	5.0	2.7	ug/l	10.0		87	40-120			
Surrogate: 2-Fluorophenol	13.0			ug/l	20.0		65	30-120			
Surrogate: Phenol-d6	13.4			ug/l	20.0		67	35-120			
Surrogate: 2,4,6-Tribromophenol	16.7			ug/l	20.0		84	45-120			
Surrogate: Nitrobenzene-d5	6.72			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.14			ug/l	10.0		71	45-120			
Surrogate: Terphenyl-d14	7.92			ug/l	10.0		79	45-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
Acenaphthene	8.72	0.50	0.10	ug/l	10.0		87	55-120	5	20	
Acenaphthylene	8.94	0.50	0.10	ug/l	10.0		89	55-120	6	20	
Aniline	7.42	10	2.9	ug/l	10.0		74	35-120	1	25	J
Anthracene	9.00	0.50	0.083	ug/l	10.0		90	55-120	6	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-160		35	L2
Benzoic acid	7.72	20	3.7	ug/l	10.0		77	35-120	14	30	J
Benzo(a)anthracene	10.0	5.0	0.038	ug/l	10.0		100	60-120	5	20	
Benzo(a)pyrene	9.12	2.0	0.14	ug/l	10.0		91	55-120	5	25	
Benzo(b)fluoranthene	9.82	2.0	0.050	ug/l	10.0		98	50-120	5	25	
Benzo(g,h,i)perylene	8.40	5.0	0.059	ug/l	10.0		84	40-125	3	25	
Benzo(k)fluoranthene	9.86	0.50	0.053	ug/l	10.0		99	50-120	6	20	
Benzyl alcohol	8.10	5.0	0.21	ug/l	10.0		81	45-120	6	20	
Bis(2-chloroethoxy)methane	8.56	0.50	0.072	ug/l	10.0		86	55-120	7	20	
Bis(2-chloroethyl)ether	7.40	0.50	0.084	ug/l	10.0		74	50-120	6	20	
Bis(2-chloroisopropyl)ether	7.66	0.50	0.11	ug/l	10.0		77	45-120	5	20	
Bis(2-ethylhexyl)phthalate	9.30	5.0	1.1	ug/l	10.0		93	60-130	2	20	
4-Bromophenyl phenyl ether	8.54	1.0	0.12	ug/l	10.0		85	50-120	5	25	
Butyl benzyl phthalate	9.60	5.0	0.34	ug/l	10.0		96	55-125	1	20	
4-Chloroaniline	7.20	2.0	0.20	ug/l	10.0		72	50-120	9	25	
2-Chloronaphthalene	8.94	0.50	0.059	ug/l	10.0		89	55-120	5	20	
4-Chloro-3-methylphenol	7.48	2.0	0.34	ug/l	10.0		75	60-120	4	25	
4-Chlorophenyl phenyl ether	9.62	0.50	0.056	ug/l	10.0		96	55-120	8	20	
2-Chlorophenol	7.62	1.0	0.12	ug/l	10.0		76	45-120	7	25	
Chrysene	9.44	0.50	0.072	ug/l	10.0		94	60-120	3	20	
Dibenz(a,h)anthracene	8.20	0.50	0.083	ug/l	10.0		82	45-130	15	25	
Dibenzofuran	8.70	0.50	0.075	ug/l	10.0		87	60-120	6	20	
Di-n-butyl phthalate	9.38	2.0	0.26	ug/l	10.0		94	55-125	4	20	
1,2-Dichlorobenzene	6.86	0.50	0.11	ug/l	10.0		69	35-120	9	25	
1,3-Dichlorobenzene	6.68	0.50	0.13	ug/l	10.0		67	35-120	6	25	
1,4-Dichlorobenzene	6.62	0.50	0.050	ug/l	10.0		66	35-120	7	25	
3,3-Dichlorobenzidine	8.16	5.0	0.93	ug/l	10.0		82	45-130	16	25	
2,4-Dichlorophenol	7.94	2.0	0.21	ug/l	10.0		79	55-120	3	20	
Diethyl phthalate	8.76	1.0	0.12	ug/l	10.0		88	55-120	7	20	
2,4-Dimethylphenol	5.42	2.0	0.31	ug/l	10.0		54	30-120	3	25	
Dimethyl phthalate	9.26	0.50	0.081	ug/l	10.0		93	60-120	6	20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
4,6-Dinitro-2-methylphenol	9.54	5.0	0.38	ug/l	10.0		95	50-120	1	25	
2,4-Dinitrophenol	8.94	5.0	2.7	ug/l	10.0		89	40-120	3	25	N-I
2,4-Dinitrotoluene	8.46	5.0	0.23	ug/l	10.0		85	60-120	6	20	
2,6-Dinitrotoluene	8.62	5.0	0.24	ug/l	10.0		86	60-120	4	20	
Di-n-octyl phthalate	10.0	5.0	0.17	ug/l	10.0		100	60-130	6	20	
1,2-Diphenylhydrazine/Azobenzene	9.68	1.0	0.087	ug/l	10.0		97	60-120	10	25	
Fluoranthene	9.68	0.50	0.089	ug/l	10.0		97	55-120	4	20	
Fluorene	9.80	0.50	0.075	ug/l	10.0		98	60-120	7	20	
Hexachlorobenzene	8.88	1.0	0.13	ug/l	10.0		89	50-120	5	20	
Hexachlorobutadiene	6.94	2.0	0.38	ug/l	10.0		69	40-120	8	25	
Hexachlorocyclopentadiene	8.62	5.0	1.8	ug/l	10.0		86	15-120	17	30	
Hexachloroethane	6.78	3.0	0.51	ug/l	10.0		68	35-120	8	25	
Indeno(1,2,3-cd)pyrene	8.56	2.0	0.19	ug/l	10.0		86	40-130	10	25	
Isophorone	7.52	1.0	0.059	ug/l	10.0		75	50-120	1	20	
2-Methylnaphthalene	8.46	1.0	0.13	ug/l	10.0		85	50-120	7	20	
2-Methylphenol	7.30	2.0	0.28	ug/l	10.0		73	45-120	4	20	
4-Methylphenol	7.48	5.0	0.20	ug/l	10.0		75	45-120	5	20	
Naphthalene	7.94	1.0	0.13	ug/l	10.0		79	50-120	8	20	
2-Nitroaniline	9.28	5.0	0.18	ug/l	10.0		93	60-120	7	20	
3-Nitroaniline	8.46	5.0	0.35	ug/l	10.0		85	55-120	8	25	
4-Nitroaniline	8.60	5.0	0.49	ug/l	10.0		86	50-125	5	20	
Nitrobenzene	7.28	1.0	0.10	ug/l	10.0		73	50-120	5	25	
2-Nitrophenol	7.92	2.0	0.23	ug/l	10.0		79	55-120	4	25	
4-Nitrophenol	8.70	5.0	0.73	ug/l	10.0		87	45-120	13	25	
N-Nitrosodimethylamine	7.56	2.0	0.22	ug/l	10.0		76	40-120	2	20	
N-Nitroso-di-n-propylamine	7.68	2.0	0.18	ug/l	10.0		77	45-120	6	20	
N-Nitrosodiphenylamine	8.36	1.0	0.077	ug/l	10.0		84	55-120	5	20	
Pentachlorophenol	9.04	2.0	0.78	ug/l	10.0		90	50-120	2	25	
Phenanthrene	9.06	0.50	0.071	ug/l	10.0		91	55-120	6	20	
Phenol	8.62	1.0	0.14	ug/l	10.0		86	45-120	6	25	
Pyrene	9.74	0.50	0.059	ug/l	10.0		97	50-120	3	25	
1,2,4-Trichlorobenzene	7.02	1.0	0.10	ug/l	10.0		70	45-120	7	20	
2,4,5-Trichlorophenol	8.36	2.0	0.075	ug/l	10.0		84	60-120	1	20	
2,4,6-Trichlorophenol	9.06	1.0	0.10	ug/l	10.0		91	60-120	3	20	
Surrogate: 2-Fluorophenol	13.5			ug/l	20.0		68	30-120			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
Surrogate: Phenol-d6	13.7			ug/l	20.0		68	35-120			
Surrogate: 2,4,6-Tribromophenol	16.7			ug/l	20.0		84	45-120			
Surrogate: Nitrobenzene-d5	7.00			ug/l	10.0		70	45-120			
Surrogate: 2-Fluorobiphenyl	7.96			ug/l	10.0		80	45-120			
Surrogate: Terphenyl-d14	8.22			ug/l	10.0		82	45-120			
<b>LCS Dup Analyzed: 04/11/2005 (5C28041-BSD2)</b>											
2,4-Dinitrophenol	8.86	5.0	2.7	ug/l	10.0		89	40-120	2	25	
Surrogate: 2-Fluorophenol	13.2			ug/l	20.0		66	30-120			
Surrogate: Phenol-d6	14.3			ug/l	20.0		72	35-120			
Surrogate: 2,4,6-Tribromophenol	17.2			ug/l	20.0		86	45-120			
Surrogate: Nitrobenzene-d5	7.02			ug/l	10.0		70	45-120			
Surrogate: 2-Fluorobiphenyl	7.52			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	7.66			ug/l	10.0		77	45-120			

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Outfall 011
Report Number: IOC2063

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Received: 03/25/05

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte Result Reporting Limit MDL Units Spike Level Source Result %REC %REC Limits RPD Limit Data Qualifiers

Batch: 5C28048 Extracted: 03/28/05

Blank Analyzed: 03/29/2005-03/30/2005 (5C28048-BLK1)

Table with 12 columns: Analyte, Result, Reporting Limit, MDL, Units, Spike Level, Source Result, %REC, %REC Limits, RPD Limit, Data Qualifiers. Lists various pesticides like Aldrin, alpha-BHC, beta-BHC, etc., with their respective values.

LCS Analyzed: 03/29/2005 (5C28048-BS1)

M-NR1

Table with 12 columns: Analyte, Result, Reporting Limit, MDL, Units, Spike Level, Source Result, %REC, %REC Limits, RPD Limit, Data Qualifiers. Lists various pesticides with their respective values.

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## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28048 Extracted: 03/28/05</b>										
<b>LCS Analyzed: 03/29/2005 (5C28048-BS1)</b>										
Endrin	0.420	0.10	0.020	ug/l	0.500		84 55-125			M-NRI
Endrin aldehyde	0.382	0.10	0.045	ug/l	0.500		76 55-115			
Endrin ketone	0.402	0.10	0.020	ug/l	0.500		80 60-115			
Heptachlor	0.371	0.10	0.030	ug/l	0.500		74 45-115			
Heptachlor epoxide	0.388	0.10	0.020	ug/l	0.500		78 50-115			
Methoxychlor	0.399	0.10	0.035	ug/l	0.500		80 60-120			
Surrogate: Tetrachloro-m-xylene	0.337			ug/l	0.500		67 35-115			
Surrogate: Decachlorobiphenyl	0.372			ug/l	0.500		74 45-120			
<b>LCS Dup Analyzed: 03/29/2005 (5C28048-BSD1)</b>										
Aldrin	0.291	0.10	0.030	ug/l	0.500		58 40-115	18	30	
alpha-BHC	0.322	0.10	0.015	ug/l	0.500		64 45-115	14	30	
beta-BHC	0.345	0.10	0.015	ug/l	0.500		69 50-115	9	30	
delta-BHC	0.352	0.20	0.020	ug/l	0.500		70 55-120	8	30	
gamma-BHC (Lindane)	0.328	0.10	0.020	ug/l	0.500		66 45-115	13	30	
4,4'-DDD	0.397	0.10	0.020	ug/l	0.500		79 60-120	6	30	
4,4'-DDE	0.378	0.10	0.025	ug/l	0.500		76 55-120	10	30	
4,4'-DDT	0.531	0.10	0.030	ug/l	0.500		106 60-120	19	30	
Dieldrin	0.368	0.10	0.015	ug/l	0.500		74 55-120	10	30	
Endosulfan I	0.351	0.10	0.015	ug/l	0.500		70 50-115	10	30	
Endosulfan II	0.368	0.10	0.040	ug/l	0.500		74 60-125	7	30	
Endosulfan sulfate	0.373	0.20	0.015	ug/l	0.500		75 60-120	6	30	
Endrin	0.383	0.10	0.020	ug/l	0.500		77 55-125	9	30	
Endrin aldehyde	0.369	0.10	0.045	ug/l	0.500		74 55-115	3	30	
Endrin ketone	0.377	0.10	0.020	ug/l	0.500		75 60-115	6	30	
Heptachlor	0.320	0.10	0.030	ug/l	0.500		64 45-115	15	30	
Heptachlor epoxide	0.349	0.10	0.020	ug/l	0.500		70 50-115	11	30	
Methoxychlor	0.375	0.10	0.035	ug/l	0.500		75 60-120	6	30	
Surrogate: Tetrachloro-m-xylene	0.289			ug/l	0.500		58 35-115			
Surrogate: Decachlorobiphenyl	0.344			ug/l	0.500		69 45-120			

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Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28048 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/29/2005-03/30/2005 (5C28048-BLK1)</b>										
Aroclor 1016	ND	1.0	0.20	ug/l						
Aroclor 1221	ND	1.0	0.10	ug/l						
Aroclor 1232	ND	1.0	0.15	ug/l						
Aroclor 1242	ND	1.0	0.15	ug/l						
Aroclor 1248	ND	1.0	0.25	ug/l						
Aroclor 1254	ND	1.0	0.25	ug/l						
Aroclor 1260	ND	1.0	0.40	ug/l						
Surrogate: Decachlorobiphenyl	0.407			ug/l	0.500		81 45-120			
<b>LCS Analyzed: 03/31/2005 (5C28048-BS2)</b>										
Aroclor 1016	6.06	2.0	0.40	ug/l	8.00		76 50-115			M-NRI
Aroclor 1260	5.96	2.0	0.80	ug/l	8.00		74 55-115			
Surrogate: Decachlorobiphenyl	0.769			ug/l	1.00		77 45-120			
<b>LCS Dup Analyzed: 03/30/2005 (5C28048-BSD2)</b>										
Aroclor 1016	3.08	1.0	0.20	ug/l	4.00		77 50-115	65	30	R-7
Aroclor 1260	3.30	1.0	0.40	ug/l	4.00		82 55-115	57	25	R-7
Surrogate: Decachlorobiphenyl	0.431			ug/l	0.500		86 45-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C25111 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C25111-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 03/26/2005 (5C25111-BS1)</b>											
Boron	0.450	0.050	0.0074	mg/l	0.500		90	85-115			
<b>Matrix Spike Analyzed: 03/26/2005 (5C25111-MS1) Source: IOC1861-01</b>											
Boron	0.612	0.050	0.0074	mg/l	0.500	0.13	96	70-130			
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C25111-MSD1) Source: IOC1861-01</b>											
Boron	0.642	0.050	0.0074	mg/l	0.500	0.13	102	70-130	5	20	
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C25116-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	0.507	2.0	0.26	ug/l							J
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.00735	0.010	0.0032	mg/l							J
Lead	ND	1.0	0.13	ug/l							
Manganese	ND	1.0	0.44	ug/l							
Nickel	ND	2.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>LCS Analyzed: 03/28/2005 (5C25116-BS1)</b>											
Antimony	80.9	2.0	0.18	ug/l	80.0		101	85-115			
Arsenic	84.0	1.0	0.49	ug/l	80.0		105	85-115			
Barium	0.0810	0.0010	0.00014	mg/l	0.0800		101	85-115			
Beryllium	82.8	0.50	0.037	ug/l	80.0		104	85-115			
Cadmium	78.6	1.0	0.015	ug/l	80.0		98	85-115			
Chromium	79.4	2.0	0.26	ug/l	80.0		99	85-115			
Cobalt	78.3	1.0	0.10	ug/l	80.0		98	85-115			
Copper	75.2	2.0	0.49	ug/l	80.0		94	85-115			
Iron	0.796	0.010	0.0032	mg/l	0.800		100	85-115			
Lead	88.6	1.0	0.13	ug/l	80.0		111	85-115			
Manganese	80.3	1.0	0.44	ug/l	80.0		100	85-115			
Nickel	78.1	2.0	0.15	ug/l	80.0		98	85-115			
Selenium	80.6	2.0	0.36	ug/l	80.0		101	85-115			
Silver	87.8	1.0	0.089	ug/l	80.0		110	85-115			
Thallium	79.3	1.0	0.075	ug/l	80.0		99	85-115			
Vanadium	79.1	2.0	0.86	ug/l	80.0		99	85-115			
Zinc	75.9	20	3.1	ug/l	80.0		95	85-115			

### Matrix Spike Analyzed: 03/28/2005 (5C25116-MS1)

Source: IOC2062-01

Antimony	83.2	2.0	0.18	ug/l	80.0	0.29	104	70-130			
Arsenic	85.1	1.0	0.49	ug/l	80.0	1.2	105	70-130			
Barium	0.121	0.0010	0.00014	mg/l	0.0800	0.036	106	70-130			
Beryllium	85.1	0.50	0.037	ug/l	80.0	ND	106	70-130			
Cadmium	79.5	1.0	0.015	ug/l	80.0	0.072	99	70-130			
Chromium	81.2	2.0	0.26	ug/l	80.0	2.2	99	70-130			
Cobalt	79.4	1.0	0.10	ug/l	80.0	0.58	99	70-130			
Copper	77.2	2.0	0.49	ug/l	80.0	3.0	93	70-130			
Iron	1.44	0.010	0.0032	mg/l	0.800	0.67	96	70-130			
Lead	86.8	1.0	0.13	ug/l	80.0	0.55	108	70-130			
Manganese	208	1.0	0.44	ug/l	80.0	100	135	70-130			MI
Nickel	79.1	2.0	0.15	ug/l	80.0	2.8	95	70-130			
Selenium	80.4	2.0	0.36	ug/l	80.0	ND	100	70-130			
Silver	85.1	1.0	0.089	ug/l	80.0	0.10	106	70-130			
Thallium	81.9	1.0	0.075	ug/l	80.0	0.15	102	70-130			
Vanadium	81.3	2.0	0.86	ug/l	80.0	1.5	100	70-130			
Zinc	84.8	20	3.1	ug/l	80.0	14	88	70-130			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>Matrix Spike Dup Analyzed: 03/28/2005 (5C25116-MSD1)</b>						<b>Source: IOC2062-01</b>					
Antimony	81.5	2.0	0.18	ug/l	80.0	0.29	102	70-130	2	20	
Arsenic	84.9	1.0	0.49	ug/l	80.0	1.2	105	70-130	0	20	
Barium	0.119	0.0010	0.00014	mg/l	0.0800	0.036	104	70-130	2	20	
Beryllium	81.9	0.50	0.037	ug/l	80.0	ND	102	70-130	4	20	
Cadmium	78.0	1.0	0.015	ug/l	80.0	0.072	97	70-130	2	20	
Chromium	79.8	2.0	0.26	ug/l	80.0	2.2	97	70-130	2	20	
Cobalt	78.3	1.0	0.10	ug/l	80.0	0.58	97	70-130	1	20	
Copper	75.6	2.0	0.49	ug/l	80.0	3.0	91	70-130	2	20	
Iron	1.40	0.010	0.0032	mg/l	0.800	0.67	91	70-130	3	20	
Lead	87.0	1.0	0.13	ug/l	80.0	0.55	108	70-130	0	20	
Manganese	203	1.0	0.44	ug/l	80.0	100	129	70-130	2	20	
Nickel	78.1	2.0	0.15	ug/l	80.0	2.8	94	70-130	1	20	
Selenium	79.7	2.0	0.36	ug/l	80.0	ND	100	70-130	1	20	
Silver	85.1	1.0	0.089	ug/l	80.0	0.10	106	70-130	0	20	
Thallium	80.9	1.0	0.075	ug/l	80.0	0.15	101	70-130	1	20	
Vanadium	81.2	2.0	0.86	ug/l	80.0	1.5	100	70-130	0	20	
Zinc	83.4	20	3.1	ug/l	80.0	14	87	70-130	2	20	

**Batch: 5C26033 Extracted: 03/26/05**

**Blank Analyzed: 03/26/2005 (5C26033-BLK1)**

Mercury	ND	0.20	0.063	ug/l							
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**LCS Analyzed: 03/26/2005 (5C26033-BS1)**

Mercury	8.12	0.20	0.063	ug/l	8.00		102	85-115			
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**Matrix Spike Analyzed: 03/26/2005 (5C26033-MS1)**

Mercury	7.56	0.20	0.063	ug/l	8.00	ND	94	70-130			
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 Outfall 011  
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26033 Extracted: 03/26/05</b>											
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C26033-MSD1)</b>						<b>Source: IOC2062-01</b>					
Mercury	7.61	0.20	0.063	ug/l	8.00	ND	95	70-130	1	20	

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C25048 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25048-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.10	mg/l							
Nitrate/Nitrite-N	ND	0.11	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25048-BS1)</b>											
Chloride	4.97	0.50	0.26	mg/l	5.00		99	90-110			M-3
Fluoride	4.81	0.50	0.10	mg/l	5.00		96	90-110			
Sulfate	10.3	0.50	0.18	mg/l	10.0		103	90-110			M-3
<b>Matrix Spike Analyzed: 03/25/2005 (5C25048-MS1) Source: IOC2038-01</b>											
Fluoride	5.70	0.50	0.10	mg/l	5.00	0.88	96	80-120			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25048-MSD1) Source: IOC2038-01</b>											
Fluoride	5.70	0.50	0.10	mg/l	5.00	0.88	96	80-120	0	20	
<b>Batch: 5C25058 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25058-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25058-BS1)</b>											
Chromium VI	52.4	1.0	0.10	ug/l	50.0		105	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25058-MS1) Source: IOC2023-03</b>											
Chromium VI	45.3	1.0	0.10	ug/l	50.0	ND	91	90-110			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25058 Extracted: 03/25/05</b>											
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25058-MSD1)</b>						<b>Source: IOC2023-03</b>					
Chromium VI	44.3	1.0	0.10	ug/l	50.0	ND	89	90-110	2	10	M2
<b>Batch: 5C25061 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25061-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25061-BS1)</b>											
Perchlorate	48.8	4.0	0.80	ug/l	50.0		98	85-115			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25061-MS1)</b>						<b>Source: IOC2024-01</b>					
Perchlorate	49.6	4.0	0.80	ug/l	50.0	1.2	97	80-120			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25061-MSD1)</b>						<b>Source: IOC2024-01</b>					
Perchlorate	49.9	4.0	0.80	ug/l	50.0	1.2	97	80-120	1	20	
<b>Batch: 5C25093 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/30/2005 (5C25093-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 03/30/2005 (5C25093-BS1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115			
<b>LCS Dup Analyzed: 03/30/2005 (5C25093-BSD1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115	0	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C25096 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25096-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25096-BS1)</b>											
Surfactants (MBAS)	0.266	0.10	0.044	mg/l	0.250		106	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25096-MS1)</b>											
						<b>Source: IOC1920-01</b>					
Surfactants (MBAS)	0.245	0.10	0.044	mg/l	0.250	ND	98	50-125			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25096-MSD1)</b>											
						<b>Source: IOC1920-01</b>					
Surfactants (MBAS)	0.260	0.10	0.044	mg/l	0.250	ND	104	50-125	6	20	
<b>Batch: 5C25117 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25117-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25117-BS1)</b>											
Total Suspended Solids	949	10	10	mg/l	1000		95	85-115			
<b>Duplicate Analyzed: 03/25/2005 (5C25117-DUP1)</b>											
						<b>Source: IOC2063-01</b>					
Total Suspended Solids	ND	10	10	mg/l		ND				10	
<b>Batch: 5C25118 Extracted: 03/25/05</b>											
<b>Duplicate Analyzed: 03/25/2005 (5C25118-DUP1)</b>											
						<b>Source: IOC2063-01</b>					
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C25119 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25119-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25119-BS1)</b>											
Total Cyanide	194	5.0	2.2	ug/l	200		97	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25119-MS1)</b>											
						<b>Source: IOC2062-01</b>					
Total Cyanide	191	5.0	2.2	ug/l	200	ND	96	70-115			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25119-MSD1)</b>											
						<b>Source: IOC2062-01</b>					
Total Cyanide	195	5.0	2.2	ug/l	200	ND	98	70-115	2	15	
<b>Batch: 5C26056 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C26056-BLK1)</b>											
Turbidity	0.0500	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 03/26/2005 (5C26056-DUP1)</b>											
						<b>Source: IOC2062-01</b>					
Turbidity	11.9	1.0	0.040	NTU		12			1	20	
<b>Batch: 5C28067 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28067-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28067-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0		98	80-115			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28067 Extracted: 03/28/05</b>											
<b>Matrix Spike Analyzed: 03/28/2005 (5C28067-MS1)</b>						<b>Source: IOC2120-01</b>					
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0	ND	98	70-120			
<b>Matrix Spike Dup Analyzed: 03/28/2005 (5C28067-MSD1)</b>						<b>Source: IOC2120-01</b>					
Ammonia-N (Distilled)	8.96	0.50	0.30	mg/l	10.0	ND	90	70-120	9	15	
<b>Batch: 5C28069 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28069-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28069-BS1)</b>											
Oil & Grease	19.7	5.0	0.94	mg/l	20.0		98	65-120			M-NR1
<b>LCS Dup Analyzed: 03/28/2005 (5C28069-BSD1)</b>											
Oil & Grease	19.1	5.0	0.94	mg/l	20.0		96	65-120	3	20	
<b>Batch: 5C28078 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28078-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28078-BS1)</b>											
Total Dissolved Solids	956	10	10	mg/l	1000		96	90-110			
<b>Duplicate Analyzed: 03/28/2005 (5C28078-DUP1)</b>						<b>Source: IOC1740-01</b>					
Total Dissolved Solids	288	10	10	mg/l		280			3	10	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28081 Extracted: 03/28/05</b>											
<b>Duplicate Analyzed: 03/28/2005 (5C28081-DUP1)</b>						<b>Source: IOC1740-01</b>					
Specific Conductance	507	1.0	1.0	umhos/cm		500			1	5	
<b>Batch: 5C29079 Extracted: 03/29/05</b>											
<b>Blank Analyzed: 03/29/2005 (5C29079-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 03/29/2005 (5C29079-BS1)</b>											
Total Organic Carbon	10.4	1.0	0.25	mg/l	10.0		104	90-110			
<b>Matrix Spike Analyzed: 03/29/2005 (5C29079-MS1)</b>						<b>Source: IOC2115-02</b>					
Total Organic Carbon	9.84	1.0	0.25	mg/l	5.00	5.3	91	80-120			
<b>Matrix Spike Dup Analyzed: 03/29/2005 (5C29079-MSD1)</b>						<b>Source: IOC2115-02</b>					
Total Organic Carbon	10.0	1.0	0.25	mg/l	5.00	5.3	94	80-120	2	20	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager



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Pasadena, CA 91101  
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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

METHOD BLANK/QC DATA

1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: P5D0112 Extracted: 04/01/05</b>											
<b>Blank Analyzed: 04/01/2005 (P5D0112-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.18			ug/l	1.00		118	80-125			
<b>LCS Analyzed: 04/01/2005 (P5D0112-BS1)</b>											
1,4-Dioxane	9.20	1.0	0.49	ug/l	10.0		92	70-130			
Surrogate: Dibromofluoromethane	1.16			ug/l	1.00		116	80-125			
<b>LCS Dup Analyzed: 04/01/2005 (P5D0112-BSD1)</b>											
1,4-Dioxane	9.55	1.0	0.49	ug/l	10.0		96	70-130	4	20	
Surrogate: Dibromofluoromethane	1.17			ug/l	1.00		117	80-125			
<b>Matrix Spike Analyzed: 04/01/2005 (P5D0112-MS1) Source: POC0730-06</b>											
1,4-Dioxane	12.6	1.0	0.49	ug/l	10.0	3.4	92	70-150			
Surrogate: Dibromofluoromethane	1.22			ug/l	1.00		122	80-125			
<b>Matrix Spike Dup Analyzed: 04/01/2005 (P5D0112-MSD1) Source: POC0730-06</b>											
1,4-Dioxane	12.9	1.0	0.49	ug/l	10.0	3.4	95	70-150	2	25	
Surrogate: Dibromofluoromethane	1.18			ug/l	1.00		118	80-125			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager





MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M1** The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- N-1** See case narrative.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ZX** Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical *California Cert #1640*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOC2063-01

Analysis Performed: EDD + Level 4  
 Samples: IOC2063-01

#### Aquatic Testing Laboratories-SUB *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chronic  
 Samples: IOC2063-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

## **Aquatic Testing Laboratories-SUB** *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC2063-01

## **Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC2063-01

## **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC2063-01

Analysis Performed: Gamma Scan  
Samples: IOC2063-04

Analysis Performed: Gross Alpha  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Gross Beta  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Radium, Combined  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Strontium 90  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Tritium  
Samples: IOC2063-01, IOC2063-03

## **Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC2063-01

Analysis Performed: Level 4 Data Package  
Samples: IOC2063-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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**IOC2063 <Page 59 of 59>**

IO02063

CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/23/05

Client Name/Address: MVH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES Outfall 011 -- 13267	
Project Manager: Bronwyn Kelly		Perimeter Pond	
Sampler: <i>Linda Hayes</i>		Phone Number: (626) 568-6691	
		Fax Number: (626) 568-6515	

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals B, Ba, Cu, Pb, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V, Cr, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Ttr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PCBs	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list	Field readings: Temp = 59.7 pH = 6.7	Comments
Outfall 011	W	Poly-1L	1	3/25/05	HNO3	1A	X														
Outfall 011-Dup	W	Poly-1L	1		HNO3	1B	X														
Outfall 011	W	Poly-1L	1		None	2		X													
Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C			X												
Outfall 011	W	1L Amber	2		None	4A, 4B			X												
Outfall 011	W	1L Amber	2		HCl	5A, 5B			X												
Outfall 011	W	Poly-500 ml	1		NaOH	6					X										
Outfall 011	W	Poly-1L	1		None	7						X									
Outfall 011	W	Poly-500 ml	2		None	8A, 8B							X								
Outfall 011	W	Poly-500 ml	2		None	9A, 9B								X							
Outfall 011	W	Poly-500 ml	2		None	10A, 10B									X						
Outfall 011	W	Poly-500 ml	1		H2SO4	11										X					
Outfall 011	W	1L Amber	2		None	12A, 12B											X				
Outfall 011	W	1L Amber	2		None	13A, 13B												X			
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C, 14D			X												

Relinquished By <i>Linda Hayes</i>	Date/Time: 3-25-05	Received By <i>Gayle</i>	Date/Time: 3-25-05
Relinquished By <i>Linda Hayes</i>	Date/Time: 3-25-05	Received By <i>Gayle</i>	Date/Time: 3-25-05
Relinquished By <i>Gayle</i>	Date/Time: 3-25-05	Received By <i>Gayle</i>	Date/Time: 3-25-05

Turn around Time: (check)  
 24 Hours  5 Days   
 48 Hours  10 Days   
 72 Hours  Normal   
 Perchlorate Only 72 Hours   
 Metals Only 72 Hours   
 Sample integrity: (Check)  Intact  On Ice  2

CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:				ANALYSIS REQUIRED										Comments
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 - 13267 Perimeter Pond				Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2C/E	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	
Sample Description	Sample Matrix	Container Type	# of Containers	Preservative	Bottle #	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2C/E	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	
Outfall 011	W	150ml Brown Poly	1 ✓	None	15	X										
Outfall 011	W	VOA	6 ✓	HCl	16A, 16B, 16C, 16D, 16E, 16G		X									
Outfall 011	W	500ml Poly	1 ✓	None	17			X								
Outfall 011	W	1L Amber	2 ✓	HCl	18A, 18B			X								
Outfall 011	W	1L Amber	2 ✓	None	19A, 19B					X						
Outfall 011	W	VOA	3 ✓	HCl	20A, 20B, 20C						X					
Outfall 011	W	1L Amber	2 ✓	None	21A, 21B							X				
Outfall 011	W	VOA	3 ✓	None	22A, 22B, 22C								X			
Outfall 011	W	Poly-1Gal	2 ✓	None	23A, 23B									X		
Outfall 011	W	1L Amber VOA	8 ✓ 4 ✓	None	24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L									X	* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA > 15pCi/L	
Trip Blanks	W	VOA	3 ✓	None	25A, 25B, 25C											
Trip Blanks	W	VOA	3 ✓	HCl	26A, 26B, 26C						X					
Relinquished By						Received By	Date/Time								Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____ Sample Integrity: (Check) _____ Intact _____ On Ice: _____	
Relinquished By						Received By	Date/Time									
Relinquished By						Received By	Date/Time									

3-25-05 15:15  
3-25-05 18:30  
3-25-05 18:30



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April 7, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/25/05  
 Del Mar Analytical Number: IOC2063

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

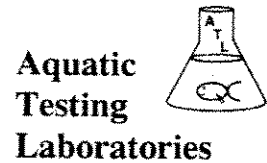
MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Grab	IOC2063-01	A-05032601-001/002	941100-1	25967-001	PENDING

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650- 0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** April 2, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05032601-001/002  
**Sample I.D.:** IOC2063-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 03/25/05  
Date Received: 03/26/05  
Date Tested: 03/26/05 to 04/01/05

**Sample Analysis:** The following analyses were performed on your sample:


Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

  
Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05032601-001

Client/ID: Del Mar - IOC2063-01

Start Date: 03/26/2005

## TEST SUMMARY

Species: *Pimephales promelas*.

Age: 8 (1-14) days.

Regulations: NPDES.

Test solution volume: 250 ml.

Feeding: prior to renewal at 48 hrs.

Number of replicates: 2.

Dilution water: Moderately hard reconstituted water.

Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.

Test type: Static-Renewal.

Test Protocol: EPA-821-R-02-012.

Endpoints: Percent Survival at 96 hrs.

Test chamber: 600 ml beakers.

Temperature: 20 +/- 1°C.

Number of fish per chamber: 10.

QA/QC Batch No.: RT-050303.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.0	9.1	8.1	0	0	LM 1000
	100%	19.7	9.4	7.8	0	0	
24 Hr	Control	19.4	7.2	7.9	0	0	R 1000
	100%	19.5	7.3	7.9	0	0	
48 Hr	Control	19.8	6.0	7.7	0	0	R 1000
	100%	19.7	7.4	7.9	0	0	
Renewal	Control	20.1	8.4	7.7	0	0	R 1000
	100%	20.1	9.5	7.6	0	0	
72 Hr	Control	19.6	7.0	7.8	0	0	LM 1030
	100%	19.6	8.4	8.0	0	0	
96 Hr	Control	19.8	7.4	7.8	0	0	LM 1030
	100%	19.9	7.7	7.9	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 7.8; Conductivity: 195 umho; Temp: 4°C;

DO: 9.4 mg/l; Alkalinity: 162 mg/l; Hardness: 79 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.

Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No

Control: Alkalinity: 57 mg/l; Hardness: 95 mg/l; Conductivity: 300 umho.

Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes / No

Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %



**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05032601  
Client/ID: Del Mar IOC2063-01

Date Tested: 03/26/05 to 04/01/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050326.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	31.4
6.25%	100%	31.2
12.5%	100%	33.5
25%	100%	30.9
50%	100%	33.1
100%	100%	33.6

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female average	Pass (31.4 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 11.3%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0651  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOC2063**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Aquatic Testing Laboratories-SUB  
 4350 Transport Street, Unit 107  
 Ventura, CA 93003  
 Phone: (805) 650-0546  
 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2063-01 Water	Sampled: 03/25/05 12:00	Instant Notification
Bioassay-7 dy Chmic	03/27/05 00:00	ceriodaphnia, 13267
Bioassay-Acute 96hr	03/27/05 00:00	fathead minnow, 13267

**Containers Supplied:**  
 1 gal Poly (IOC2063-01AR)  
 1 gal Poly (IOC2063-01AS)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): 4°C

Released By: [Signature] Date: 3-26-05 Time: 7:42  
 Received By: [Signature] Date: 3-26-05 Time: 5:00 AM  
 Released By: [Signature] Date: 3-26-05 Time: 0742  
 Received By: [Signature] Date: 3-26-05 Time: 0742

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 31, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
*Attention:* Michele Harper

*Project Name:* IOC2063  
*Date Received:* 03/28/05

*Truesdail Project:* 941100

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
941100-1	IOC2063-01	Water	03/25/05	1200	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K.R.P. 9/4/05  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

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**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOC2063  
**Date Received:** 03/28/05

**Truesdail Project:** 941100

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.

**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager



**REPORT**

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2063  
**P.O. Number:** IOC2063  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

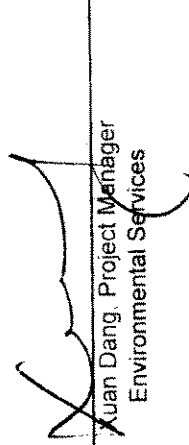
**Laboratory No:** 941100  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

**Analytical Results**

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
704871-MB	Method Blank	ND	ND	ND	ND	ND
941100	IOC2063-01	ND	ND	ND	ND	ND
MDL		1.2	0.27	0.39		1.0
PQL		5.0	5.0			

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Juan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1937

14201 FRANKLIN AVENUE, TUSTIN, CALIFORNIA 92780-7008  
 (714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOC2063  
**P.O. Number:** IOC2063  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 3024, Analysis: 380  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704871  
**Project Lab. No.:** 941100  
**Spiked Sample ID:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

Parameter	Theoretical Value (µg/L)	Measured Value (µg/L)	% Rec.	Control Limits		Flag
				Rec.	Limits	
Monomethyl Hydrazine	25.0	25.2	101	85-115		PASS
u-Dimethyl Hydrazine	25.0	22.5	89.9	85-115		PASS
Hydrazine	5.0	5.22	104	85-115		PASS

### QCS

Parameter	Theoretical Value (µg/L)	Measured Value (µg/L)	% Rec.	Control Limits		Flag
				Rec.	Limits	
Monomethyl Hydrazine	50.0	45.0	90.1	85-115		PASS
u-Dimethyl Hydrazine	50.0	42.9	85.7	85-115		PASS
Hydrazine	10.0	9.88	98.8	85-115		PASS

### Quality Control/Quality Assurance Spikes Report

Parameter	Spiked Conc. µg/L	Recovered Conc. µg/L	Percent Recovery (%)	LCS/LCSD		Flag	Control Limits	%D	% Rec.
				LCS	LCS/D				
Monomethyl Hydrazine	50.0	45.8	91.7	94.0	2.52%	PASS	70-130	20	70-130
u-Dimethyl Hydrazine	50.0	46.1	92.2	93.6	1.49%	PASS	70-130	20	70-130
Hydrazine	10.0	9.39	93.9	89.6	4.71%	PASS	70-130	20	70-130

Parameter	Spiked Conc. µg/L	Recovered Conc. µg/L	Percent Recovery (%)	MS/MSD		Flag	Control Limits	%D	% Rec.
				MS	MSD				
Monomethyl Hydrazine	50.0	40.4	80.8	10.7%	PASS	20	0-150	20	0-150
u-Dimethyl Hydrazine	50.0	44.5	89.0	7.94%	PASS	20	0-150	20	0-150
Hydrazine	10.0	7.90	79.0	3.24%	PASS	20	0-150	20	0-150

ICV: Initial Calibration Verification  
 QCS: Quality Control Standard  
 LCS: Laboratory Control Spike  
 MS: Matrix Spike  
 %D: Percent Difference  
 Flag: "Pass" if within Control Limits, otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
 Environmental Services

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**941100**  
**Del Mar Analytical**

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOC2063**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Truesdail Laboratories-SUB 14201 Franklin Avenue Tustin, CA 92680 Phone: (714) 730-6239 Fax: (714) 730-6462  <i>Rec'd 03/28/05</i> <i>s7d 941100</i>

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2063-01 Water	Sampled: 03/25/05 12:00	Instant Notification
Hydrazine-OUT	03/28/05 12:00	J flags, Sub Truesdail for Monomethylhydrazine
Level 4 Data Package	04/22/05 12:00	

Containers Supplied:  
 1 L Amber (IOC2063-01AM)  
 1 L Amber (IOC2063-01AN)

**RUSH**

**ALERT !!**  
**Level IV QC**

**For Sample Conditions**  
**See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

*[Signature]* 3-28-05 805      *Rick Peruta* 3-28-05 8:05  
 Released By      Date      Time      Received By      Date      Time  
*Rick Peruta* 3-28-05 912      *[Signature]* 3/28/05 9:12  
 Released By      Date      Time      Received By      Date      Time



TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 941100

Date Delivered: 03/28/05 Time: 9:12 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  Yes  No  N/A  
Temperature (if yes)? 4°C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  Yes  No  N/A  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  Yes  No  N/A  
If not, notify the Project Manager
14. Have Project due dates been checked and accepted?  Yes  No  N/A  
Turn Around Time (TAT):  RUSH  Standard

**ALERT!!  
Level IV QC**

**RUSH**

15. Sample Matrix:  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water

16. Comments: \_\_\_\_\_

17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Shabunsky



# Internal Chain of Custody Logbook

Number: 941100  
 Kit Name: Del MAR

Storage Temperature: 4°C

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				8/28/05	9:30			<i>[Signature]</i>
	HydroZinc-2905	11:30		8-28-05	1430	100	NOGA	<i>[Signature]</i>

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials



April 02, 2005

**Alta Project I.D.: 25967**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 29, 2005 under your Project Name "IOC2063". These samples were extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

Results qualified with an "A" are lower than the EPA Method 1613 Minimum Level, and above the lower calibration limit.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in cursive script that reads "Martha M. Maier".

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 3/29/2005**

Alta Lab. ID

Client Sample ID

25967-001

IOC2063-01

**SECTION II**



Method Blank		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	6653	Lab Sample:	0-MB001	
Sample Size:	1,000 L	Date Extracted:	30-Mar-05	Date Analyzed DB-5:	31-Mar-05	
				Date Analyzed DB-225:	NA	
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.000000554		13C-2,3,7,8-TCDD	85.8	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000438		13C-1,2,3,7,8-PeCDD	89.3	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.000000693		13C-1,2,3,4,7,8-HxCDD	78.7	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.000000669		13C-1,2,3,6,7,8-HxCDD	92.3	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.000000673		13C-1,2,3,4,6,7,8-HpCDD	77.2	23 - 140
1,2,3,4,6,7,8-HpCDD	ND	0.000000795		13C-OCDD	50.0	17 - 157
OCDD	ND	0.00000232		13C-2,3,7,8-TCDF	91.1	24 - 169
2,3,7,8-TCDF	ND	0.000000436		13C-1,2,3,7,8-PeCDF	89.9	24 - 185
1,2,3,7,8-PeCDF	ND	0.000000695		13C-2,3,4,7,8-PeCDF	96.8	21 - 178
2,3,4,7,8-PeCDF	ND	0.000000592		13C-1,2,3,4,7,8-HxCDF	77.8	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000264		13C-1,2,3,6,7,8-HxCDF	87.0	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000253		13C-2,3,4,6,7,8-HxCDF	84.8	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000263		13C-1,2,3,7,8,9-HxCDF	80.9	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.000000408		13C-1,2,3,4,6,7,8-HpCDF	72.1	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000381		13C-1,2,3,4,7,8,9-HpCDF	76.9	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000359		13C-OCDF	57.9	17 - 157
OCDF	ND	0.00000147		CRS 37Cl-2,3,7,8-TCDD	90.5	35 - 197
<b>Totals</b>						
Total TCDD	ND	0.000000554				
Total PeCDD	ND	0.000000438				
Total HxCDD	ND	0.000000677				
Total HpCDD	ND	0.000000795				
Total TCDF	ND	0.000000436				
Total PeCDF	ND	0.000000642				
Total HxCDF	ND	0.000000291				
Total HpCDF	ND	0.000000450				
<b>Footnotes</b>						
a. Sample specific estimated detection limit.						
b. Estimated maximum possible concentration.						
c. Method detection limit.						
d. Lower control limit - upper control limit.						

Analyst: RAS

Approved By: William J. Luksemburg 01-Apr-2005 14:54



**EPA Method 1613**

OPR Results		Lab Sample: 0-OPR001		Date Analyzed DB-5: 31-Mar-05		Date Analyzed DB-225: NA	
Matrix:	Aqueous	QC Batch No.:	6653	Sample Size:	1.000 L	Date Analyzed DB-5:	31-Mar-05
Analyte	Spike Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL		
2,3,7,8-TCDD	10.0	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	68.5	25 - 164		
1,2,3,7,8-PeCDD	50.0	35 - 71	13C-1,2,3,7,8-PeCDD	68.2	25 - 181		
1,2,3,4,7,8-HxCDD	50.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	88.5	32 - 141		
1,2,3,6,7,8-HxCDD	50.0	38 - 67	13C-1,2,3,6,7,8-HxCDD	101	28 - 130		
1,2,3,7,8,9-HxCDD	50.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	70.5	23 - 140		
1,2,3,4,6,7,8-HpCDD	50.0	35 - 70	13C-OCDD	38.0	17 - 157		
OCDD	100	78 - 144	13C-2,3,7,8-TCDF	75.2	24 - 169		
2,3,7,8-TCDF	10.0	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	66.3	24 - 185		
1,2,3,7,8-PeCDF	50.0	40 - 67	13C-2,3,4,7,8-PeCDF	72.3	21 - 178		
2,3,4,7,8-PeCDF	50.0	34 - 80	13C-1,2,3,4,7,8-HxCDF	88.8	26 - 152		
1,2,3,4,7,8-HxCDF	50.0	36 - 67	13C-1,2,3,6,7,8-HxCDF	97.3	26 - 123		
1,2,3,6,7,8-HxCDF	50.0	42 - 65	13C-2,3,4,6,7,8-HxCDF	86.3	28 - 136		
2,3,4,6,7,8-HxCDF	50.0	35 - 78	13C-1,2,3,7,8,9-HxCDF	84.2	29 - 147		
1,2,3,7,8,9-HxCDF	50.0	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	69.1	28 - 143		
1,2,3,4,6,7,8-HpCDF	50.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	76.9	26 - 138		
1,2,3,4,7,8,9-HpCDF	50.0	39 - 69	13C-OCDF	49.3	17 - 157		
OCDF	100	63 - 170	CRS 37Cl-2,3,7,8-TCDD	74.7	35 - 197		

Analyst: RAS

Approved By: William J. Luksemburg 01-Apr-2005 13:47



Sample ID: IOC2063-01		EPA Method 1613					
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25967-001		
Project:	IOC2063	Sample Size:	1.004 L	QC Batch No.:	6653		
Date Collected:	25-Mar-05			Date Analyzed DB-5:	31-Mar-05		
Time Collected:	1200			Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000460		IS 13C-2,3,7,8-TCDD	76.4	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000455		13C-1,2,3,7,8-PeCDD	78.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.000000622		13C-1,2,3,4,7,8-HxCDD	91.7	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.000000621		13C-1,2,3,6,7,8-HxCDD	102	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.000000615		13C-1,2,3,4,6,7,8-HpCDD	75.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.000000655		J	13C-OCDD	44.5	17 - 157	
OCDD	0.0000599		A	13C-2,3,7,8-TCDF	84.2	24 - 169	
2,3,7,8-TCDF	ND	0.000000565		13C-1,2,3,7,8-PeCDF	79.2	24 - 185	
1,2,3,7,8-PeCDF	ND	0.000000632		13C-2,3,4,7,8-PeCDF	83.7	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000534		13C-1,2,3,4,7,8-HxCDF	95.1	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000299		13C-1,2,3,6,7,8-HxCDF	102	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000299		13C-2,3,4,6,7,8-HxCDF	91.8	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000361		13C-1,2,3,7,8,9-HxCDF	87.9	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.000000543		13C-1,2,3,4,6,7,8-HpCDF	73.0	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.00000185		J	13C-1,2,3,4,7,8,9-HpCDF	81.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000606		13C-OCDF	50.4	17 - 157	
OCDF	0.00000290		J	CRS 37Cl-2,3,7,8-TCDD	80.8	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.000000460					
Total PeCDD	ND	0.000000455					
Total HxCDD	ND	0.00000115					
Total HpCDD	0.0000159						
Total TCDF	0.00000161		D				
Total PeCDF	ND	0.000000896					
Total HxCDF	0.000000737						
Total HpCDF	0.00000328						

a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Analyst: RAS  
 Approved By: William J. Luksemburg  
 Date: 01-Apr-2005 14:54

**APPENDIX**



---

## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>P</b>	<b>Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that correspond to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.

**CURRENT CERTIFICATIONS**

NELAP — (Primary AA: California, Certificate No. 02102CA)

Department of the Navy

U.S. Army Corps of Engineers

U.S. EPA Region 5

Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)

Commonwealth of Kentucky — (Certificate No. 90063)

Commonwealth of Virginia — (Certificate No. 00013)

State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)

State of Arizona — (Certificate No. AZ0639)

State of Arkansas, Department of Health — (Approval granted through CA certification)

State of Arkansas, Department of Environmental Quality

State of California — (Certificate No. 1640)

State of Colorado

State of Connecticut — (Certificate No. PH-0182)

State of Florida — (Certificate No. 87456)

State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)

State of Louisiana, Department of Environmental Quality

State of Maine

State of Michigan (Certificate No. 81178087)

State of Mississippi — (Approval granted through CA certification)

State of Nevada — (Certificate No. CA413)

State of New Jersey — (Certificate No. CA003)

State of New York, Department of Health — (Certificate No. 11411)

State of North Carolina — (Certification No. 06700)

State of North Dakota, Department of Health — (Certificate No. R-078)

State of New Mexico

State of Oklahoma — (D9919)

State of Oregon — (Certificate No. CA413)

State of Pennsylvania — (Certificate No. 68-490)

State of South Carolina — (Certificate No. 87002001)

State of Tennessee — (Certificate No. 02996)

State of Texas — (Certificate No. TX247-1000A)

State of Utah — (Certificate No. E-201)

State of Washington — (Certification No. C091)

State of Wisconsin — (Certificate No. 998036160)

State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)



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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC2063

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 933-0940 <div style="text-align: right; font-size: 1.5em; margin-top: 10px;">             25967              0.4°C           </div>

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2063-01 Water	Sampled: 03/25/05 12:00	Instant Notification
1613-Dioxin-HR	04/01/05 12:00	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	04/22/05 12:00	Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOC2063-01G)		
1 L Amber (IOC2063-01H)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

	3-28-05	1700		3/29/05	
Released By	Date	Time	Received By	Date	Time

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25967

1. Date Samples Arrived: <u>03/29/05 0915</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
2. Time / Date logged in: <u>1025 3/29/05</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
3. Samples Arrived By: (circle) <u>FedEx</u> UPS World Courier Other:			
4. Shipping Preservation: (circle) <u>Ice</u> <u>Blue Ice</u> / Dry Ice / None Temp °C <u>0.4°C</u>			
	YES	NO	NA
5. Shipping Container(s) Intact? If not, describe condition in comment section.	✓		
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.	✓		
7. Shipping Documentation Present? (circle) Shipping Label <u>Airbill</u> Tracking Number <u>7904 7041 3782</u>	✓		
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section.		✓	✓
9. Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10. Chain of Custody (COC) or other Sample Documentation Present?	✓		
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.	✓		
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed			
13. Container(s) and/or Bottle(s) Requested?		✓	
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted			✓

Comments: Sampler's initials found on sample label





## LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/25/05  
Received: 03/25/05  
Issued: 04/13/05 16:23

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

### CASE NARRATIVE

**SAMPLE RECEIPT:** Samples were received intact, at 2°C, on ice and with chain of custody documentation.

**HOLDING TIMES:** All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.

**PRESERVATION:** Samples requiring preservation were verified prior to sample analysis.

**QA/QC CRITERIA:** All analyses met method criteria, except as noted in the report with data qualifiers. The percent recovery for benzidine in the BS/BSD was below method acceptance limits. Benzidine is known to be a problematic compound and according to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor. All results reported for benzidine are potentially biased low and can be considered estimates only. Results for benzidine are reported with 'L2' qualifier. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported. The sample was then reanalyzed for 2,4-Dinitrophenol and the results are reported as an RE1. Also, there was a low BSD recovery for the original batch for Oil & Grease and the lab re-extracted and re-analyzed the sample.

**COMMENTS:** Results that fall between the MDL and RL are 'J' flagged.

**SUBCONTRACTED:** Refer to the last page for specific subcontract laboratory information included in this report.



# Del Mar Analytical

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

LABORATORY ID	CLIENT ID	MATRIX
IOC2063-01	Outfall 011 Grab	Water
IOC2063-02	Trip Blank	Water
IOC2063-03	Outfall 011 Grab/filter	Water
IOC2063-04	Outfall 011-Grab/Substrate	Water

Reviewed By:

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOC2063-01

Analysis Performed: EDD + Level 4

Samples: IOC2063-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chmic

Samples: IOC2063-01

### Del Mar Analytical, Irvine

Michele Harper

Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2063

Sampled: 03/25/05  
Received: 03/25/05

### **Aquatic Testing Laboratories-SUB** California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC2063-01

### **Del Mar Analytical - Phoenix** NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC2063-01

### **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC2063-01

Analysis Performed: Gamma Scan  
Samples: IOC2063-04

Analysis Performed: Gross Alpha  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Gross Beta  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Radium, Combined  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Strontium 90  
Samples: IOC2063-01, IOC2063-03

Analysis Performed: Tritium  
Samples: IOC2063-01, IOC2063-03

### **Truesdail Laboratories-SUB** California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC2063-01

Analysis Performed: Level 4 Data Package  
Samples: IOC2063-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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IOX2063

# CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/23/05

<b>Client Name/Address:</b> <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 <b>Project Manager: Bronwyn Kelly</b> <b>Sampler: Linda Hayes.</b>		<b>Project:</b> Boeing-SSFL NPDES <b>Outfall 011 - 13267</b> Perimeter Pond Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>ANALYSIS REQUIRED</b>														Field readings: Temp = 59.7 pH = 6.7 Comments						
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Bottle #	Total Recoverable Metals: Pb, Cu, Pd, Ni, Se, Ag, Cr, Mn, Zn, Co, V, Cr, Hg	Settleable Solids	VOCs 624 + Xylenes + Freon 123 A + PF list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl-, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2)	Alpha BHC (608) + PF list	2,4,6 Trichlorophenol, 2,4-dinitrophenol, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PF list					
Outfall 011	W	Poly-1L	1	3/25/05 15:25	HNO3	1A	X																	
Outfall 011-Dup	W	Poly-1L	1		HNO3	1B	X																	
Outfall 011	W	Poly-1L	1		None	2																		
Outfall 011	W	VOAs	3		HCl	3A, 3B, 3C																		
Outfall 011	W	1L Amber	2		None	4A, 4B				X														
Outfall 011	W	1L Amber	2		HCl	5A, 5B					X													
Outfall 011	W	Poly-500 ml	1		NaOH	6					X													
Outfall 011	W	Poly-1L	1		None	7						X												
Outfall 011	W	Poly-500 ml	2		None	8A, 8B							X											
Outfall 011	W	Poly-500 ml	2		None	9A, 9B								X										
Outfall 011	W	Poly-500 ml	2		None	10A, 10B									X									
Outfall 011	W	Poly-500 ml	1		H2SO4	11										X								
Outfall 011	W	1L Amber	2		None	12A, 12B												X						
Outfall 011	W	1L Amber	2		None	13A, 13B													X					
Trip Blank	W	VOAs	3		HCl	14A, 14B, 14C			X															
Relinquished By	Linda Hayes		3-25-05	15:25	Received By		Linda Hayes		3-25-05	15:25	Turn around Time: (check)		24 Hours	5 Days	48 Hours	10 Days	72 Hours	Normal	Perchlorate Only 72 Hours	Metals Only 72 Hours	Sample Integrity: (Check)	Intact	On Ice:	2

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		<b>Project Manager:</b> Bronwyn Kelly Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>Sampler:</b> Linda Hayes		<b>ANALYSIS REQUIRED</b>									
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (908.0, Sr-90 (905.0), Total 228, Tritium)	Comments	
Outfall 011	W	150ml Brown Poly	1 ✓	None	3/25/05 12:00	X											
Outfall 011	W	VOA	6 ✓	HCl			X										
Outfall 011	W	500ml Poly	1 ✓	None				X									
Outfall 011	W	1L Amber	2 ✓	HCl					X								
Outfall 011	W	1L Amber	2 ✓	None						X							
Outfall 011	W	VOA	3 ✓	HCl							X						
Outfall 011	W	1L Amber	2 ✓	None								X					
Outfall 011	W	VOA	3 ✓	None									X				
Outfall 011	W	Poly-1Gal	2 ✓	None										X		* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA > 15pCi/L	
Outfall 011	W	1L Amber VOA	8 ✓ 4 ✓	None											X		
Trip Blanks	W	VOA	3 ✓	None													
Trip Blanks	W	VOA	3 ✓	HCl							X						
Relinquished By	Linda Hayes		3/25/05	15:15	Received By	Yasuyuki		3-25-05	15:15	Turn around time: (check) 24 Hours <input type="checkbox"/> 5 Days <input checked="" type="checkbox"/> 10 Days <input type="checkbox"/> 72 Hours <input type="checkbox"/>		Perchlorate Only 72 Hours <input type="checkbox"/>		Metals Only 72 Hours <input type="checkbox"/>		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/>	
Relinquished By	Linda Hayes		3-25-05	18:30	Received By	[Signature]		3/25/05	(8:30)	Perchlorate Only 72 Hours <input type="checkbox"/>		Metals Only 72 Hours <input type="checkbox"/>		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/>			



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (656) 505-8596 FAX (656) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Project: 13267 (Study 1)/Outfall 011  
Sampled: 03/25/05  
Del Mar Analytical Number: IOC2063

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), Radium 228 (904.0) and Cesium 137 by Gamma Spectroscopy (EPA 901.1) for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Grab	IOC2063-01	A-05032601-001/002	941100-1	25967-001	R503230-8381-001
Outfall 011 Grab/Filtered	IOC2063-03	NA	NA	NA	R503230-8381-002
Outfall 011 Grab/Substrate	IOC2063-04	NA	NA	NA	R503231-8382-001

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
DEL MAR ANALYTICAL

Michele Harper  
Project Manager



# EBERLINE SERVICES

May 11, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOC2063  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503230-8381

Dear Ms. Harper:

Enclosed are results from the analyses of two water samples received at Eberline Services on March 29, 2005. The samples were analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), strontium-90 (Sr-90, EPA905.0), Ra-226 (EPA903.1), and Ra-228 (EPA904.0). The QC LCS, blank analyses, sample duplicates, and matrix spike samples results were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Ra-228, do not require matrix spike analyses to be performed. No problems encountered during the analyses.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/njv*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

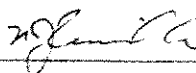
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0436  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8381</u> Work Order <u>R503230-01</u> Received Date <u>03/29/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOC2063</u> Matrix <u>WATER</u>
--	---

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOC2063-01	8381-001	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
			04/18/05	Sr90	-0.052 ± 0.37	pCi/L	0.658
IOC2063-03	8381-002	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
			04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535

Certified by <u></u> Report Date <u>05/11/05</u> Page 1
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# Eberline Services

## QC RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8381-003	GrossAlpha	10.7 ± 1.2	pCi/Smpl	11.2	0.420	96% recovery
		Gross Beta	12.2 ± 0.81	pCi/Smpl	12.0	0.550	102% recovery
		H3	235 ± 25	pCi/Smpl	257	27.4	91% recovery
		Ra226	5.10 ± 0.17	pCi/Smpl	5.59	0.047	91% recovery
		Sr90	12.4 ± 0.68	pCi/Smpl	11.1	0.283	112% recovery
<u>BLANK</u>							
	8381-004	GrossAlpha	-0.073 ± 0.14	pCi/Smpl	NA	0.379	<MDA
		Gross Beta	0.067 ± 0.34	pCi/Smpl	NA	0.586	<MDA
		H3	-0.412 ± 16	pCi/Smpl	NA	27.5	<MDA
		Ra226	0.018 ± 0.024	pCi/Smpl	NA	0.040	<MDA
		Sr90	-0.007 ± 0.14	pCi/Smpl	NA	0.280	<MDA
<u>LCS</u>							
	9489-003	Ra228	11.0 ± 0.61	pCi/Smpl	10.1	0.763	109% recovery
<u>BLANK</u>							
	9489-004	Ra228	-0.361 ± 0.30	pCi/Smpl	NA	0.821	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8381-005	GrossAlpha	1.15 ± 0.86	1.15
	Gross Beta	2.11 ± 1.2	1.82
	H3	66.7 ± 160	278
	Ra226	0.186 ± 0.20	0.326
	Sr90	-0.125 ± 0.23	0.504
9489-005	Ra228	0.001 ± 0.14	0.400

<u>ORIGINALS</u>						
Sample ID	Results ± 2σ	MDA	3σ	RPD (Tot)	Eval	
8381-001	0.510 ± 0.59	0.852	77	194	satis.	
	2.97 ± 1.3	1.84	33	109	satis.	
	-16.7 ± 160	279	-	0	satis.	
	-0.229 ± 0.19	0.396	-	0	satis.	
	-0.052 ± 0.37	0.658	-	0	satis.	
9489-002	-0.077 ± 0.15	0.414	-	0	satis.	

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8381-006	GrossAlpha	87.8 ± 5.8	0.847
	Gross Beta	79.5 ± 3.6	1.79
	H3	18000 ± 600	290
	Ra226	128 ± 2.6	0.359

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8381-001	0.510 ± 0.59	0.852	76.6	114	
	2.97 ± 1.3	1.84	73.7	104	
	-16.7 ± 160	279	18800	96	
	-0.229 ± 0.19	0.396	123	104	

Certified by
Report Date <u>05/11/05</u>
Page 2



# EBERLINE SERVICES

July 6, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Eberline Services NELAP Cert #01120CA (exp. 01/31/06)

Dear Ms. Harper:

Enclosed are revised gamma Cs-137 reports for various projects, the project numbers and Eberline Services report numbers are given below. The results were previously reported in the units of pCi/sample; the enclosed reports present the results in the recalculated units of pCi/g.

<u>Del Mar Project</u>	<u>Eberline Services Report</u>
IOB1069-03	R502140-8269
IOB1576-03	R502216-8295
IOB2065-04	R503156-8346
IOB1014-04	R503158-8348
IOC1523-04	R503160-8350
IOC1562-03	R503162-8352
IOC2063-04	R503231-8382
IOD2061-03	R505003-8443

Please call me if you have any questions concerning the enclosed reports.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/mjv*

Enclosure: Reports  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)



Eberline Services

ANALYSIS RESULTS

SDG <u>8382</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503231-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>SOLID</u>

Client	Lab	Collected	Analyzed	Nuclide	Results $\pm 2\sigma$	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
IOC2063-04	8382-001	03/25/05	04/19/05	Cs137 (G)	U	pCi/G	19.4

Certified by <u><i>ndj</i></u>
Report Date <u>07/06/05</u>
Page 1

Eberline Services

QC RESULTS

SDG <u>8382</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503231-01</u>	Contract <u>PROJECT# 10C2063</u>
Received Date <u>03/29/05</u>	Matrix <u>SOLID</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>	8382-002	Cs137 (G)	229 ± 28	pCi/Smpl	222	24.0	103% recovery
<u>BLANK</u>	8382-003	Cs137 (G)	U	pCi/Smpl	NA	9.85	<MDA

<u>DUPLICATES</u>				<u>ORIGINALS</u>			
Sample ID	Nuclide	Results ± 2σ	MDA	Sample ID	Results ± 2σ	MDA	RPD (Tot) Eval
8382-004	Cs137 (G)	U	25.8	8382-001	U	19.4	- 0 satis.

Certified by <u>[Signature]</u>
Report Date <u>07/06/05</u>
Page 2



1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC2063

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: 3 weeks Initials: \_\_\_\_\_

Analysis	Expiration	Sampled:	Comments
Sample ID: IOC2063-01 Water		03/25/05 12:00	<del>Instant Notification</del> Analyze as received, do not preserve
EDD + Level 4-OUT	04/22/05 12:00		**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	03/25/06 12:00		900.0
Gross Beta-O	03/25/06 12:00		900.0 <sup>903.1</sup> <sup>MLM</sup> <sup>3/31/05</sup>
Radium, Combined-O	03/25/06 12:00		EPA 903.0 & 904.0
Strontium 90-O	03/25/06 12:00		905.0
Tritium-O	03/25/06 12:00		906

- Containers Supplied:**
- 1 L Amber (IOC2063-01AT)
  - 1 L Amber (IOC2063-01AU)
  - 1 L Amber (IOC2063-01AV)
  - 1 L Amber (IOC2063-01AW)
  - 40 ml Voa Vial (IOC2063-01AX)
  - 40 ml Voa Vial (IOC2063-01AY)
  - 40 ml Voa Vial (IOC2063-01AZ)
  - 40 ml Voa Vial (IOC2063-01BA)

Sample ID: IOC2063-03 Water		Sampled: 03/25/05 12:00	Filter w/preweighed .45 um & preserve (except H3)
Gross Alpha-O	03/25/06 12:00		900.0
Gross Beta-O	03/25/06 12:00		900.0 <sup>903.1</sup> <sup>MLM</sup> <sup>3/31/05</sup>
Radium, Combined-O	03/25/06 12:00		EPA 903.0 & 904.0
Strontium 90-O	03/25/06 12:00		905.0
Tritium-O	03/25/06 12:00		906

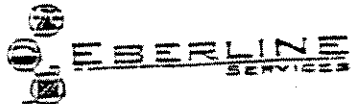
- Containers Supplied:**
- 1 L Amber (IOC2063-03A)
  - 1 L Amber (IOC2063-03B)
  - 1 L Amber (IOC2063-03C)
  - 1 L Amber (IOC2063-03D)

Sample ID: IOC2063-04 Water		Sampled: 03/25/05 12:00	Analyze substrate on filter from IOB2065-03
Gamma Scan-O	03/25/06 12:00		Cesium 137, EPA 901.1, 20 pci/sample RL

	3-28-05	1700	SON THAI	03/29/05	10:20 AM
Released By	Date	Time	Received By	Date	Time

Released By	Date	Time	Received By	Date	Time

RICHMOND, CA LABORATORY



SAMPLE RECEIPT CHECKLIST

Client DEL MAR City IRVINE State CA  
 Date/Time received 03/29/05 CoC No. IOC 2063  
10:00 AM  
 Container I.D. No. \_\_\_\_\_ Requested TAT (Days) 3 WEEKS P.D. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]  
 2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]  
 3. Custody seals on sample containers intact? Yes [ ] No [  ] N/A [ ]  
 4. Custody seals on sample containers dated & signed? Yes [ ] No [  ] N/A [ ]  
 5. Packing material is: Wet [  ] Dry [ ]  
 6. Number of samples in shipping container: 2 Sample Matrix water  
 7. Number of containers per sample: \_\_\_\_\_ (Or see CoC IOC 2063)  
 8. Samples are in correct container Yes [  ] No [ ]  
 9. Paperwork agrees with samples? Yes [  ] No [ ]  
 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]  
 11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]  
 12. Samples are: Preserved [  ] Not preserved [ ] pH 7 Preservative \_\_\_\_\_  
 13. Describe any anomalies: \_\_\_\_\_  
 14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_  
 15. Inspected by TS Date: 03/29/05 Time: 10:00 AM

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 34**

Outfall 011, March 25, 2005


MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF40  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Alta  
 Reviewer H. Chang  
 Analysis/Method Dioxins & Furans /1613

Date: April 7, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Detects below the method calibration level were qualified "J." EMPCs were qualified "UJ." Ether interference was qualified "UJ."
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOC0871, IOC2062, IOC2063,  
IOC2064, IOC2093

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC0871, IOC2062, IOC2063, IOC2064, IOC2093  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 7, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 018	IOC0871-01	25975-001	water	1613
Outfall 002	IOC2062-01	25969-001	water	1613
Outfall 011	IOC2063-01	25967-001	water	1613
Outfall 011 Composite	IOC2064-01	25968-001	water	1613
Outfall 001	IOC2093-01	25970-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples in these SDGs were received at Del Mar with cooler temperatures within the QC limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  with the exception of sample Outfall 002 which was received at  $8^{\circ}\text{C}$ . The samples were received at  $0.4^{\circ}\text{C}$  at Alta. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. Due to non-volatile nature of the target compounds and since all samples were received intact, no qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 01/21/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning and end of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0\_6653\_MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_6653\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any results reported as Estimated Maximum Possible Concentration (EMPC) were qualified as estimated nondetects, "UJ." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J;" however, as Alta analyzed an additional calibration standard, the results below the lower MCL but above the lower calibration level were flagged with "A" laboratory qualifier. These results were qualified as estimated, "J," by the reviewer.

2,3,7,8-TCDF was detected in sample Outfall 018; however, no confirmation was performed since the level of the detect was below the calibration range. This compound was qualified as estimated, "J."

The Total TCDF result in sample Outfall 011 was reported with "D" laboratory qualifier due to the presence of ether. Total TCDF was qualified as "J" in this sample. No further qualifications were required.



Sample ID: IOC2063-01 *Outfall 011*

Client Data		Sample Data		Laboratory Data		EPA Method 1613	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25967-001	Date Received:	29-Mar-05
Project:	IOC2063	Sample Size:	1.004 L	QC Batch No.:	6653	Date Extracted:	30-Mar-05
Date Collected:	25-Mar-05			Date Analyzed DB-5:	31-Mar-05	Date Analyzed DB-225: NA	
Time Collected:	1200						
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.000000460			IS 13C-2,3,7,8-TCDD	76.4	25 - 164
1,2,3,7,8-PeCDD	ND	0.000000455			13C-1,2,3,7,8-PeCDD	78.4	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.000000622			13C-1,2,3,4,7,8-HxCDD	91.7	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.000000621			13C-1,2,3,6,7,8-HxCDD	102	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.000000615			13C-1,2,3,4,6,7,8-HpCDD	75.8	23 - 140
1,2,3,4,6,7,8-HpCDD	0.00000655			J	13C-OCDD	44.5	17 - 157
OCDD	0.0000599			A	13C-2,3,7,8-TCDF	84.2	24 - 169
2,3,7,8-TCDF	ND	0.000000565			13C-1,2,3,7,8-PeCDF	79.2	24 - 185
1,2,3,7,8-PeCDF	ND	0.000000632			13C-2,3,4,7,8-PeCDF	83.7	21 - 178
2,3,4,7,8-PeCDF	ND	0.000000534			13C-1,2,3,4,7,8-HxCDF	95.1	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000299			13C-1,2,3,6,7,8-HxCDF	102	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000299			13C-2,3,4,6,7,8-HxCDF	91.8	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000361			13C-1,2,3,7,8,9-HxCDF	87.9	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.000000543			13C-1,2,3,4,6,7,8-HpCDF	73.0	28 - 143
1,2,3,4,6,7,8-HpCDF	0.00000185			J	13C-1,2,3,4,7,8,9-HpCDF	81.0	26 - 138
1,2,3,4,7,8,9-HpCDF	ND				13C-OCDF	50.4	17 - 157
OCDF	0.00000290			J	CRS 37Cl-2,3,7,8-TCDD	80.8	35 - 197
Totals							
Total TCDD	ND	0.000000460					
Total PeCDD	ND	0.000000455					
Total HxCDD	ND	0.00000115					
Total HpCDD	0.0000159						
Total TCDF	0.00000161						
Total PeCDF	ND						
Total HxCDF	0.000000896			D			
Total HpCDF	0.000000737						
Total HpCDF	0.00000328						

Footnotes  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Analytic: RAS

Approved By: William J. Luksenburg 01-Apr-2005 14:54

**AMEC VALIDATED**

LEVEL IV

Project 25967



**Sample ID: IOC2064-01 Outfall Oil Composite**

**EPA Method 1613**

**Laboratory Data**

Lab Sample: 25968-001 Date Received: 29-Mar-05  
 QC Batch No.: 6653 Date Extracted: 30-Mar-05  
 Date Analyzed DB-5: 31-Mar-05 Date Analyzed DB-225: NA

**Sample Data**

Matrix: Aqueous  
 Sample Size: 1.021 L

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOC2064  
 Date Collected: 25-Mar-05  
 Time Collected: 1440

**Analyte**      **Conc. (ug/L)**      **DL<sup>a</sup>**      **EMPC<sup>b</sup>**      **Qualifiers**

Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000006545			80.2	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000449			87.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.000000740			73.9	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.000000754			82.8	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.000000740			75.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.00000734			J	53.0	17 - 157	
OCDD	0.0000692			A	86.2	24 - 169	
2,3,7,8-TCDF	ND	0.000000447			88.1	24 - 185	
1,2,3,7,8-PeCDF	ND	0.000000850			89.8	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000779			75.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000247			83.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000238			81.2	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000255			81.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.000000391	0.000000989		73.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000531			76.0	26 - 138	
OCDF	0.00000273			J	61.6	17 - 157	
<b>Totals</b>					88.5	35 - 197	

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: RAS

Approved By: William J. Luksemburg 01-Apr-2005 14:54

**AMEC VALIDATED**  
 LEVEL IV

Project 25968

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711HZ11  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Truesdail

Reviewer P. Meeks

Analysis/Method Hydrazines

Date: 04/11/05  
 Reviewer's Signature  


**ACTION ITEMS\***

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times \_\_\_\_\_
  - GC/MS Tune/Inst. Performance \_\_\_\_\_
  - Calibrations \_\_\_\_\_
  - Blanks \_\_\_\_\_
  - Surrogates \_\_\_\_\_
  - Matrix Spike/Dup LCS \_\_\_\_\_
  - Field QC \_\_\_\_\_
  - Internal Standard Performance \_\_\_\_\_
  - Compound Identification and Quantitation \_\_\_\_\_
  - System Performance \_\_\_\_\_

**COMMENTS\***

Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample identification

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derlan Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2063  
**P.O. Number:** IOC2063  
**Method Number:** 8316 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941100  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qual	Rev	Qual	Rev	Qual	Rev
704871-MB	Method Blank	ND	*	ND	*	ND	*
941100	Outfall oil Grab	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*QMA 4/4/05*

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

**LEVEL IV**

*[Signature]*  
Xuan Dang, Project Manager  
Environmental Services

*Analytical Not Validated*

**AMEC VALIDATED**

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



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14201 FRANKLIN AVENUE · JUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
Liquid / 1 Sample  
Project Name: IOC-2064  
P.O. Number: IOC-2064  
Method Number: 8315 (Modified)  
Investigation: Hydrazines in Liquid

**Laboratory No:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qual Code	Rev Qual Code	Qual Code	Rev Qual Code	Qual Code	Rev Qual Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101	Outfall Oil Composite IOC2064-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*PM 4/1/05*

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

# AMEC VALIDATED

*Analytical Not Validated*

# LABORATORY IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226


Package ID T711MT74  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Metals

Date: 04/11/05  
 Reviewer's Signature  


**ACTION ITEMS<sup>a</sup>**

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**

Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were applied for: 1. Detects in the method blank and CCBs 2. ICSAB recovery outlier 3. Reporting limit check standard recovery outlier 4. Detects below the reporting limit
--	--

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

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Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma - Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	ILM04
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	ILM04



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. Duplicate samples were submitted for the samples in these SDGs; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals, and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. Antimony and nickel were not recovered in the 0.2 ppb reporting limit check standard; therefore nondetected antimony in both site samples (see section 2.4) was qualified as estimated, "UJ." As nickel was detected in both samples above the 2.0 µg/L reporting limit and was recovered within the control limits in the 2.0 ppb reporting limit check standard, no qualifications were required. The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

Antimony, boron and thallium were detected in bracketing CCBs at 0.422 µg/L, 0.0207 mg/L, and 0.0895 µg/L, respectively; therefore, antimony and boron detected in both site samples and thallium detected in Outfall 011 Grab were qualified as estimated, "UJ." Chromium was detected in method blank 5C25116-BLK1 at 0.516 µg/L; therefore, chromium detected in both site samples was qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and barium, beryllium, selenium, thallium, vanadium, antimony and lead were not spiked into the ICSAB solution. Arsenic was recovered below the control limit in the ICSAB, therefore, arsenic detected in both site samples was qualified as estimated, "J." Manganese, cobalt copper, zinc, and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the boron ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferents and the other spiked analytes were within the control limits of 80-120%. No further qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5C25116-BS1 and the ICP LCS sample was identified as 5C25111-BS1. The mercury LCS sample was identified as 5C26033-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD analyses were performed in association with the samples in these SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the samples in these SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was evaluated based on LCS results. No qualifications were required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C25116	0.00014	0.0010	0.024	1	03/25/05	03/28/05	Rev Qual   Qual Code
Boron	EPA 200.7	5C25111	0.0074	0.050	0.095	1	03/25/05	03/27/05	U3   B
Iron	EPA 200.8	5C25116	0.0032	0.010	0.43	1	03/25/05	03/28/05	

# AMEC VALIDATED

# LEVEL IV

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 503-8796 FAX (619) 505-9619  
 9700 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-6643 FAX (480) 785-0853  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-1621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C25116	0.18	2.0	0.29	1	03/25/05	03/28/05	U J J
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.6	1	03/25/05	03/28/05	J
Beryllium	EPA 200.8	5C25116	0.037	0.50	ND	1	03/25/05	03/28/05	U
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.20	1	03/25/05	03/28/05	J J J
Chromium	EPA 200.8	5C25116	0.26	2.0	1.4	1	03/25/05	03/28/05	U J B, J
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05	J J J
Copper	EPA 200.8	5C25116	0.49	2.0	3.7	1	03/25/05	03/28/05	J J J
Lead	EPA 200.8	5C25116	0.13	1.0	0.43	1	03/25/05	03/28/05	J, J
Manganese	EPA 200.8	5C25116	0.44	1.0	41	1	03/25/05	03/28/05	J, J
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/26/05	03/26/05	U
Nickel	EPA 200.8	5C25116	0.15	2.0	3.5	1	03/25/05	03/28/05	J
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05	U
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05	U
Thallium	EPA 200.8	5C25116	0.075	1.0	ND	1	03/25/05	03/28/05	J
Vanadium	EPA 200.8	5C25116	0.86	2.0	1.2	1	03/25/05	03/28/05	J J J
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05	J J J

Rev	Qual	Code
U J J		X3, B
J		I
U		
J J J		DNC
U J B, J		B
J J J		DNC
J, J		DNC
U		
U		
J J J		DNC
J J J		DNC

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C25116	0.00014	0.0010	0.023	1	03/25/05	03/28/05	US B
Boron	EPA 200.7	5C25111	0.0074	0.050	0.092	1	03/25/05	03/27/05	US B
Iron	EPA 200.8	5C25116	0.0032	0.010	0.43	1	03/25/05	03/28/05	US B

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5C25116	0.18	2.0	0.34	1	03/25/05	03/28/05		UJ J	#3, B
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.7	1	03/25/05	03/28/05		J J	I
Beryllium	EPA 200.8	5C25116	0.037	0.50	0.041	1	03/25/05	03/28/05		J J	DNQ
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.22	1	03/25/05	03/28/05		J J	DNQ
Chromium	EPA 200.8	5C25116	0.26	2.0	1.2	1	03/25/05	03/28/05		UJ B, J	B
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05		J J	DNQ
Copper	EPA 200.8	5C25116	0.49	2.0	3.9	1	03/25/05	03/28/05		J J	DNQ
Lead	EPA 200.8	5C25116	0.13	1.0	0.46	1	03/25/05	03/28/05		J J	DNQ
Manganese	EPA 200.8	5C25116	0.44	1.0	36	1	03/25/05	03/28/05		J J	DNQ
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/25/05	03/28/05		U	
Nickel	EPA 200.8	5C25116	0.15	2.0	3.4	1	03/26/05	03/26/05		U	
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05		U	
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05		U	
Thallium	EPA 200.8	5C25116	0.075	1.0	0.21	1	03/25/05	03/28/05		UJ J	B
Vanadium	EPA 200.8	5C25116	0.86	2.0	ND	1	03/25/05	03/28/05		U	
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05		J J	DNQ

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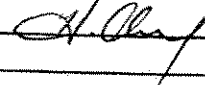
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP34  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Del Mar  
 Reviewer H. Chang  
 Analysis/Method Pesticides & PCBs/608

Date: April 10, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Samples were qualified "UJ" for low surrogate recoveries.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	





# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 10, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	608
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4'-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 03/24/05 associated with the pesticide analysis of the sample, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 03/28/05 associated with the PCB analysis of the samples which consisted of five points for Aroclor 1016 and Aroclor 1260. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing the pesticide analysis of the sample, all %Ds were  $\leq 15\%$  with the exception of %Ds for alpha-BHC, gamma-chlordane, dieldrin, and 4,4'DDD on channel B for one of the closing CCVs. No qualifications were required since channel A was used as the primary column and there were no detects on the primary column. Of the continuing calibrations associated with the PCB analysis of the sample, all %Ds were  $\leq 15\%$  for Aroclor 1016 and Aroclor 1260. A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

Two water method blanks, one for pesticides (5C28048-BLK1) and one for PCBs (5C28048-BLK2) were extracted and analyzed with these SDG. There were no pesticide target compounds or Aroclors detected in the corresponding method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two pairs of blank spike and blank spike duplicate, one for pesticides (5C28048-BS1/BSD1) and one for PCBs (5C28048-BS2/BSD2) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$  for pesticides. RPDs for Aroclors 1016 and 1260 were above the QC limits of 30% and 25%, respectively. No qualifications were required since there were no detects for Aroclors in the samples.

The laboratory indicated that the PCB blank spike was double spiked and was reanalyzed at 2 $\times$  dilution. The original analysis of the BS was not provided. The 2 $\times$  dilution showed comparable

levels to the BSD analysis. A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of both samples were below the laboratory-established QC limits. In sample Outfall 011 Composite, the surrogate recovery was reported as acceptable, however, the raw data indicated that it was slightly below the QC limits. All pesticides and PCBs were qualified as estimated nondetects, "UJ," in both samples. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses performed on the sample in this SDG. Method accuracy was assessed based on the blank spike results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the extracts for pesticides. The extracts for PCBs were acid washed. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticides and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs by recalculating any sample detects, and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standards of the initial calibrations and the laboratory MDL studies. The water reporting limits were not adjusted for sample amount on the result summaries; however, the dilution factor listed on the summaries reflected the sample volume extracted. No qualifications were required.

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

 Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

 Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

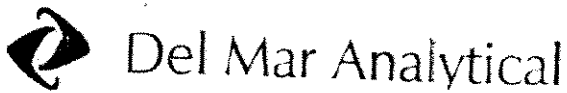
Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	UJ S
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.971	03/28/05	03/29/05	
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/29/05	
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.971	03/28/05	03/29/05	
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.971	03/28/05	03/29/05	
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.971	03/28/05	03/29/05	
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.971	03/28/05	03/29/05	
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05	
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.971	03/28/05	03/29/05	
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.971	03/28/05	03/29/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					31%				ZX
Surrogate: Decachlorobiphenyl (45-120%)					36%				ZX

# AMEC VALIDATED

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/30/05	UJ	S
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.971	03/28/05	03/30/05		
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05		
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05		
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05		
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05		
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.971	03/28/05	03/30/05		
Surrogate: Decachlorobiphenyl (45-120%)					40 %					

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DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9464 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8196 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	US S
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.952	03/28/05	03/29/05	
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/29/05	
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.952	03/28/05	03/29/05	
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.952	03/28/05	03/29/05	
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.952	03/28/05	03/29/05	
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.952	03/28/05	03/29/05	
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.952	03/28/05	03/29/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					35 %				
Surrogate: Decachlorobiphenyl (45-120%)					40 %				

**AMEC VALIDATED**

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 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 783-0843 FAX (480) 785-0817  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89130 (702) 798-3620 FAX (702) 798-1627

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.952	03/28/05	03/30/05	UT S
Surrogate: Decachlorobiphenyl (45-120%)					45 %				

# AMEC VALIDATED

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA8  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 10

Laboratory Eberline

Reviewer P. Meeks

Analysis/Method Radionuclides

Date: 05/17/05  
 Reviewer's Signature  
*P. Meeks*

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	<u>Qualifications were applied for detector efficiency outliers and exceeded holding times.</u>
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 10  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: May 17, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab/Unfiltered	IOC1523-01	8349-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC1523-03	8349-002	water	900.0, 905.0, 906.0
Outfall 011 Grab/Substrate	IOC1523-04	8350-001	water	901.1
Outfall 011 Composite	IOC1526-01	8344-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Filtered	IOC1562-01	8351-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOC1562-02	8351-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOC1562-03	8352-001	water	901.1
Outfall 011 Grab/Unfiltered	IOC2063-01	8381-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC2063-03	8381-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Composite	IOC2064-01	8383-001	water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

All samples were received unpreserved, in glass containers. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As instructed on the transfer COCs, Eberline filtered and then preserved samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063). The gross alpha, gross beta, strontium, radium-226, radium-228, and cesium-137 results for the remaining samples were not qualified for lack of preservation, as the methods specifies a five-day holding time for unpreserved samples.

No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. None of the COCs requested radium-226 or radium-228 analyses. These analyses were requested by M. Harper of Del Mar Analytical, as per instructions in a letter from the LARWQCB dated 3/22/05. The original and transfer COCs accounted for the samples and remaining analyses presented in this data package.

Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

All tritium analyses and all analyses for samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063) were performed within 180 days of collection. The remaining analyses were performed beyond the five day holding time for unpreserved samples; therefore, the gross alpha, gross beta, radium-226, radium-228, strontium-90, and cesium-137 results for samples Outfall 011 Grab Unfiltered (IOC1523), Outfall 011 Grab Substrate (IOC1523), Outfall 011 Composite (IOC1526), Outfall 003 Unfiltered, Outfall 003 Substrate, Outfall 011 Grab Unfiltered (IOC2063), Outfall 011 Substrate (IOC2063), and Outfall 011 Composite (IOC2064) were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.



## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. All gross alpha detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in June 2002. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in July 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 90% and the actinium chemical yields were greater than 65%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Blank spikes were analyzed in association with the samples in these SDGs. Two gross alpha, two radium-228, one radium-226, one strontium-90, and one tritium LCS recoveries were outside the 3-sigma limits control limits, but all had acceptable recoveries ranging from 72- 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, strontium, radium-226, and radium-228 on Outfall 011 Grab Unfiltered (IOC2063). All results were within the 3-sigma limits and no qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, and radium-226 on Outfall 011 Grab Unfiltered (IOC2063). The Outfall 011 Grab Unfiltered gross alpha (114%), gross beta (104%), tritium (96%), and radium-226 (104%) were outside the 3-sigma control limits; however, as the recoveries were deemed acceptable, no qualifications were required. The Outfall 011 Composite gross alpha recovery outside the 3-sigma limits; however, as the 82% recovery was deemed acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA								
Client Outfall Oil Grab Unfiltered IOC1523-01	Lab 8349-001	Sample ID 03/18/05	Collected 04/02/05	Analyzed GrossAlpha	Nuclide	0.067 ± 0.71	pCi/L	1.39								
						04/02/05	Gross Beta	2.09 ± 1.3	pCi/L	1.94						
						04/22/05	Ra228	0.453 ± 0.25	pCi/L	0.611						
						04/07/05	H3	-16.2 ± 98	pCi/L	166						
						05/06/05	Ra226	0.084 ± 0.020	pCi/L	0.023						
						04/05/05	Sr90	-0.108 ± 0.25	pCi/L	0.508						
						Client Outfall Oil Grab Filtered IOC1523-03	Lab 8349-002	Sample ID 03/18/05	Collected 04/02/05	Analyzed GrossAlpha	Nuclide	0.626 ± 0.83	pCi/L	1.28		
												04/02/05	Gross Beta	3.37 ± 1.3	pCi/L	1.79
												04/07/05	H3	-63.2 ± 96	pCi/L	166
												04/05/05	Sr90	0.029 ± 0.29	pCi/L	0.588

AM 5/17/05

Bar Qual	Qual Code
J	R, H
J	↓
S	
J	H
S	H
S	
H	R
C	
C	

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/17/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8150</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503160-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/23/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
		<u>Outfall Oil Grab Substrate</u>						
IOC1523-04	8150-001	03/18/05	04/11/05	Cs137 (G)	0	pCi/Smpl	9.67	

Rev	Qual
Qual	Code
U3	H

pm 5/17/05

**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>05/04/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
<u>Sample ID</u> Outfall Oil Composite IOC1526	<u>Sample ID</u> 8344-001	03/18/05	04/02/05	Gross Alpha	0.305 ± 0.81	pCi/L	1.20
			04/02/05	Gross Beta	1.96 ± 1.1	pCi/L	1.80
			04/22/05	Ra228	0.359 ± 0.23	pCi/L	0.576
			04/07/05	H3	-31.0 ± 98	pCi/L	166
			05/06/05	Ra226	0.063 ± 0.020	pCi/L	0.024
			04/05/05	Sr90	0.032 ± 0.22	pCi/L	0.442

Rev Qual	Qual Code
5	R, H
5	↓
5	
5	H
5	H

Am 5/17/05

**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u><i>[Signature]</i></u>
Report Date <u>05/10/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8351</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503161-01</u>	Contract <u>PROJECT# IOCI562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
<u>Outfall 003 Filtered</u> IOCI562-01	<u>8351-001</u>	<u>03/19/05</u>	<u>04/08/05</u>	<u>GrossAlpha</u>	<u>8.96 ± 3.3</u>	<u>pCi/L</u>	<u>2.54</u>
			<u>04/08/05</u>	<u>Gross Beta</u>	<u>18.0 ± 3.1</u>	<u>pCi/L</u>	<u>3.73</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>0.448 ± 0.53</u>	<u>pCi/L</u>	<u>0.961</u>
			<u>04/07/05</u>	<u>H3</u>	<u>-43.7 ± 96</u>	<u>pCi/L</u>	<u>164</u>
			<u>05/05/05</u>	<u>Ra226</u>	<u>0.091 ± 0.026</u>	<u>pCi/L</u>	<u>0.034</u>
			<u>04/05/05</u>	<u>Sr90</u>	<u>5.49 ± 0.58</u>	<u>pCi/L</u>	<u>0.445</u>
<u>Outfall 003 Unfiltered</u> IOCI562-02	<u>8351-002</u>	<u>03/19/05</u>	<u>04/06/05</u>	<u>GrossAlpha</u>	<u>5.03 ± 3.0</u>	<u>pCi/L</u>	<u>3.27</u>
			<u>04/06/05</u>	<u>Gross Beta</u>	<u>19.0 ± 3.7</u>	<u>pCi/L</u>	<u>4.56</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>0.386 ± 0.56</u>	<u>pCi/L</u>	<u>0.897</u>
			<u>04/07/05</u>	<u>H3</u>	<u>-34.3 ± 99</u>	<u>pCi/L</u>	<u>168</u>
			<u>05/05/05</u>	<u>Ra226</u>	<u>0.145 ± 0.028</u>	<u>pCi/L</u>	<u>0.031</u>
			<u>04/05/05</u>	<u>Sr90</u>	<u>5.49 ± 0.56</u>	<u>pCi/L</u>	<u>0.404</u>

Raw Qual	Qual Code
J	R
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H	H, H
H	H
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Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503162-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
Outfall 003	Substrate	8352-001	03/19/05	04/25/05	Cs137 (G)	U	pCi/Smpl	5.55

Rev Qual	Qual Code
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Report Date <u>05/03/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Rw Qual	Qual Code
S	R, H
F	H
B	H
B	H
S	H
→	←
C	R
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C	
C	
C	
C	

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
<b>Outfall Oil Grab Unfiltered</b>							
IOC2063-01	8381-001	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
			04/18/05	Sr90	-0.052 ± 0.37	pCi/L	0.658
<b>Outfall Oil Grab Filtered</b>							
IOC2063-03	8381-002	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
			04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535

PM 5/17/05

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Report Date <u>05/11/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503212-01</u>	Contract <u>PROJECT# IOC2054</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u>	<u>Sample ID</u>						
Outfall 01 Composite							
IOC2054-01	8383-001	03/25/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
			04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
			05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
			04/21/05	H3	83.4 ± 170	pCi/L	278
			04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
			04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

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Am 5/17/05

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LEVEL IV

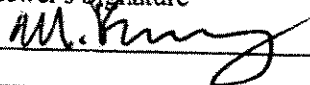
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Report Date <u>05/11/05</u>
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV53  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064  
 No. of Analyses 2

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

Date: April 11, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	Qualifications were required for calibration and LCS outliers and for blank contamination.
Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	water	625
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	water	625



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 03/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds listed on the sample summary form, except for the  $r^2$  values for benzoic acid and 4,6-dinitro-2-methylphenol. Benzoic acid and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the samples of these SDGs. The laboratory used more stringent %RSD criteria than required by Method 625, and provided reanalyses of both samples for 2,4-dinitrophenol only; however, as the original data met criteria, the reanalysis results, both nondetects, were rejected, "R," in favor of the original analysis results for 2,4-dinitrophenol. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 03/31/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$  except for the %Ds for hexachlorocyclopentadiene and benzidine. Hexachlorocyclopentadiene was qualified as an estimated nondetect, "UJ," in the samples of these SDGs. Benzidine was rejected for other reasons (see Section 2.5) and was not further qualified. A representative number of RRFs,  $r^2$  values, and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.4 BLANKS

One method blank (5C28041-BLK1) was extracted and analyzed with this SDG. Butylbenzylphthalate, di-n-butylphthalate, and diethylphthalate were reported in the method blank and were qualified as nondetects, "U," in the samples of these SDGs. Review of the raw data indicated no reportable false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C28041-BS1/5C28041-BSD1) was extracted and analyzed with this SDG. All percent recoveries and RPDs were within the laboratory QC limits, except for benzidine which was not recovered in either the BS or BSD. Benzidine was rejected, "R," in the samples of these SDGs. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance. No qualifications were required.



17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 4810 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 783-0943 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3610 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	U
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	U
Aniline	EPA 625	5C28041	2.9	10	ND	0.971	03/28/05	03/31/05	U
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	U
Benzidine	EPA 625	5C28041	2.4	5.0	ND	0.971	03/28/05	03/31/05	U
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.971	03/28/05	03/31/05	U
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.971	03/28/05	03/31/05	U
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.971	03/28/05	03/31/05	U
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.971	03/28/05	03/31/05	U
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.971	03/28/05	03/31/05	U
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.971	03/28/05	03/31/05	U
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.971	03/28/05	03/31/05	U
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	U
Butyl benzyl phthalate	EPA 625	5C28041	0.34	5.0	ND 0.68	0.971	03/28/05	03/31/05	U J B
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.971	03/28/05	03/31/05	U
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05	U
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.971	03/28/05	03/31/05	U
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.971	03/28/05	03/31/05	U
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	U
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	U
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	U
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05	U
Di-n-butyl phthalate	EPA 625	5C28041	0.26	2.0	ND 0.87	0.971	03/28/05	03/31/05	U J B
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	U
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.971	03/28/05	03/31/05	U
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.971	03/28/05	03/31/05	U
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.971	03/28/05	03/31/05	U
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.971	03/28/05	03/31/05	U
Diethyl phthalate	EPA 625	5C28041	0.12	1.0	ND 0.23	0.971	03/28/05	03/31/05	U J B
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.971	03/28/05	03/31/05	U
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.971	03/28/05	03/31/05	U
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.971	03/28/05	03/31/05	U
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	03/31/05	U J C
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.971	03/28/05	03/31/05	U N-1
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.971	03/28/05	03/31/05	U
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.971	03/28/05	03/31/05	U
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.971	03/28/05	03/31/05	U

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MP 4.11.05



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.971	03/28/05	03/31/05	U
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05	U
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	U
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.971	03/28/05	03/31/05	U
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.971	03/28/05	03/31/05	U I C
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.971	03/28/05	03/31/05	U
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.971	03/28/05	03/31/05	U
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.971	03/28/05	03/31/05	U
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	U
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.971	03/28/05	03/31/05	U
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.971	03/28/05	03/31/05	U
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05	U
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.971	03/28/05	03/31/05	U
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.971	03/28/05	03/31/05	U
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.971	03/28/05	03/31/05	U
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	U
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.971	03/28/05	03/31/05	U
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.971	03/28/05	03/31/05	U
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.971	03/28/05	03/31/05	U
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.971	03/28/05	03/31/05	U
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.971	03/28/05	03/31/05	U
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.971	03/28/05	03/31/05	U
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.971	03/28/05	03/31/05	U
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.971	03/28/05	03/31/05	U
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05	U
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	U
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.971	03/28/05	03/31/05	U
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05	U
Surrogate: 2-Fluorophenol (30-120%)									64 %
Surrogate: Phenol-d6 (35-120%)									65 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									85 %
Surrogate: Nitrobenzene-d5 (45-120%)									64 %
Surrogate: 2-Fluorobiphenyl (45-120%)									69 %
Surrogate: Terphenyl-d14 (45-120%)									84 %

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01RE1 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	04/11/05	R D
Surrogate: 2-Fluorophenol (30-120%)					60 %				
Surrogate: Phenol-d6 (35-120%)					63 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					84 %				
Surrogate: Nitrobenzene-d5 (45-120%)					62 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					66 %				
Surrogate: Terphenyl-d14 (45-120%)					79 %				

*see quality code*  
 R D

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**LEVEL IV**

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-1021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	QUAL CODE
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	U	
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	U	
Aniline	EPA 625	5C28041	2.9	10	ND	0.943	03/28/05	03/31/05	U	
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	U	
Benidine	EPA 625	5C28041	2.4	5.0	ND	0.943	03/28/05	03/31/05	U	
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.943	03/28/05	03/31/05	U	
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.943	03/28/05	03/31/05	U	
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.943	03/28/05	03/31/05	U	
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	U	
Butyl benzyl phthalate	EPA 625	5C28041	0.34	5.0	ND 0.70	0.943	03/28/05	03/31/05	U	B
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.943	03/28/05	03/31/05	U	
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	U	
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.943	03/28/05	03/31/05	U	
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.943	03/28/05	03/31/05	U	
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	U	
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	U	
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	U	
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	U	
Di-n-butyl phthalate	EPA 625	5C28041	0.26	2.0	ND	0.943	03/28/05	03/31/05	U	
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	U	
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.943	03/28/05	03/31/05	U	
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.943	03/28/05	03/31/05	U	
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.943	03/28/05	03/31/05	U	
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.943	03/28/05	03/31/05	U	
Diethyl phthalate	EPA 625	5C28041	0.12	1.0	ND 0.26	0.943	03/28/05	03/31/05	U	B
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.943	03/28/05	03/31/05	U	
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.943	03/28/05	03/31/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.943	03/28/05	03/31/05	U	
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	03/31/05	U	
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.943	03/28/05	03/31/05	U	N-1
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.943	03/28/05	03/31/05	U	
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.943	03/28/05	03/31/05	U	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.943	03/28/05	03/31/05	U	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.943	03/28/05	03/31/05	U
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	U
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.943	03/28/05	03/31/05	U
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.943	03/28/05	03/31/05	U J C
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.943	03/28/05	03/31/05	U
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.943	03/28/05	03/31/05	U
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.943	03/28/05	03/31/05	U
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.943	03/28/05	03/31/05	U
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.943	03/28/05	03/31/05	U
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.943	03/28/05	03/31/05	U
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.943	03/28/05	03/31/05	U
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.943	03/28/05	03/31/05	U
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.943	03/28/05	03/31/05	U
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.943	03/28/05	03/31/05	U
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.943	03/28/05	03/31/05	U
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.943	03/28/05	03/31/05	U
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.943	03/28/05	03/31/05	U
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.943	03/28/05	03/31/05	U
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.943	03/28/05	03/31/05	U
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.943	03/28/05	03/31/05	U
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	U
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.943	03/28/05	03/31/05	U
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
Surrogate: 2-Fluorophenol (30-120%)					63 %				
Surrogate: Phenol-d6 (35-120%)					66 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					87 %				
Surrogate: Nitrobenzene-d5 (45-120%)					67 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					70 %				
Surrogate: Terphenyl-d14 (45-120%)					83 %				

LEVEL IV

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01RE1 (Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	04/11/05	R D
Surrogate: 2-Fluorophenol (30-120%)					61 %				
Surrogate: Phenol-d6 (35-120%)					66 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					89 %				
Surrogate: Nitrobenzene-d5 (45-120%)					66 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					71 %				
Surrogate: Terphenyl-d14 (45-120%)					81 %				

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Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF60  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Pacific Analytical

Reviewer L. Calvin

Analysis/Method EFH by Method 8015B

Date: April 12, 2005

Reviewer's Signature



<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 12, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	8015B/EFH
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	8015B/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analyses was analyzed on 03/11/05. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5C26001-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C26001-BS1/BSD1) was extracted and analyzed with the samples in these SDGs. The laboratory reported recoveries of alkane range C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound n-octacosane. The sample surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses performed on the samples of these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by Method 8015B. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in mg/L (ppm). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.952	03/26/05	03/29/05	U
Surrogate: n-Octacosane (40-125%)					95 %				

*very good quality code*

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0055  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date	Data
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.943	03/26/05	03/28/05	u
Surrogate: n-Octacosane (40-125%)					65 %				

*see Qual Qual Good*

### AMEC VALIDATED

# LEVEL IV

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF61  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064  
 No. of Analyses 4

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method GRO by Method 8015M

Date: April 12, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____ _____ _____
3. Analyses Not Conducted	_____ _____
4. Missing Hardcopy Deliverables	_____ _____ _____
5. Incorrect Hardcopy Deliverables	_____ _____ _____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

**COMMENTS<sup>b</sup>**      Acceptable as reviewed.

\_\_\_\_\_

\_\_\_\_\_

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/Purgeable

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 12, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC2063-02	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC2064-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COCs indicated the samples were properly preserved. Information regarding lack of headspace in the VOA vials was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/15/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5C26026-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5C26026-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound 4-bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC limits of 65-140%. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site samples of these SDGs. Evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Samples Trip Blank (IOC2063-02) and Trip Blank (IOC2064-02) were the trip blanks associated with site samples Outfall 011 Grab and Outfall 011 Composite, respectively. GRO (C4-C12) was not detected above the MDL in either trip blank. Review of the raw data indicated no false negative results. There were no field blank or equipment rinsate samples associated with these SDGs. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in units of mg/L (ppt). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	u
Surrogate: 4-BFB (FID) (65-140%) 104 %									
Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water) Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	u
Surrogate: 4-BFB (FID) (65-140%) 103 %									

rel  
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Decade

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE





# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	u
Surrogate: 4-BFB (FID) (65-140%)					102 %				
Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	u
Surrogate: 4-BFB (FID) (65-140%)					88 %				

*rel qual*  
*qual*  
*Good*

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO92  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

Laboratory Del Mar

No. of Analyses 4

Reviewer H. Chang

Date: April 11, 2005

Analysis/Method Volatiles/624

Reviewer's Signature



ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Acrolein was rejected in all samples due to low RRFs in initial and continuing calibrations.
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUPS: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	624
Trip Blank	Trip Blank	IOC2063-02	water	624
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	624
Trip Blank	Trip Blank	IOC2064-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COC noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

All ion abundances were within the limits specified in the EPA Method 624. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 03/04/05 and 03/16/05 (1,1,2-trichloro-1,2,2-trifluoroethane, acrolein, and acrylonitrile only) were associated with these SDGs. The average RRF for acrolein was  $<0.05$  in the initial calibration dated 03/16/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The average RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for all applicable target compounds.

Two continuing calibrations dated 03/27/05 at 09:39 and at 10:11 (1,1,2-trichloro-1,2,2-trifluoroethane, acrolein, and acrylonitrile only) were associated with the sample analyses in these SDGs. The RRF for acrolein was  $<0.05$  in the continuing calibration; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. All other RRFs were  $\geq 0.05$  for the remaining target compounds. All %Ds were within  $\pm 20\%$  with the exception of acrolein which had a %D greater than 20%. No additional qualification was necessary since acrolein was already rejected due to low RRFs. A representative number of %RSDs and average RRFs from the

initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

One water method blank (5C27003-BLK1) was associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summary. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water blank spike (5C27003-BS1) was associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall 011 Grab. All recoveries and RPDs were within the laboratory-established QC limits. A representative number of recoveries and RPDs were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOC2063) and Trip Blank (IOC2064) were the trip blanks associated with these SDGs. There were no target compounds detected above the MDLs in the trip blanks. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane. The laboratory calibrated for target compound 1,2-dichloro-1,1,2-trifluoroethane; however, the calibration was not used for identification. Target compound cyclohexane was not included in the calibration (see section 2.11). TIC scan did not identify neither compound. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not utilized for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for these compounds. Nondetects for both compounds were qualified as estimated, "UJ," in the samples Outfall 011 Grab and Outfall 011 Composite. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for these SDGs other than two target compounds reported using a TIC scan (see Section 2.10). Reporting of TICs is not required by EPA Method 624. No qualifications were required.



## **2.13 SYSTEM PERFORMANCE**

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)										
Reporting Units: ug/l										
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	u	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05		
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05		
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05		
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05		
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05		
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05		
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05		
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05		
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05		
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05		
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05		
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05		
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05		
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05		
trans-1,2-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05		
1,2-Dichloropropane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05		
cis-1,3-Dichloropropene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05		
trans-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05		
Ethylbenzene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05		
Methylene chloride	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05		
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05		
Tetrachloroethene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05		
Toluene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05		
1,1,1-Trichloroethane	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05		
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05		
Trichloroethene	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05		
Trichlorofluoromethane	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05		
Vinyl chloride	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05		
Xylenes, Total	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05		
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05		
Surrogate: Dibromofluoromethane (80-120%)			1.2	5.0	ND	1	03/27/05	03/27/05		
Surrogate: Toluene-d8 (80-120%)										108 %
Surrogate: 4-Bromofluorobenzene (80-120%)										101 %
										94 %

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	u		
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05			
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05			
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05			
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05			
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05			
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05			
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05			
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05			
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05			
Surrogate: Dibromofluoromethane (80-120%)											108 %
Surrogate: Toluene-d8 (80-120%)											100 %
Surrogate: 4-Bromofluorobenzene (80-120%)											92 %

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
<b>Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)</b>										
Reporting Units: ug/l										
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u	
Surrogate: Dibromofluoromethane (80-120%)					108 %					
Surrogate: Toluene-d8 (80-120%)					101 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					
<b>Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u	
Surrogate: Dibromofluoromethane (80-120%)					108 %					
Surrogate: Toluene-d8 (80-120%)					100 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					92 %					

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## LEVEL IV

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0943 FAX (480) 785-0831  
 1520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	u
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

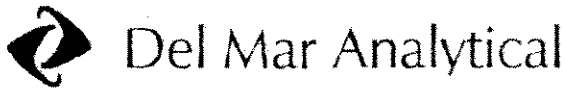
Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05		u	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05			
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05			
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05			
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05			
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05			
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05			
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05			
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05			
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05			
Surrogate: Dibromofluoromethane (80-120%)											105 %
Surrogate: Toluene-d8 (80-120%)											100 %
Surrogate: 4-Bromofluorobenzene (80-120%)											93 %

### AMEC VALIDATED

### LEVEL IV

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 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
<b>Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R		R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u		
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u		
Surrogate: Dibromofluoromethane (80-120%)									105 %		
Surrogate: Toluene-d8 (80-120%)									100 %		
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %		
<b>Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R		R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u		
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u		
Surrogate: Dibromofluoromethane (80-120%)									105 %		
Surrogate: Toluene-d8 (80-120%)									100 %		
Surrogate: 4-Bromofluorobenzene (80-120%)									93 %		

**AMEC VALIDATED**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ *11
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ *11
<b>Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ	#11
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ	#11
Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U	

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### LEVEL IV

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# CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711WC131  
Task Order 313150010  
SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Del Mar Analytical  
Reviewer L. Jarusewic  
Analysis/Method General Minerals

Date: 04/08/05  
Reviewer's Signature  
*L. Jarusewic*

## ACTION ITEMS<sup>a</sup>

- 1. **Case Narrative Deficiencies**
- 2. **Out of Scope Analyses**
- 3. **Analyses Not Conducted**
- 4. **Missing Hardcopy Deliverables**
- 5. **Incorrect Hardcopy Deliverables**
- 6. **Deviations from Analysis Protocol, e.g.,**
  - Qualifications were applied for:
  - 1) Detects below the reporting limit
  - 2) Negative method blank results
  - 3) Reviewer change of cyanide MDL to level of interference

Holding Times \_\_\_\_\_

GC/MS Tune/Inst. Performance \_\_\_\_\_

Calibrations \_\_\_\_\_

Blanks \_\_\_\_\_

Surrogates \_\_\_\_\_

Matrix Spike/Dup LCS \_\_\_\_\_

Field QC \_\_\_\_\_

Internal Standard Performance \_\_\_\_\_

Compound Identification and Quantitation \_\_\_\_\_

System Performance \_\_\_\_\_

## COMMENTS<sup>b</sup>

\_\_\_\_\_

\_\_\_\_\_

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
S	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 8, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 425.1, 218.6, 120.1, 160.2, 160.5, 180.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	Water	General Minerals
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	Water	General Minerals
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01RE	Water	EPA 413.1
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01RE	Water	EPA 413.1



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for surfactants, turbidity, nitrate/nitrite, biological oxygen demand, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. The total cyanide reporting limit check standard was recovered within the control limits of 70-130%. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total suspended solids, or total settleable solids. No qualifications were required.

### 2.3 BLANKS

Turbidity was detected in the method blank (5C26056-BLK1) associated with Outfall 011-Grab and Outfall 011-Composite; however, the method blank result was insufficient to qualify the Outfall 011-Grab or Outfall 011-Composite results. Cyanide was reported in the method blank (5C25119-BLK1) associated with Outfall 011-Grab and Outfall 011-Composite at  $-3.8 \mu\text{g/L}$ ; therefore, nondetected cyanide in Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." The remaining method blank and

CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No further qualifications were required.

#### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, oil and grease, and total recoverable hydrocarbons only) recoveries and RPDs were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. The original LCS/LCSD results for oil and grease associated with Outfall 011-Grab and Outfall 011-Composite were recovered below laboratory-established QC limits. The laboratory re-extracted the samples and the LCS/LCSD and reported all oil and grease results from the reanalysis. No qualifications were required.

#### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.

#### **2.6 LABORATORY DUPLICATES**

Laboratory duplicate analyses were performed on Outfall 011-Grab for residual chlorine and total suspended solids. The RPDs were within the laboratory-established control limits and no qualifications were required.

#### **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

There were no MS/MSD analyses performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

#### **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

#### **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Cyanide was reported in the raw data for Outfall 011-Grab and Outfall 011-Composite at -5.2 and -5.6  $\mu\text{g/L}$ , respectively, and the associated method blank was reported at -3.8  $\mu\text{g/L}$ . Due to these negative results, the reviewer changed the MDL and the reporting limit on the Form Is to the level of interference. BOD and fluoride in Outfall 011-Grab and Outfall 011-Composite and oil and grease in Outfall 011-Grab detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	U

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	0.56	1	03/28/05	03/28/05	
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	0.91	1	03/25/05	03/30/05	J
Chloride	EPA 300.0	5C25048	0.26	0.50	8.4	1	03/25/05	03/25/05	J
Fluoride	EPA 300.0	5C25048	0.10	0.50	0.25	1	03/25/05	03/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	0.14	1	03/25/05	03/25/05	J
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	U
Sulfate	EPA 300.0	5C25048	0.18	0.50	20	1	03/25/05	03/25/05	U
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	U
Total Dissolved Solids	SM2540C	5C28078	10	10	120	1	03/28/05	03/28/05	
Total Organic Carbon	EPA 415.1	5C29079	0.25	1.0	11	1	03/29/05	03/29/05	
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	U

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 QUAL  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2063-01RE1 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	1.6	1	03/28/05	03/28/05	J J

REV  
 QUAL CODE

DNQ

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0041 FAX (480) 785-0831  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3670 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5C25105	0.10	0.10	ND	1	03/25/05	03/25/05	U

REV QUAL  
 QUAL CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0873  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3623

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.4	1	03/26/05	03/26/05	REV OUT COT

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0801  
 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3020 FAX (702) 798-3021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Qualifiers	
									REV	QUAL CODE
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	U	
Total Cyanide	EPA 335.2	5C25119	<del>2</del> 5.2	<del>5</del> 5.2	ND	1	03/25/05	03/25/05	U	
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	*	B, \$

JH/4/05

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# LEVEL IV

\*Analysis Not Valid

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0044 FAX (480) 785-0831  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3630 FAX (702) 798-3625

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C28081	1.0	1.0	210	1	03/28/05	03/28/05	KEY QUAL CODE

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# LEVEL IV

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 9434 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-5596 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0877  
 2320 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: mg/l										
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	U	EDV QUAL COD

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	ND	1	03/28/05	03/28/05	U
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	1.1	1	03/25/05	03/30/05	J
Chloride	EPA 300.0	5C25048	0.26	0.50	9.2	1	03/25/05	03/25/05	J
Fluoride	EPA 300.0	5C25048	0.10	0.50	0.25	1	03/25/05	03/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	0.15	1	03/25/05	03/25/05	J
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	U
Sulfate	EPA 300.0	5C25048	0.18	0.50	22	1	03/25/05	03/25/05	U
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	U
Total Dissolved Solids	SM2540C	5C28078	10	10	140	1	03/28/05	03/28/05	U
Total Organic Carbon	EPA 415.1	5C28077	0.25	1.0	10	1	03/28/05	03/28/05	U
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	U

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (352) 505-8596 FAX (352) 505-469  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 767-0045 FAX (480) 785-082  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 735-3620 FAX (702) 798-362

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01RE1 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	ND	1	03/28/05	03/28/05	U

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 9464 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8196 FAX (619) 505-068  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0143 FAX (480) 785-085  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-162

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study I)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5C25105	0.10	0.10	ND	1	03/25/05	03/25/05	U

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# LEVEL IV

DRAFT REPORT  
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 9481 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 503-8598 FAX (619) 503-0039  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 285-0043 FAX (480) 285-0811  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.2	1	03/26/05	03/26/05	BY SUT SUT LOD

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**LEVEL IV**

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-968  
 9330 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-087  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3620

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	U
Total Cyanide	EPA 335.2	5C25119	<del>2.7</del> 5.6	<del>5.0</del> 5.6	ND	1	03/25/05	03/25/05	UJ
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	*

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HJ 4/14/05

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**LEVEL IV**

\*Analysis Not Validated

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 DATA SUBJECT TO CHANGE





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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8096 FAX (858) 505-9089  
 9830 South 57th St., Suite B-120, Phoenix, AZ 85044 (480) 785-0013 FAX (480) 785-0051  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-1621

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: umhos/cm										
Specific Conductance	EPA 120.1	5C28081	1.0	1.0	220	1	03/28/05	03/28/05		REV SUIT CORR

**AMEC VALIDATED**

**LEVEL IV**

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC132  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

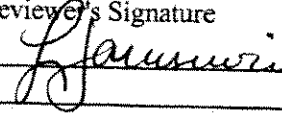
Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method Perchlorate

Date: 04/08/05

Reviewer's Signature



**ACTION ITEMS\***

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS<sup>b</sup>**

Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 8, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	Water	Perchlorate
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	Water	Perchlorate



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV, ICCS, and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3020 FAX (702) 798-3021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	* ↓
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	↓
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	U

**AMEC VALIDATED**

**LEVEL IV**

*\*Analysis Not Valid\**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-8020 FAX (702) 798-8027

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	* u
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	↓ u
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	u

### AMEC VALIDATED

# LEVEL IV

\*Analysis Not Validated

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 35**

Outfall 011, January 4, 2005

Del Mar Analytical Laboratory Report



### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Quarterly Outfall 011 + 13267

Sampled: 01/04/05-01/05/05  
Received: 01/04/05  
Issued: 03/08/05 17:21

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report. This entire report was reviewed and approved for release.*

#### CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 4°C, on ice and with chain of custody documentation.
- HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged. There was a dilution for the MBAS analysis due to emulsion.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

**LABORATORY ID**

IOA0131-01  
IOA0131-02

**CLIENT ID**

Outfall 011 - composite  
Trip Blank

**MATRIX**

Water  
Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

### CORRECTIVE ACTION REPORT

Department: Extractions

Method: EPA 625

QC Batch: 5A10039

Date: 01/14/2005

Matrix: Water

#### Identification and Definition of Problem:

The percent recoveries for benzidine in the LCS and LCSD were below method acceptance limits.

#### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

#### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

  
Dave Dawes

Date: 01/18/2005 09:20 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water)					Sampled: 01/05/05				
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5A06070	0.31	1.0	ND	1	01/06/05	01/06/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5A06045	0.082	0.50	ND	0.962	01/06/05	01/06/05	
Surrogate: n-Octacosane (40-125%)					58 %				

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/05/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	
Surrogate: 4-BFB (FID) (65-140%)					86 %				
<b>Sample ID: IOA0131-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	
Surrogate: 4-BFB (FID) (65-140%)					84 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0131-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/05/05</b>				
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05	
Surrogate: Dibromofluoromethane (80-120%)					104 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOA0131-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05	
Surrogate: Dibromofluoromethane (80-120%)					103 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water)					Sampled: 01/05/05				
Reporting Units: ug/l									
Benzene	EPA 624	5A06024	0.28	1.0	ND	1	01/06/05	01/06/05	
Bromodichloromethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
Bromoform	EPA 624	5A06024	0.32	5.0	ND	1	01/06/05	01/06/05	
Bromomethane	EPA 624	5A06024	0.34	5.0	ND	1	01/06/05	01/06/05	
Carbon tetrachloride	EPA 624	5A06024	0.28	0.50	ND	1	01/06/05	01/06/05	
Chlorobenzene	EPA 624	5A06024	0.36	2.0	ND	1	01/06/05	01/06/05	
Chloroethane	EPA 624	5A06024	0.33	5.0	ND	1	01/06/05	01/06/05	
Chloroform	EPA 624	5A06024	0.33	2.0	ND	1	01/06/05	01/06/05	
Chloromethane	EPA 624	5A06024	0.30	5.0	ND	1	01/06/05	01/06/05	
Dibromochloromethane	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichlorobenzene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	
1,3-Dichlorobenzene	EPA 624	5A06024	0.35	2.0	ND	1	01/06/05	01/06/05	
1,4-Dichlorobenzene	EPA 624	5A06024	0.37	2.0	ND	1	01/06/05	01/06/05	
1,1-Dichloroethane	EPA 624	5A06024	0.27	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichloroethane	EPA 624	5A06024	0.28	0.50	ND	1	01/06/05	01/06/05	
1,1-Dichloroethene	EPA 624	5A06024	0.32	5.0	ND	1	01/06/05	01/06/05	
trans-1,2-Dichloroethene	EPA 624	5A06024	0.27	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichloropropane	EPA 624	5A06024	0.35	2.0	ND	1	01/06/05	01/06/05	
cis-1,3-Dichloropropene	EPA 624	5A06024	0.22	2.0	ND	1	01/06/05	01/06/05	
trans-1,3-Dichloropropene	EPA 624	5A06024	0.24	2.0	ND	1	01/06/05	01/06/05	
Ethylbenzene	EPA 624	5A06024	0.25	2.0	ND	1	01/06/05	01/06/05	
Methylene chloride	EPA 624	5A06024	0.48	5.0	ND	1	01/06/05	01/06/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A06024	0.24	2.0	ND	1	01/06/05	01/06/05	
Tetrachloroethene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	
Toluene	EPA 624	5A06024	0.36	2.0	ND	1	01/06/05	01/06/05	
1,1,1-Trichloroethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
1,1,2-Trichloroethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
Trichloroethene	EPA 624	5A06024	0.26	2.0	ND	1	01/06/05	01/06/05	
Trichlorofluoromethane	EPA 624	5A06024	0.34	5.0	ND	1	01/06/05	01/06/05	
Vinyl chloride	EPA 624	5A06024	0.26	0.50	ND	1	01/06/05	01/06/05	
Xylenes, Total	EPA 624	5A06024	0.52	4.0	ND	1	01/06/05	01/06/05	
Surrogate: Dibromofluoromethane (80-120%)					104 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-02 (Trip Blank - Water)									
Reporting Units: ug/l					Sampled: 01/04/05				
Benzene	EPA 624	5A06024	0.23	2.0	ND	1	01/06/05	01/06/05	
Bromodichloromethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
Bromoform	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
Bromomethane	EPA 624	5A06024	0.46	5.0	ND	1	01/06/05	01/06/05	
Carbon tetrachloride	EPA 624	5A06024	0.29	5.0	ND	1	01/06/05	01/06/05	
Chlorobenzene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	
Chloroethane	EPA 624	5A06024	0.86	5.0	ND	1	01/06/05	01/06/05	
Chloroform	EPA 624	5A06024	0.23	2.0	ND	1	01/06/05	01/06/05	
Chloromethane	EPA 624	5A06024	0.44	5.0	ND	1	01/06/05	01/06/05	
Dibromochloromethane	EPA 624	5A06024	0.48	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichlorobenzene	EPA 624	5A06024	0.39	2.0	ND	1	01/06/05	01/06/05	
1,3-Dichlorobenzene	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05	
1,4-Dichlorobenzene	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05	
1,1-Dichloroethane	EPA 624	5A06024	0.17	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichloroethane	EPA 624	5A06024	0.43	2.0	ND	1	01/06/05	01/06/05	
1,1-Dichloroethene	EPA 624	5A06024	0.24	5.0	ND	1	01/06/05	01/06/05	
cis-1,2-Dichloroethene	EPA 624	5A06024	0.26	2.0	ND	1	01/06/05	01/06/05	
trans-1,2-Dichloroethene	EPA 624	5A06024	0.20	2.0	ND	1	01/06/05	01/06/05	
1,2-Dichloropropane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	
cis-1,3-Dichloropropene	EPA 624	5A06024	0.31	2.0	ND	1	01/06/05	01/06/05	
trans-1,3-Dichloropropene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	
Ethylbenzene	EPA 624	5A06024	0.31	2.0	ND	1	01/06/05	01/06/05	
Methylene chloride	EPA 624	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05	
Tetrachloroethene	EPA 624	5A06024	0.39	2.0	ND	1	01/06/05	01/06/05	
Toluene	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05	
1,1,1-Trichloroethane	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05	
1,1,2-Trichloroethane	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05	
Trichloroethene	EPA 624	5A06024	0.38	2.0	ND	1	01/06/05	01/06/05	
Trichlorofluoromethane	EPA 624	5A06024	0.37	5.0	ND	1	01/06/05	01/06/05	
Vinyl chloride	EPA 624	5A06024	0.24	5.0	ND	1	01/06/05	01/06/05	
Surrogate: Dibromofluoromethane (80-120%)					103 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water)					Sampled: 01/05/05				
Reporting Units: ug/l									
Acrolein	EPA 624	5A07016	4.6	50	ND	1	01/07/05	01/07/05	
Acrylonitrile	EPA 624	5A07016	5.1	50	ND	1	01/07/05	01/07/05	
2-Chloroethyl vinyl ether	EPA 624	5A07016	1.3	5.0	ND	1	01/07/05	01/07/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/05/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	
Cyclohexane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	
<b>Sample ID: IOA0131-02 (Trip Blank - Water)</b>					<b>Sampled: 01/04/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	
Cyclohexane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	

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Michele Harper  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water)					Sampled: 01/05/05				
Reporting Units: ug/l									
Acenaphthene	EPA 625	5A10039	0.10	0.50	ND	0.98	01/10/05	01/14/05	
Acenaphthylene	EPA 625	5A10039	0.10	0.50	ND	0.98	01/10/05	01/14/05	
Aniline	EPA 625	5A10039	2.9	10	ND	0.98	01/10/05	01/14/05	
Anthracene	EPA 625	5A10039	0.083	0.50	ND	0.98	01/10/05	01/14/05	
Benzidine	EPA 625	5A10039	2.4	5.0	ND	0.98	01/10/05	01/14/05	
Benzoic acid	EPA 625	5A10039	3.7	20	ND	0.98	01/10/05	01/14/05	L2
Benzo(a)anthracene	EPA 625	5A10039	0.038	5.0	ND	0.98	01/10/05	01/14/05	
Benzo(a)pyrene	EPA 625	5A10039	0.14	2.0	ND	0.98	01/10/05	01/14/05	
Benzo(b)fluoranthene	EPA 625	5A10039	0.050	2.0	ND	0.98	01/10/05	01/14/05	
Benzo(g,h,i)perylene	EPA 625	5A10039	0.059	5.0	ND	0.98	01/10/05	01/14/05	
Benzo(k)fluoranthene	EPA 625	5A10039	0.053	0.50	ND	0.98	01/10/05	01/14/05	
Benzyl alcohol	EPA 625	5A10039	0.21	5.0	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroethoxy)methane	EPA 625	5A10039	0.072	0.50	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroethyl)ether	EPA 625	5A10039	0.084	0.50	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroisopropyl)ether	EPA 625	5A10039	0.11	0.50	ND	0.98	01/10/05	01/14/05	
<b>Bis(2-ethylhexyl)phthalate</b>	EPA 625	5A10039	1.1	5.0	<b>1.2</b>	0.98	01/10/05	01/14/05	J
4-Bromophenyl phenyl ether	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	
Butyl benzyl phthalate	EPA 625	5A10039	0.34	5.0	ND	0.98	01/10/05	01/14/05	
4-Chloroaniline	EPA 625	5A10039	0.20	2.0	ND	0.98	01/10/05	01/14/05	
2-Chloronaphthalene	EPA 625	5A10039	0.059	0.50	ND	0.98	01/10/05	01/14/05	
4-Chloro-3-methylphenol	EPA 625	5A10039	0.34	2.0	ND	0.98	01/10/05	01/14/05	
4-Chlorophenyl phenyl ether	EPA 625	5A10039	0.056	0.50	ND	0.98	01/10/05	01/14/05	
2-Chlorophenol	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	
Chrysene	EPA 625	5A10039	0.072	0.50	ND	0.98	01/10/05	01/14/05	
Dibenz(a,h)anthracene	EPA 625	5A10039	0.083	0.50	ND	0.98	01/10/05	01/14/05	
Dibenzofuran	EPA 625	5A10039	0.075	0.50	ND	0.98	01/10/05	01/14/05	
Di-n-butyl phthalate	EPA 625	5A10039	0.26	2.0	ND	0.98	01/10/05	01/14/05	
1,2-Dichlorobenzene	EPA 625	5A10039	0.11	0.50	ND	0.98	01/10/05	01/14/05	
1,3-Dichlorobenzene	EPA 625	5A10039	0.13	0.50	ND	0.98	01/10/05	01/14/05	
1,4-Dichlorobenzene	EPA 625	5A10039	0.050	0.50	ND	0.98	01/10/05	01/14/05	
3,3-Dichlorobenzidine	EPA 625	5A10039	0.93	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dichlorophenol	EPA 625	5A10039	0.21	2.0	ND	0.98	01/10/05	01/14/05	
Diethyl phthalate	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	
2,4-Dimethylphenol	EPA 625	5A10039	0.31	2.0	ND	0.98	01/10/05	01/14/05	
Dimethyl phthalate	EPA 625	5A10039	0.081	0.50	ND	0.98	01/10/05	01/14/05	
4,6-Dinitro-2-methylphenol	EPA 625	5A10039	0.38	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dinitrophenol	EPA 625	5A10039	2.7	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dinitrotoluene	EPA 625	5A10039	0.23	5.0	ND	0.98	01/10/05	01/14/05	
2,6-Dinitrotoluene	EPA 625	5A10039	0.24	5.0	ND	0.98	01/10/05	01/14/05	
Di-n-octyl phthalate	EPA 625	5A10039	0.17	5.0	ND	0.98	01/10/05	01/14/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A10039	0.087	1.0	ND	0.98	01/10/05	01/14/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Fluoranthene	EPA 625	5A10039	0.089	0.50	ND	0.98	01/10/05	01/14/05	
Fluorene	EPA 625	5A10039	0.075	0.50	ND	0.98	01/10/05	01/14/05	
Hexachlorobenzene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05	
Hexachlorobutadiene	EPA 625	5A10039	0.38	2.0	ND	0.98	01/10/05	01/14/05	
Hexachlorocyclopentadiene	EPA 625	5A10039	1.8	5.0	ND	0.98	01/10/05	01/14/05	
Hexachloroethane	EPA 625	5A10039	0.51	3.0	ND	0.98	01/10/05	01/14/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5A10039	0.19	2.0	ND	0.98	01/10/05	01/14/05	
Isophorone	EPA 625	5A10039	0.059	1.0	0.098	0.98	01/10/05	01/14/05	J
2-Methylnaphthalene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05	
2-Methylphenol	EPA 625	5A10039	0.28	2.0	ND	0.98	01/10/05	01/14/05	
4-Methylphenol	EPA 625	5A10039	0.20	5.0	ND	0.98	01/10/05	01/14/05	
Naphthalene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05	
2-Nitroaniline	EPA 625	5A10039	0.18	5.0	ND	0.98	01/10/05	01/14/05	
3-Nitroaniline	EPA 625	5A10039	0.35	5.0	ND	0.98	01/10/05	01/14/05	
4-Nitroaniline	EPA 625	5A10039	0.49	5.0	ND	0.98	01/10/05	01/14/05	
Nitrobenzene	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05	
2-Nitrophenol	EPA 625	5A10039	0.23	2.0	ND	0.98	01/10/05	01/14/05	
4-Nitrophenol	EPA 625	5A10039	0.73	5.0	ND	0.98	01/10/05	01/14/05	
N-Nitrosodimethylamine	EPA 625	5A10039	0.22	2.0	ND	0.98	01/10/05	01/14/05	
N-Nitroso-di-n-propylamine	EPA 625	5A10039	0.18	2.0	ND	0.98	01/10/05	01/14/05	
N-Nitrosodiphenylamine	EPA 625	5A10039	0.077	1.0	ND	0.98	01/10/05	01/14/05	
Pentachlorophenol	EPA 625	5A10039	0.78	2.0	ND	0.98	01/10/05	01/14/05	
Phenanthrene	EPA 625	5A10039	0.071	0.50	ND	0.98	01/10/05	01/14/05	
Phenol	EPA 625	5A10039	0.14	1.0	ND	0.98	01/10/05	01/14/05	
Pyrene	EPA 625	5A10039	0.059	0.50	ND	0.98	01/10/05	01/14/05	
1,2,4-Trichlorobenzene	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05	
2,4,5-Trichlorophenol	EPA 625	5A10039	0.075	2.0	ND	0.98	01/10/05	01/14/05	
2,4,6-Trichlorophenol	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05	
Surrogate: 2-Fluorophenol (35-120%)					74 %				
Surrogate: Phenol-d6 (45-120%)					80 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					89 %				
Surrogate: Nitrobenzene-d5 (45-120%)					77 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					82 %				
Surrogate: Terphenyl-d14 (45-135%)					83 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Aldrin	EPA 608	5A07033	0.029	0.10	ND	0.98	01/07/05	01/07/05	
alpha-BHC	EPA 608	5A07033	0.010	0.10	ND	0.98	01/07/05	01/07/05	
beta-BHC	EPA 608	5A07033	0.011	0.10	ND	0.98	01/07/05	01/07/05	
delta-BHC	EPA 608	5A07033	0.010	0.20	ND	0.98	01/07/05	01/07/05	
gamma-BHC (Lindane)	EPA 608	5A07033	0.0097	0.10	ND	0.98	01/07/05	01/07/05	
Chlordane	EPA 608	5A07033	0.18	1.0	ND	0.98	01/07/05	01/07/05	
4,4'-DDD	EPA 608	5A07033	0.011	0.10	ND	0.98	01/07/05	01/07/05	
4,4'-DDE	EPA 608	5A07033	0.017	0.10	ND	0.98	01/07/05	01/07/05	
4,4'-DDT	EPA 608	5A07033	0.015	0.10	ND	0.98	01/07/05	01/07/05	
Dieldrin	EPA 608	5A07033	0.010	0.10	ND	0.98	01/07/05	01/07/05	
Endosulfan I	EPA 608	5A07033	0.015	0.10	ND	0.98	01/07/05	01/07/05	
Endosulfan II	EPA 608	5A07033	0.037	0.10	ND	0.98	01/07/05	01/07/05	
Endosulfan sulfate	EPA 608	5A07033	0.013	0.20	ND	0.98	01/07/05	01/07/05	
Endrin	EPA 608	5A07033	0.0082	0.10	ND	0.98	01/07/05	01/07/05	
Endrin aldehyde	EPA 608	5A07033	0.045	0.10	ND	0.98	01/07/05	01/07/05	
Endrin ketone	EPA 608	5A07033	0.020	0.10	ND	0.98	01/07/05	01/07/05	
Heptachlor	EPA 608	5A07033	0.030	0.10	ND	0.98	01/07/05	01/07/05	
Heptachlor epoxide	EPA 608	5A07033	0.012	0.10	ND	0.98	01/07/05	01/07/05	
Methoxychlor	EPA 608	5A07033	0.034	0.10	ND	0.98	01/07/05	01/07/05	
Toxaphene	EPA 608	5A07033	0.77	5.0	ND	0.98	01/07/05	01/07/05	
Surrogate: Tetrachloro-m-xylene (35-120%)									58 %
Surrogate: Decachlorobiphenyl (45-120%)									82 %

Del Mar Analytical, Irvine  
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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5A07033	0.067	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1221	EPA 608	5A07033	0.057	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1232	EPA 608	5A07033	0.13	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1242	EPA 608	5A07033	0.12	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1248	EPA 608	5A07033	0.21	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1254	EPA 608	5A07033	0.16	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1260	EPA 608	5A07033	0.17	1.0	ND	0.98	01/07/05	01/07/05	
Surrogate: Decachlorobiphenyl (45-120%)					71 %				

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: mg/l									
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.015	1	01/05/05	01/06/05	
Boron	EPA 200.7	5A06063	0.0074	0.050	0.051	1	01/06/05	01/06/05	
Iron	EPA 200.8	5A05092	0.0032	0.010	0.81	1	01/05/05	01/06/05	

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.42	1	01/05/05	01/06/05	J
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.97	1	01/05/05	01/06/05	J
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.072	1	01/05/05	01/06/05	J
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.12	1	01/05/05	01/06/05	J
Chromium	EPA 200.8	5A05092	0.26	1.0	1.9	1	01/05/05	01/06/05	J
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.34	1	01/05/05	01/06/05	J
Copper	EPA 200.8	5A05092	0.49	2.0	4.4	1	01/05/05	01/06/05	J
Lead	EPA 200.8	5A05092	0.13	1.0	0.82	1	01/05/05	01/06/05	J
Manganese	EPA 200.8	5A05092	0.44	1.0	14	1	01/05/05	01/06/05	J
Mercury	EPA 245.1	5A06051	0.063	0.20	0.17	1	01/06/05	01/06/05	J
Nickel	EPA 200.8	5A05092	0.15	1.0	2.1	1	01/05/05	01/06/05	J
Selenium	EPA 200.8	5A05092	0.36	2.0	0.66	1	01/05/05	01/06/05	J
Silver	EPA 200.8	5A05092	0.089	1.0	0.13	1	01/05/05	01/06/05	J
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	J
Vanadium	EPA 200.8	5A05092	0.86	1.0	1.1	1	01/05/05	01/06/05	J
Zinc	EPA 200.8	5A05092	3.1	20	15	1	01/05/05	01/06/05	J

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5A05067	0.30	0.50	ND	1	01/05/05	01/05/05	
Biochemical Oxygen Demand	EPA 405.1	5A05054	0.59	2.0	1.3	1	01/05/05	01/10/05	J
Chloride	EPA 300.0	5A05050	0.26	0.50	4.3	1	01/05/05	01/05/05	
Fluoride	EPA 300.0	5A05050	0.074	0.50	0.28	1	01/05/05	01/05/05	J
Nitrate/Nitrite-N	EPA 300.0	5A05050	0.072	0.26	2.1	1	01/05/05	01/05/05	
Oil & Grease	EPA 413.1	5A05068	0.94	5.0	0.95	1	01/05/05	01/05/05	J
Residual Chlorine	EPA 330.5	5A05066	0.10	0.10	ND	1	01/05/05	01/05/05	
Sulfate	EPA 300.0	5A05050	0.18	0.50	6.0	1	01/05/05	01/05/05	
Surfactants (MBAS)	SM5540-C	5A05099	0.44	1.0	0.46	10	01/05/05	01/05/05	RL-1, J
Total Dissolved Solids	SM2540C	5A07084	10	10	100	1	01/07/05	01/07/05	
Total Organic Carbon	EPA 415.1	5A05058	0.56	1.0	13	1	01/05/05	01/05/05	
Total Suspended Solids	EPA 160.2	5A07077	10	10	ND	1	01/07/05	01/07/05	

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5A05055	0.10	0.10	ND	1	01/05/05	01/05/05	

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: NTU									
Turbidity	EPA 180.1	5A05079	0.040	1.0	24	1	01/05/05	01/05/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.16	1	01/05/05	01/05/05	B, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05	
Perchlorate	EPA 314.0	5A12035	0.80	4.0	ND	1	01/12/05	01/12/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5A06081	1.0	1.0	110	1	01/06/05	01/06/05	

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5A1103	0.49	1.0	ND	1	01/11/05	01/11/05	
Surrogate: Dibromofluoromethane (80-125%)					108 %				

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 011 - composite (IOA0131-01) - Water	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
EPA 160.5	2	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 16:56	01/05/2005 18:00
EPA 180.1	2	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 14:00	01/05/2005 15:00
EPA 218.6	1	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 13:00	01/05/2005 13:12
EPA 300.0	2	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 14:30	01/05/2005 14:59
EPA 330.5	1	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 11:45	01/05/2005 12:00
EPA 405.1	2	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 14:00	01/10/2005 20:30
EPA 624	3	01/05/2005 11:30	01/04/2005 18:25	01/07/2005 00:00	01/07/2005 13:50
SM5540-C	2	01/05/2005 11:30	01/04/2005 18:25	01/05/2005 20:09	01/05/2005 20:25

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06070 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06070-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 01/06/2005 (5A06070-BS1)</b>											
Total Recoverable Hydrocarbons	4.83	1.0	0.31	mg/l	5.00		97	65-120			M-NR1
<b>LCS Dup Analyzed: 01/06/2005 (5A06070-BSD1)</b>											
Total Recoverable Hydrocarbons	4.65	1.0	0.31	mg/l	5.00		93	65-120	4	20	

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06045 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06045-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.131			mg/l	0.200		66	40-125			
<b>LCS Analyzed: 01/06/2005 (5A06045-BS1)</b>											
EFH (C13 - C40)	0.671	0.50	0.082	mg/l	0.775		87	40-120			M-NR1
Surrogate: n-Octacosane	0.136			mg/l	0.200		68	40-125			
<b>LCS Dup Analyzed: 01/06/2005 (5A06045-BSD1)</b>											
EFH (C13 - C40)	0.682	0.50	0.082	mg/l	0.775		88	40-120	2	25	
Surrogate: n-Octacosane	0.149			mg/l	0.200		74	40-125			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06001 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06001-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00910			mg/l	0.0100		91	65-140			
<b>LCS Analyzed: 01/06/2005 (5A06001-BS1)</b>											
GRO (C4 - C12)	0.222	0.10	0.050	mg/l	0.220		101	70-140			
Surrogate: 4-BFB (FID)	0.0108			mg/l	0.0100		108	65-140			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06001-MS1)</b>											
						<b>Source: INL1858-04</b>					
GRO (C4 - C12)	0.233	0.10	0.050	mg/l	0.220	ND	106	60-140			
Surrogate: 4-BFB (FID)	0.0110			mg/l	0.0100		110	65-140			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06001-MSD1)</b>											
						<b>Source: INL1858-04</b>					
GRO (C4 - C12)	0.224	0.10	0.050	mg/l	0.220	ND	102	60-140	4	20	
Surrogate: 4-BFB (FID)	0.0107			mg/l	0.0100		107	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06024-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	25.8			ug/l	25.0		103	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	23.7			ug/l	25.0		95	80-120			

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METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06024-BLK1)</b>											
Benzene	ND	2.0	0.23	ug/l							
Benzene	ND	1.0	0.28	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromodichloromethane	ND	2.0	0.30	ug/l							
Bromoform	ND	2.0	0.30	ug/l							
Bromoform	ND	5.0	0.32	ug/l							
Bromomethane	ND	5.0	0.34	ug/l							
Bromomethane	ND	5.0	0.46	ug/l							
Carbon tetrachloride	ND	0.50	0.28	ug/l							
Carbon tetrachloride	ND	5.0	0.29	ug/l							
Chlorobenzene	ND	2.0	0.32	ug/l							
Chlorobenzene	ND	2.0	0.36	ug/l							
Chloroethane	ND	5.0	0.33	ug/l							
Chloroethane	ND	5.0	0.86	ug/l							
Chloroform	ND	2.0	0.23	ug/l							
Chloroform	ND	2.0	0.33	ug/l							
Chloromethane	ND	5.0	0.44	ug/l							
Chloromethane	ND	5.0	0.30	ug/l							
Dibromochloromethane	ND	2.0	0.28	ug/l							
Dibromochloromethane	ND	2.0	0.48	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l							
1,2-Dichlorobenzene	ND	2.0	0.39	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.28	ug/l							
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l							
1,4-Dichlorobenzene	ND	2.0	0.41	ug/l							
1,1-Dichloroethane	ND	2.0	0.27	ug/l							
1,1-Dichloroethane	ND	2.0	0.17	ug/l							
1,2-Dichloroethane	ND	0.50	0.28	ug/l							
1,2-Dichloroethane	ND	2.0	0.43	ug/l							
1,1-Dichloroethene	ND	5.0	0.32	ug/l							
1,1-Dichloroethene	ND	5.0	0.24	ug/l							
cis-1,2-Dichloroethene	ND	2.0	0.26	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.20	ug/l							
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l							

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>										
<b>Blank Analyzed: 01/06/2005 (5A06024-BLK1)</b>										
1,2-Dichloropropane	ND	2.0	0.30	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.31	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.32	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.31	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
Methylene chloride	ND	5.0	1.2	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.41	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.39	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
Toluene	ND	2.0	0.28	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.28	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.41	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichloroethene	ND	2.0	0.38	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Trichlorofluoromethane	ND	5.0	0.37	ug/l						
Vinyl chloride	ND	5.0	0.24	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	25.8			ug/l	25.0		103	80-120		
Surrogate: Dibromofluoromethane	25.8			ug/l	25.0		103	80-120		
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120		
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120		
Surrogate: 4-Bromofluorobenzene	23.7			ug/l	25.0		95	80-120		
Surrogate: 4-Bromofluorobenzene	23.7			ug/l	25.0		95	80-120		

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>										
<b>LCS Analyzed: 01/06/2005 (5A06024-BS1)</b>										
Benzene	25.5	1.0	0.28	ug/l	25.0		102 70-120			
Benzene	25.5	2.0	0.23	ug/l	25.0		102 70-120			
Bromodichloromethane	26.5	2.0	0.30	ug/l	25.0		106 70-140			
Bromodichloromethane	26.5	2.0	0.30	ug/l	25.0		106 70-140			
Bromoform	25.3	2.0	0.30	ug/l	25.0		101 55-135			
Bromoform	25.3	5.0	0.32	ug/l	25.0		101 55-135			
Bromomethane	32.2	5.0	0.46	ug/l	25.0		129 60-140			
Bromomethane	32.2	5.0	0.34	ug/l	25.0		129 60-140			
Carbon tetrachloride	26.4	5.0	0.29	ug/l	25.0		106 70-140			
Carbon tetrachloride	26.4	0.50	0.28	ug/l	25.0		106 70-140			
Chlorobenzene	25.7	2.0	0.36	ug/l	25.0		103 80-125			
Chlorobenzene	25.7	2.0	0.32	ug/l	25.0		103 80-125			
Chloroethane	31.0	5.0	0.33	ug/l	25.0		124 60-145			
Chloroethane	31.0	5.0	0.86	ug/l	25.0		124 60-145			
Chloroform	26.8	2.0	0.33	ug/l	25.0		107 75-130			
Chloroform	26.8	2.0	0.23	ug/l	25.0		107 75-130			
Chloromethane	28.6	5.0	0.30	ug/l	25.0		114 40-145			
Chloromethane	28.6	5.0	0.44	ug/l	25.0		114 40-145			
Dibromochloromethane	25.9	2.0	0.28	ug/l	25.0		104 65-145			
Dibromochloromethane	25.9	2.0	0.48	ug/l	25.0		104 65-145			
1,2-Dichlorobenzene	25.5	2.0	0.32	ug/l	25.0		102 80-120			
1,2-Dichlorobenzene	25.5	2.0	0.39	ug/l	25.0		102 80-120			
1,3-Dichlorobenzene	24.2	2.0	0.28	ug/l	25.0		97 80-120			
1,3-Dichlorobenzene	24.2	2.0	0.35	ug/l	25.0		97 80-120			
1,4-Dichlorobenzene	24.3	2.0	0.41	ug/l	25.0		97 80-120			
1,4-Dichlorobenzene	24.3	2.0	0.37	ug/l	25.0		97 80-120			
1,1-Dichloroethane	27.2	2.0	0.27	ug/l	25.0		109 70-135			
1,1-Dichloroethane	27.2	2.0	0.17	ug/l	25.0		109 70-135			
1,2-Dichloroethane	25.7	0.50	0.28	ug/l	25.0		103 60-150			
1,2-Dichloroethane	25.7	2.0	0.43	ug/l	25.0		103 60-150			
1,1-Dichloroethane	28.2	5.0	0.32	ug/l	25.0		113 75-135			
1,1-Dichloroethane	28.2	5.0	0.24	ug/l	25.0		113 75-135			
cis-1,2-Dichloroethene	27.3	2.0	0.26	ug/l	25.0		109 70-125			
trans-1,2-Dichloroethene	28.0	2.0	0.27	ug/l	25.0		112 70-130			
trans-1,2-Dichloroethene	28.0	2.0	0.20	ug/l	25.0		112 70-130			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>										
<b>LCS Analyzed: 01/06/2005 (5A06024-BS1)</b>										
1,2-Dichloropropane	26.9	2.0	0.35	ug/l	25.0		108 70-120			
1,2-Dichloropropane	26.9	2.0	0.30	ug/l	25.0		108 70-120			
cis-1,3-Dichloropropene	27.5	2.0	0.31	ug/l	25.0		110 75-130			
cis-1,3-Dichloropropene	27.5	2.0	0.22	ug/l	25.0		110 75-130			
trans-1,3-Dichloropropene	27.5	2.0	0.32	ug/l	25.0		110 75-135			
trans-1,3-Dichloropropene	27.5	2.0	0.24	ug/l	25.0		110 75-135			
Ethylbenzene	27.6	2.0	0.31	ug/l	25.0		110 80-120			
Ethylbenzene	27.6	2.0	0.25	ug/l	25.0		110 80-120			
Methylene chloride	28.4	5.0	0.48	ug/l	25.0		114 60-135			
Methylene chloride	28.4	5.0	1.2	ug/l	25.0		114 60-135			
1,1,2,2-Tetrachloroethane	24.8	2.0	0.41	ug/l	25.0		99 60-135			
1,1,2,2-Tetrachloroethane	24.8	2.0	0.24	ug/l	25.0		99 60-135			
Tetrachloroethene	25.7	2.0	0.39	ug/l	25.0		103 75-125			
Tetrachloroethene	25.7	2.0	0.32	ug/l	25.0		103 75-125			
Toluene	26.4	2.0	0.36	ug/l	25.0		106 75-120			
Toluene	26.4	2.0	0.28	ug/l	25.0		106 75-120			
1,1,1-Trichloroethane	27.2	2.0	0.28	ug/l	25.0		109 75-140			
1,1,1-Trichloroethane	27.2	2.0	0.30	ug/l	25.0		109 75-140			
1,1,2-Trichloroethane	26.3	2.0	0.41	ug/l	25.0		105 70-125			
1,1,2-Trichloroethane	26.3	2.0	0.30	ug/l	25.0		105 70-125			
Trichloroethene	25.1	2.0	0.26	ug/l	25.0		100 80-120			
Trichloroethene	25.1	2.0	0.38	ug/l	25.0		100 80-120			
Trichlorofluoromethane	28.7	5.0	0.37	ug/l	25.0		115 65-145			
Trichlorofluoromethane	28.7	5.0	0.34	ug/l	25.0		115 65-145			
Vinyl chloride	26.6	5.0	0.24	ug/l	25.0		106 50-130			
Vinyl chloride	26.6	0.50	0.26	ug/l	25.0		106 50-130			
Surrogate: Dibromofluoromethane	26.0			ug/l	25.0		104 80-120			
Surrogate: Dibromofluoromethane	26.0			ug/l	25.0		104 80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103 80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103 80-120			
Surrogate: 4-Bromofluorobenzene	26.2			ug/l	25.0		105 80-120			
Surrogate: 4-Bromofluorobenzene	26.2			ug/l	25.0		105 80-120			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>											
<b>Matrix Spike Analyzed: 01/06/2005 (5A06024-MS1)</b>						<b>Source: IOA0131-01</b>					
Benzene	25.3	1.0	0.28	ug/l	25.0	ND	101	70-120			
Benzene	25.3	2.0	0.23	ug/l	25.0	ND	101	70-120			
Bromodichloromethane	26.5	2.0	0.30	ug/l	25.0	ND	106	70-140			
Bromodichloromethane	26.5	2.0	0.30	ug/l	25.0	ND	106	70-140			
Bromoform	24.5	5.0	0.32	ug/l	25.0	ND	98	55-140			
Bromoform	24.5	2.0	0.30	ug/l	25.0	ND	98	55-140			
Bromomethane	33.8	5.0	0.46	ug/l	25.0	ND	135	50-145			
Bromomethane	33.8	5.0	0.34	ug/l	25.0	ND	135	50-145			
Carbon tetrachloride	26.2	0.50	0.28	ug/l	25.0	ND	105	70-145			
Carbon tetrachloride	26.2	5.0	0.29	ug/l	25.0	ND	105	70-145			
Chlorobenzene	25.7	2.0	0.32	ug/l	25.0	ND	103	80-125			
Chlorobenzene	25.7	2.0	0.36	ug/l	25.0	ND	103	80-125			
Chloroethane	32.2	5.0	0.86	ug/l	25.0	ND	129	50-145			
Chloroethane	32.2	5.0	0.33	ug/l	25.0	ND	129	50-145			
Chloroform	27.2	2.0	0.23	ug/l	25.0	ND	109	70-135			
Chloroform	27.2	2.0	0.33	ug/l	25.0	ND	109	70-135			
Chloromethane	29.4	5.0	0.30	ug/l	25.0	ND	118	35-145			
Chloromethane	29.4	5.0	0.44	ug/l	25.0	ND	118	35-145			
Dibromochloromethane	25.4	2.0	0.48	ug/l	25.0	ND	102	65-145			
Dibromochloromethane	25.4	2.0	0.28	ug/l	25.0	ND	102	65-145			
1,2-Dichlorobenzene	25.4	2.0	0.32	ug/l	25.0	ND	102	75-130			
1,2-Dichlorobenzene	25.4	2.0	0.39	ug/l	25.0	ND	102	75-130			
1,3-Dichlorobenzene	24.4	2.0	0.35	ug/l	25.0	ND	98	75-130			
1,3-Dichlorobenzene	24.4	2.0	0.28	ug/l	25.0	ND	98	75-130			
1,4-Dichlorobenzene	24.2	2.0	0.41	ug/l	25.0	ND	97	80-120			
1,4-Dichlorobenzene	24.2	2.0	0.37	ug/l	25.0	ND	97	80-120			
1,1-Dichloroethane	27.7	2.0	0.27	ug/l	25.0	ND	111	65-135			
1,1-Dichloroethane	27.7	2.0	0.17	ug/l	25.0	ND	111	65-135			
1,2-Dichloroethane	25.2	0.50	0.28	ug/l	25.0	ND	101	60-150			
1,2-Dichloroethane	25.2	2.0	0.43	ug/l	25.0	ND	101	60-150			
1,1-Dichloroethene	28.7	5.0	0.24	ug/l	25.0	ND	115	65-140			
1,1-Dichloroethene	28.7	5.0	0.32	ug/l	25.0	ND	115	65-140			
cis-1,2-Dichloroethene	27.9	2.0	0.26	ug/l	25.0	ND	112	65-130			
trans-1,2-Dichloroethene	28.6	2.0	0.27	ug/l	25.0	ND	114	65-135			
trans-1,2-Dichloroethene	28.6	2.0	0.20	ug/l	25.0	ND	114	65-135			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: SA06024 Extracted: 01/06/05</b>											
<b>Matrix Spike Analyzed: 01/06/2005 (SA06024-MS1)</b>						<b>Source: IOA0131-01</b>					
1,2-Dichloropropane	26.7	2.0	0.35	ug/l	25.0	ND	107	65-130			
1,2-Dichloropropane	26.7	2.0	0.30	ug/l	25.0	ND	107	65-130			
cis-1,3-Dichloropropene	26.8	2.0	0.31	ug/l	25.0	ND	107	70-140			
cis-1,3-Dichloropropene	26.8	2.0	0.22	ug/l	25.0	ND	107	70-140			
trans-1,3-Dichloropropene	26.4	2.0	0.24	ug/l	25.0	ND	106	70-140			
trans-1,3-Dichloropropene	26.4	2.0	0.32	ug/l	25.0	ND	106	70-140			
Ethylbenzene	27.6	2.0	0.25	ug/l	25.0	ND	110	70-130			
Ethylbenzene	27.6	2.0	0.31	ug/l	25.0	ND	110	70-130			
Methylene chloride	28.9	5.0	1.2	ug/l	25.0	ND	116	60-135			
Methylene chloride	28.9	5.0	0.48	ug/l	25.0	ND	116	60-135			
1,1,2,2-Tetrachloroethane	25.0	2.0	0.24	ug/l	25.0	ND	100	60-145			
1,1,2,2-Tetrachloroethane	25.0	2.0	0.41	ug/l	25.0	ND	100	60-145			
Tetrachloroethene	25.5	2.0	0.39	ug/l	25.0	ND	102	70-130			
Tetrachloroethene	25.5	2.0	0.32	ug/l	25.0	ND	102	70-130			
Toluene	26.2	2.0	0.36	ug/l	25.0	ND	105	70-120			
Toluene	26.2	2.0	0.28	ug/l	25.0	ND	105	70-120			
1,1,1-Trichloroethane	27.2	2.0	0.30	ug/l	25.0	ND	109	75-140			
1,1,1-Trichloroethane	27.2	2.0	0.28	ug/l	25.0	ND	109	75-140			
1,1,2-Trichloroethane	25.6	2.0	0.41	ug/l	25.0	ND	102	60-135			
1,1,2-Trichloroethane	25.6	2.0	0.30	ug/l	25.0	ND	102	60-135			
Trichloroethene	24.6	2.0	0.26	ug/l	25.0	ND	98	70-125			
Trichloroethene	24.6	2.0	0.38	ug/l	25.0	ND	98	70-125			
Trichlorofluoromethane	29.2	5.0	0.37	ug/l	25.0	ND	117	55-145			
Trichlorofluoromethane	29.2	5.0	0.34	ug/l	25.0	ND	117	55-145			
Vinyl chloride	27.7	5.0	0.24	ug/l	25.0	ND	111	40-135			
Vinyl chloride	27.7	0.50	0.26	ug/l	25.0	ND	111	40-135			
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>										
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06024-MSD1)</b>										
<b>Source: IOA0131-01</b>										
Benzene	25.5	2.0	0.23	ug/l	25.0	ND	102 70-120	1	20	
Benzene	25.5	1.0	0.28	ug/l	25.0	ND	102 70-120	1	20	
Bromodichloromethane	26.2	2.0	0.30	ug/l	25.0	ND	105 70-140	1	20	
Bromodichloromethane	26.2	2.0	0.30	ug/l	25.0	ND	105 70-140	1	20	
Bromoform	23.5	2.0	0.30	ug/l	25.0	ND	94 55-140	4	25	
Bromoform	23.5	5.0	0.32	ug/l	25.0	ND	94 55-140	4	25	
Bromomethane	31.6	5.0	0.46	ug/l	25.0	ND	126 50-145	7	25	
Bromomethane	31.6	5.0	0.34	ug/l	25.0	ND	126 50-145	7	25	
Carbon tetrachloride	26.9	0.50	0.28	ug/l	25.0	ND	108 70-145	3	25	
Carbon tetrachloride	26.9	5.0	0.29	ug/l	25.0	ND	108 70-145	3	25	
Chlorobenzene	25.5	2.0	0.36	ug/l	25.0	ND	102 80-125	1	20	
Chlorobenzene	25.5	2.0	0.32	ug/l	25.0	ND	102 80-125	1	20	
Chloroethane	30.8	5.0	0.33	ug/l	25.0	ND	123 50-145	4	25	
Chloroethane	30.8	5.0	0.86	ug/l	25.0	ND	123 50-145	4	25	
Chloroform	26.7	2.0	0.33	ug/l	25.0	ND	107 70-135	2	20	
Chloroform	26.7	2.0	0.23	ug/l	25.0	ND	107 70-135	2	20	
Chloromethane	29.1	5.0	0.30	ug/l	25.0	ND	116 35-145	1	25	
Chloromethane	29.1	5.0	0.44	ug/l	25.0	ND	116 35-145	1	25	
Dibromochloromethane	24.8	2.0	0.48	ug/l	25.0	ND	99 65-145	2	25	
Dibromochloromethane	24.8	2.0	0.28	ug/l	25.0	ND	99 65-145	2	25	
1,2-Dichlorobenzene	25.6	2.0	0.32	ug/l	25.0	ND	102 75-130	1	20	
1,2-Dichlorobenzene	25.6	2.0	0.39	ug/l	25.0	ND	102 75-130	1	20	
1,3-Dichlorobenzene	24.4	2.0	0.28	ug/l	25.0	ND	98 75-130	0	20	
1,3-Dichlorobenzene	24.4	2.0	0.35	ug/l	25.0	ND	98 75-130	0	20	
1,4-Dichlorobenzene	24.4	2.0	0.37	ug/l	25.0	ND	98 80-120	1	20	
1,4-Dichlorobenzene	24.4	2.0	0.41	ug/l	25.0	ND	98 80-120	1	20	
1,1-Dichloroethane	27.1	2.0	0.17	ug/l	25.0	ND	108 65-135	2	20	
1,1-Dichloroethane	27.1	2.0	0.27	ug/l	25.0	ND	108 65-135	2	20	
1,2-Dichloroethane	24.9	0.50	0.28	ug/l	25.0	ND	100 60-150	1	20	
1,2-Dichloroethane	24.9	2.0	0.43	ug/l	25.0	ND	100 60-150	1	20	
1,1-Dichloroethene	28.0	5.0	0.32	ug/l	25.0	ND	112 65-140	2	20	
1,1-Dichloroethene	28.0	5.0	0.24	ug/l	25.0	ND	112 65-140	2	20	
cis-1,2-Dichloroethene	27.4	2.0	0.26	ug/l	25.0	ND	110 65-130	2	20	
trans-1,2-Dichloroethene	28.3	2.0	0.27	ug/l	25.0	ND	113 65-135	1	20	
trans-1,2-Dichloroethene	28.3	2.0	0.20	ug/l	25.0	ND	113 65-135	1	20	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>											
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06024-MSD1)</b>						<b>Source: IOA0131-01</b>					
1,2-Dichloropropane	26.3	2.0	0.35	ug/l	25.0	ND	105	65-130	2	20	
1,2-Dichloropropane	26.3	2.0	0.30	ug/l	25.0	ND	105	65-130	2	20	
cis-1,3-Dichloropropene	26.8	2.0	0.22	ug/l	25.0	ND	107	70-140	0	20	
cis-1,3-Dichloropropene	26.8	2.0	0.31	ug/l	25.0	ND	107	70-140	0	20	
trans-1,3-Dichloropropene	26.2	2.0	0.24	ug/l	25.0	ND	105	70-140	1	25	
trans-1,3-Dichloropropene	26.2	2.0	0.32	ug/l	25.0	ND	105	70-140	1	25	
Ethylbenzene	27.3	2.0	0.31	ug/l	25.0	ND	109	70-130	1	20	
Ethylbenzene	27.3	2.0	0.25	ug/l	25.0	ND	109	70-130	1	20	
Methylene chloride	28.3	5.0	0.48	ug/l	25.0	ND	113	60-135	2	20	
Methylene chloride	28.3	5.0	1.2	ug/l	25.0	ND	113	60-135	2	20	
1,1,2,2-Tetrachloroethane	23.7	2.0	0.41	ug/l	25.0	ND	95	60-145	5	30	
1,1,2,2-Tetrachloroethane	23.7	2.0	0.24	ug/l	25.0	ND	95	60-145	5	30	
Tetrachloroethene	25.3	2.0	0.39	ug/l	25.0	ND	101	70-130	1	20	
Tetrachloroethene	25.3	2.0	0.32	ug/l	25.0	ND	101	70-130	1	20	
Toluene	25.8	2.0	0.36	ug/l	25.0	ND	103	70-120	2	20	
Toluene	25.8	2.0	0.28	ug/l	25.0	ND	103	70-120	2	20	
1,1,1-Trichloroethane	27.4	2.0	0.28	ug/l	25.0	ND	110	75-140	1	20	
1,1,1-Trichloroethane	27.4	2.0	0.30	ug/l	25.0	ND	110	75-140	1	20	
1,1,2-Trichloroethane	24.9	2.0	0.41	ug/l	25.0	ND	100	60-135	3	25	
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0	ND	100	60-135	3	25	
Trichloroethene	24.6	2.0	0.26	ug/l	25.0	ND	98	70-125	0	20	
Trichloroethene	24.6	2.0	0.38	ug/l	25.0	ND	98	70-125	0	20	
Trichlorofluoromethane	29.1	5.0	0.34	ug/l	25.0	ND	116	55-145	0	25	
Trichlorofluoromethane	29.1	5.0	0.37	ug/l	25.0	ND	116	55-145	0	25	
Vinyl chloride	27.5	5.0	0.24	ug/l	25.0	ND	110	40-135	1	30	
Vinyl chloride	27.5	0.50	0.26	ug/l	25.0	ND	110	40-135	1	30	
Surrogate: Dibromofluoromethane	25.9			ug/l	25.0		104	80-120			
Surrogate: Dibromofluoromethane	25.9			ug/l	25.0		104	80-120			
Surrogate: Toluene-d8	25.5			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.5			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	25.6			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	25.6			ug/l	25.0		102	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager





MWH-Pasadena/Boeing  
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Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A07016 Extracted: 01/07/05</b>										
<b>Blank Analyzed: 01/07/2005 (5A07016-BLK1)</b>										
Acrolein	ND	50	4.6	ug/l						
Acrylonitrile	ND	50	5.1	ug/l						
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l						
Surrogate: Dibromofluoromethane	25.8			ug/l	25.0		103 80-120			
Surrogate: Toluene-d8	25.9			ug/l	25.0		104 80-120			
Surrogate: 4-Bromofluorobenzene	23.6			ug/l	25.0		94 80-120			
<b>LCS Analyzed: 01/07/2005 (5A07016-BS1)</b>										
2-Chloroethyl vinyl ether	27.7	5.0	1.3	ug/l	25.0		111 20-175			
Surrogate: Dibromofluoromethane	26.3			ug/l	25.0		105 80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103 80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106 80-120			
<b>Matrix Spike Analyzed: 01/07/2005 (5A07016-MS1) Source: IOA0264-02</b>										
2-Chloroethyl vinyl ether	23.8	5.0	1.3	ug/l	25.0	ND	95 20-175			
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106 80-120			
Surrogate: Toluene-d8	25.8			ug/l	25.0		103 80-120			
Surrogate: 4-Bromofluorobenzene	26.2			ug/l	25.0		105 80-120			
<b>Matrix Spike Dup Analyzed: 01/07/2005 (5A07016-MSD1) Source: IOA0264-02</b>										
2-Chloroethyl vinyl ether	26.7	5.0	1.3	ug/l	25.0	ND	107 20-175	11	25	
Surrogate: Dibromofluoromethane	25.6			ug/l	25.0		102 80-120			
Surrogate: Toluene-d8	25.5			ug/l	25.0		102 80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101 80-120			

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06024 Extracted: 01/06/05</b>										
<b>Blank Analyzed: 01/06/2005 (5A06024-BLK1)</b>										
Cyclohexane	ND	2.5	N/A	ug/l						
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						

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Report Number: IOA0131

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A10039-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	ND	5.0	0.34	ug/l							
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	ND	2.0	0.26	ug/l							
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3'-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	ND	1.0	0.12	ug/l							
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD	Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>												
<b>Blank Analyzed: 01/13/2005 (5A10039-BLK1)</b>												
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l								
2,4-Dinitrophenol	ND	5.0	2.7	ug/l								
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l								
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l								
Di-n-octyl phthalate	ND	5.0	0.17	ug/l								
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l								
Fluoranthene	ND	0.50	0.089	ug/l								
Fluorene	ND	0.50	0.075	ug/l								
Hexachlorobenzene	ND	1.0	0.13	ug/l								
Hexachlorobutadiene	ND	2.0	0.38	ug/l								
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l								
Hexachloroethane	ND	3.0	0.51	ug/l								
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l								
Isophorone	ND	1.0	0.059	ug/l								
2-Methylnaphthalene	ND	1.0	0.13	ug/l								
2-Methylphenol	ND	2.0	0.28	ug/l								
4-Methylphenol	ND	5.0	0.20	ug/l								
Naphthalene	ND	1.0	0.13	ug/l								
2-Nitroaniline	ND	5.0	0.18	ug/l								
3-Nitroaniline	ND	5.0	0.35	ug/l								
4-Nitroaniline	ND	5.0	0.49	ug/l								
Nitrobenzene	ND	1.0	0.10	ug/l								
2-Nitrophenol	ND	2.0	0.23	ug/l								
4-Nitrophenol	ND	5.0	0.73	ug/l								
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l								
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l								
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l								
Pentachlorophenol	ND	2.0	0.78	ug/l								
Phenanthrene	ND	0.50	0.071	ug/l								
Phenol	ND	1.0	0.14	ug/l								
Pyrene	ND	0.50	0.059	ug/l								
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l								
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l								
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l								
Surrogate: 2-Fluorophenol	13.2			ug/l	20.0		66	35-120				

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METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>										
<b>Blank Analyzed: 01/13/2005 (5A10039-BLK1)</b>										
Surrogate: Phenol-d6	13.6			ug/l	20.0		68 45-120			
Surrogate: 2,4,6-Tribromophenol	14.9			ug/l	20.0		74 50-125			
Surrogate: Nitrobenzene-d5	6.88			ug/l	10.0		69 45-120			
Surrogate: 2-Fluorobiphenyl	6.80			ug/l	10.0		68 45-120			
Surrogate: Terphenyl-d14	7.82			ug/l	10.0		78 45-135			
<b>LCS Analyzed: 01/14/2005 (5A10039-BS1)</b>										
Acenaphthene	8.24	0.50	0.10	ug/l	10.0		82 55-120			
Acenaphthylene	8.04	0.50	0.10	ug/l	10.0		80 55-120			
Aniline	7.28	10	2.9	ug/l	10.0		73 30-120			J
Anthracene	8.64	0.50	0.083	ug/l	10.0		86 60-120			
Benzidine	ND	5.0	2.4	ug/l	10.0		20-180			L2
Benzoic acid	5.84	20	3.7	ug/l	10.0		58 30-125			J
Benzo(a)anthracene	8.76	5.0	0.038	ug/l	10.0		88 65-120			
Benzo(a)pyrene	9.40	2.0	0.14	ug/l	10.0		94 55-125			
Benzo(b)fluoranthene	8.52	2.0	0.050	ug/l	10.0		85 50-125			
Benzo(g,h,i)perylene	8.40	5.0	0.059	ug/l	10.0		84 35-160			
Benzo(k)fluoranthene	8.82	0.50	0.053	ug/l	10.0		88 50-125			
Benzyl alcohol	9.58	5.0	0.21	ug/l	10.0		96 40-130			
Bis(2-chloroethoxy)methane	8.50	0.50	0.072	ug/l	10.0		85 55-120			
Bis(2-chloroethyl)ether	7.66	0.50	0.084	ug/l	10.0		77 50-120			
Bis(2-chloroisopropyl)ether	7.62	0.50	0.11	ug/l	10.0		76 50-120			
Bis(2-ethylhexyl)phthalate	10.8	5.0	1.1	ug/l	10.0		108 65-125			
4-Bromophenyl phenyl ether	8.64	1.0	0.12	ug/l	10.0		86 55-125			
Butyl benzyl phthalate	9.64	5.0	0.34	ug/l	10.0		96 60-125			
4-Chloroaniline	8.04	2.0	0.20	ug/l	10.0		80 55-120			
2-Chloronaphthalene	8.24	0.50	0.059	ug/l	10.0		82 60-120			
4-Chloro-3-methylphenol	8.80	2.0	0.34	ug/l	10.0		88 60-120			
4-Chlorophenyl phenyl ether	8.66	0.50	0.056	ug/l	10.0		87 55-120			
2-Chlorophenol	8.12	1.0	0.12	ug/l	10.0		81 45-120			
Chrysene	8.22	0.50	0.072	ug/l	10.0		82 65-120			
Dibenz(a,h)anthracene	9.08	0.50	0.083	ug/l	10.0		91 40-160			
Dibenzofuran	8.34	0.50	0.075	ug/l	10.0		83 60-120			
Di-n-butyl phthalate	9.62	2.0	0.26	ug/l	10.0		96 65-125			
1,2-Dichlorobenzene	7.74	0.50	0.11	ug/l	10.0		77 40-120			
1,3-Dichlorobenzene	7.36	0.50	0.13	ug/l	10.0		74 40-120			

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>											
<b>LCS Analyzed: 01/14/2005 (5A10039-BS1)</b>											
1,4-Dichlorobenzene	7.56	0.50	0.050	ug/l	10.0		76	40-120			
3,3-Dichlorobenzidine	7.54	5.0	0.93	ug/l	10.0		75	50-170			
2,4-Dichlorophenol	8.76	2.0	0.21	ug/l	10.0		88	55-120			
Diethyl phthalate	8.96	1.0	0.12	ug/l	10.0		90	60-120			
2,4-Dimethylphenol	6.42	2.0	0.31	ug/l	10.0		64	35-120			
Dimethyl phthalate	8.88	0.50	0.081	ug/l	10.0		89	60-120			
4,6-Dinitro-2-methylphenol	8.14	5.0	0.38	ug/l	10.0		81	55-120			
2,4-Dinitrophenol	13.8	5.0	2.7	ug/l	10.0		138	40-140			
2,4-Dinitrotoluene	9.30	5.0	0.23	ug/l	10.0		93	60-140			
2,6-Dinitrotoluene	8.96	5.0	0.24	ug/l	10.0		90	65-125			
Di-n-octyl phthalate	10.4	5.0	0.17	ug/l	10.0		104	60-130			
1,2-Diphenylhydrazine/Azobenzene	9.52	1.0	0.087	ug/l	10.0		95	60-120			
Fluoranthene	9.34	0.50	0.089	ug/l	10.0		93	55-125			
Fluorene	8.68	0.50	0.075	ug/l	10.0		87	60-120			
Hexachlorobenzene	8.30	1.0	0.13	ug/l	10.0		83	50-120			
Hexachlorobutadiene	7.82	2.0	0.38	ug/l	10.0		78	45-120			
Hexachlorocyclopentadiene	7.70	5.0	1.8	ug/l	10.0		77	10-130			
Hexachloroethane	7.62	3.0	0.51	ug/l	10.0		76	40-120			
Indeno(1,2,3-cd)pyrene	9.06	2.0	0.19	ug/l	10.0		91	35-150			
Isophorone	8.98	1.0	0.059	ug/l	10.0		90	55-120			
2-Methylnaphthalene	8.12	1.0	0.13	ug/l	10.0		81	50-120			
2-Methylphenol	8.44	2.0	0.28	ug/l	10.0		84	45-120			
4-Methylphenol	8.52	5.0	0.20	ug/l	10.0		85	45-120			
Naphthalene	8.00	1.0	0.13	ug/l	10.0		80	50-120			
2-Nitroaniline	8.96	5.0	0.18	ug/l	10.0		90	60-130			
3-Nitroaniline	8.72	5.0	0.35	ug/l	10.0		87	50-140			
4-Nitroaniline	9.74	5.0	0.49	ug/l	10.0		97	45-160			
Nitrobenzene	8.22	1.0	0.10	ug/l	10.0		82	50-120			
2-Nitrophenol	9.16	2.0	0.23	ug/l	10.0		92	55-120			
4-Nitrophenol	9.20	5.0	0.73	ug/l	10.0		92	50-135			
N-Nitrosodimethylamine	7.72	2.0	0.22	ug/l	10.0		77	40-120			
N-Nitroso-di-n-propylamine	8.70	2.0	0.18	ug/l	10.0		87	50-120			
N-Nitrosodiphenylamine	9.08	1.0	0.077	ug/l	10.0		91	60-120			
Pentachlorophenol	10.0	2.0	0.78	ug/l	10.0		100	50-125			
Phenanthrene	8.40	0.50	0.071	ug/l	10.0		84	55-120			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>											
<b>LCS Analyzed: 01/14/2005 (5A10039-BS1)</b>											
Phenol	8.02	1.0	0.14	ug/l	10.0		80	45-120			
Pyrene	8.78	0.50	0.059	ug/l	10.0		88	50-120			
1,2,4-Trichlorobenzene	8.14	1.0	0.10	ug/l	10.0		81	50-120			
2,4,5-Trichlorophenol	9.42	2.0	0.075	ug/l	10.0		94	60-120			
2,4,6-Trichlorophenol	9.32	1.0	0.10	ug/l	10.0		93	60-120			
Surrogate: 2-Fluorophenol	15.0			ug/l	20.0		75	35-120			
Surrogate: Phenol-d6	15.5			ug/l	20.0		78	45-120			
Surrogate: 2,4,6-Tribromophenol	16.5			ug/l	20.0		82	50-125			
Surrogate: Nitrobenzene-d5	7.60			ug/l	10.0		76	45-120			
Surrogate: 2-Fluorobiphenyl	7.88			ug/l	10.0		79	45-120			
Surrogate: Terphenyl-d14	7.86			ug/l	10.0		79	45-135			
<b>LCS Dup Analyzed: 01/13/2005 (5A10039-BSD1)</b>											
Acenaphthene	8.32	0.50	0.10	ug/l	10.0		83	55-120	1	20	
Acenaphthylene	8.08	0.50	0.10	ug/l	10.0		81	55-120	1	20	
Aniline	6.10	10	2.9	ug/l	10.0		61	30-120	18	25	J
Anthracene	8.26	0.50	0.083	ug/l	10.0		83	60-120	4	20	
Benzidine	ND	5.0	2.4	ug/l	10.0			20-180		35	L2
Benzoic acid	6.06	20	3.7	ug/l	10.0		61	30-125	4	30	J
Benzo(a)anthracene	8.48	5.0	0.038	ug/l	10.0		85	65-120	3	20	
Benzo(a)pyrene	8.66	2.0	0.14	ug/l	10.0		87	55-125	8	25	
Benzo(b)fluoranthene	8.10	2.0	0.050	ug/l	10.0		81	50-125	5	25	
Benzo(g,h,i)perylene	8.48	5.0	0.059	ug/l	10.0		85	35-160	1	25	
Benzo(k)fluoranthene	8.52	0.50	0.053	ug/l	10.0		85	50-125	3	20	
Benzyl alcohol	9.38	5.0	0.21	ug/l	10.0		94	40-130	2	20	
Bis(2-chloroethoxy)methane	8.34	0.50	0.072	ug/l	10.0		83	55-120	2	20	
Bis(2-chloroethyl)ether	7.66	0.50	0.084	ug/l	10.0		77	50-120	0	20	
Bis(2-chloroisopropyl)ether	8.06	0.50	0.11	ug/l	10.0		81	50-120	6	20	
Bis(2-ethylhexyl)phthalate	9.64	5.0	1.1	ug/l	10.0		96	65-125	11	20	
4-Bromophenyl phenyl ether	8.44	1.0	0.12	ug/l	10.0		84	55-125	2	25	
Butyl benzyl phthalate	9.20	5.0	0.34	ug/l	10.0		92	60-125	5	20	
4-Chloroaniline	8.34	2.0	0.20	ug/l	10.0		83	55-120	4	25	
2-Chloronaphthalene	8.02	0.50	0.059	ug/l	10.0		80	60-120	3	20	
4-Chloro-3-methylphenol	9.00	2.0	0.34	ug/l	10.0		90	60-120	2	25	
4-Chlorophenyl phenyl ether	8.32	0.50	0.056	ug/l	10.0		83	55-120	4	20	
2-Chlorophenol	7.84	1.0	0.12	ug/l	10.0		78	45-120	4	25	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05
Received: 01/04/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Table with columns: Analyte, Result, Reporting Limit, MDL, Units, Spike Level, Source Result, %REC, %REC Limits, RPD, RPD Limit, Data Qualifiers. Includes sub-headers for Batch: 5A10039, LCS Dup Analyzed: 01/13/2005, and M-NR1.

Del Mar Analytical, Irvine
Michele Harper
Project Manager

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 Attention: Bronwyn Kelly

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05

Received: 01/04/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A10039 Extracted: 01/10/05</b>											
<b>LCS Dup Analyzed: 01/13/2005 (5A10039-BSD1)</b>											<b>M-NR1</b>
4-Nitrophenol	8.72	5.0	0.73	ug/l	10.0		87	50-135	5	25	
N-Nitrosodimethylamine	9.20	2.0	0.22	ug/l	10.0		92	40-120	17	20	
N-Nitroso-di-n-propylamine	8.82	2.0	0.18	ug/l	10.0		88	50-120	1	20	
N-Nitrosodiphenylamine	8.58	1.0	0.077	ug/l	10.0		86	60-120	6	20	
Pentachlorophenol	9.00	2.0	0.78	ug/l	10.0		90	50-125	11	25	
Phenanthrene	7.96	0.50	0.071	ug/l	10.0		80	55-120	5	20	
Phenol	7.98	1.0	0.14	ug/l	10.0		80	45-120	1	25	
Pyrene	8.40	0.50	0.059	ug/l	10.0		84	50-120	4	25	
1,2,4-Trichlorobenzene	7.34	1.0	0.10	ug/l	10.0		73	50-120	10	20	
2,4,5-Trichlorophenol	8.94	2.0	0.075	ug/l	10.0		89	60-120	5	20	
2,4,6-Trichlorophenol	9.46	1.0	0.10	ug/l	10.0		95	60-120	1	20	
Surrogate: 2-Fluorophenol	14.3			ug/l	20.0		72	35-120			
Surrogate: Phenol-d6	15.2			ug/l	20.0		76	45-120			
Surrogate: 2,4,6-Tribromophenol	16.3			ug/l	20.0		82	50-125			
Surrogate: Nitrobenzene-d5	7.68			ug/l	10.0		77	45-120			
Surrogate: 2-Fluorobiphenyl	7.62			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	7.76			ug/l	10.0		78	45-135			

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 Project Manager



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Received: 01/04/05

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A07033 Extracted: 01/07/05</b>											
<b>Blank Analyzed: 01/07/2005 (5A07033-BLK1)</b>											
Aldrin	ND	0.10	0.029	ug/l							
alpha-BHC	ND	0.10	0.010	ug/l							
beta-BHC	ND	0.10	0.011	ug/l							
delta-BHC	ND	0.20	0.010	ug/l							
gamma-BHC (Lindane)	ND	0.10	0.0097	ug/l							
Chlordane	ND	1.0	0.18	ug/l							
4,4'-DDD	ND	0.10	0.011	ug/l							
4,4'-DDE	ND	0.10	0.017	ug/l							
4,4'-DDT	ND	0.10	0.015	ug/l							
Dieldrin	ND	0.10	0.010	ug/l							
Endosulfan I	ND	0.10	0.015	ug/l							
Endosulfan II	ND	0.10	0.037	ug/l							
Endosulfan sulfate	ND	0.20	0.013	ug/l							
Endrin	ND	0.10	0.0082	ug/l							
Endrin aldehyde	ND	0.10	0.045	ug/l							
Endrin ketone	ND	0.10	0.020	ug/l							
Heptachlor	ND	0.10	0.030	ug/l							
Heptachlor epoxide	ND	0.10	0.012	ug/l							
Methoxychlor	ND	0.10	0.034	ug/l							
Toxaphene	ND	5.0	0.77	ug/l							
Surrogate: Tetrachloro-m-xylene	0.328			ug/l	0.500		66	35-120			
Surrogate: Decachlorobiphenyl	0.444			ug/l	0.500		89	45-120			
<b>LCS Analyzed: 01/07/2005 (5A07033-BS1)</b>											
Aldrin	0.441	0.10	0.029	ug/l	0.500		88	45-115			M-NR1
alpha-BHC	0.452	0.10	0.010	ug/l	0.500		90	45-115			
beta-BHC	0.468	0.10	0.011	ug/l	0.500		94	50-115			
delta-BHC	0.498	0.20	0.010	ug/l	0.500		100	55-120			
gamma-BHC (Lindane)	0.458	0.10	0.0097	ug/l	0.500		92	45-115			
4,4'-DDD	0.465	0.10	0.011	ug/l	0.500		93	60-120			
4,4'-DDE	0.473	0.10	0.017	ug/l	0.500		95	55-120			
4,4'-DDT	0.473	0.10	0.015	ug/l	0.500		95	60-130			
Dieldrin	0.475	0.10	0.010	ug/l	0.500		95	55-120			
Endosulfan I	0.466	0.10	0.015	ug/l	0.500		93	50-115			
Endosulfan II	0.461	0.10	0.037	ug/l	0.500		92	60-125			
Endosulfan sulfate	0.460	0.20	0.013	ug/l	0.500		92	60-120			

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Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting		Spike	Source	%REC		RPD	RPD	Data
		Limit	MDL			Units	Level			
<b>Batch: 5A07033 Extracted: 01/07/05</b>										
<b>LCS Analyzed: 01/07/2005 (5A07033-BS1)</b>										
Endrin	0.500	0.10	0.0082	ug/l	0.500	100	55-125			M-NR1
Endrin aldehyde	0.443	0.10	0.045	ug/l	0.500	89	55-115			
Endrin ketone	0.456	0.10	0.020	ug/l	0.500	91	60-120			
Heptachlor	0.444	0.10	0.030	ug/l	0.500	89	45-115			
Heptachlor epoxide	0.463	0.10	0.012	ug/l	0.500	93	50-120			
Methoxychlor	0.460	0.10	0.034	ug/l	0.500	92	60-135			
Surrogate: Tetrachloro-m-xylene	0.397			ug/l	0.500	79	35-120			
Surrogate: Decachlorobiphenyl	0.496			ug/l	0.500	99	45-120			
<b>LCS Dup Analyzed: 01/07/2005 (5A07033-BSD1)</b>										
Aldrin	0.396	0.10	0.029	ug/l	0.500	79	45-115	11	30	
alpha-BHC	0.459	0.10	0.010	ug/l	0.500	92	45-115	2	30	
beta-BHC	0.448	0.10	0.011	ug/l	0.500	90	50-115	4	30	
delta-BHC	0.503	0.20	0.010	ug/l	0.500	101	55-120	1	30	
gamma-BHC (Lindane)	0.459	0.10	0.0097	ug/l	0.500	92	45-115	0	30	
4,4'-DDD	0.501	0.10	0.011	ug/l	0.500	100	60-120	7	30	
4,4'-DDE	0.487	0.10	0.017	ug/l	0.500	97	55-120	3	30	
4,4'-DDT	0.518	0.10	0.015	ug/l	0.500	104	60-130	9	30	
Dieldrin	0.489	0.10	0.010	ug/l	0.500	98	55-120	3	30	
Endosulfan I	0.469	0.10	0.015	ug/l	0.500	94	50-115	1	30	
Endosulfan II	0.497	0.10	0.037	ug/l	0.500	99	60-125	8	30	
Endosulfan sulfate	0.510	0.20	0.013	ug/l	0.500	102	60-120	10	30	
Endrin	0.523	0.10	0.0082	ug/l	0.500	105	55-125	4	30	
Endrin aldehyde	0.495	0.10	0.045	ug/l	0.500	99	55-115	11	30	
Endrin ketone	0.507	0.10	0.020	ug/l	0.500	101	60-120	11	30	
Heptachlor	0.436	0.10	0.030	ug/l	0.500	87	45-115	2	30	
Heptachlor epoxide	0.464	0.10	0.012	ug/l	0.500	93	50-120	0	30	
Methoxychlor	0.520	0.10	0.034	ug/l	0.500	104	60-135	12	30	
Surrogate: Tetrachloro-m-xylene	0.390			ug/l	0.500	78	35-120			
Surrogate: Decachlorobiphenyl	0.546			ug/l	0.500	109	45-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**METHOD BLANK/QC DATA**

**TOTAL PCBS (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A07033 Extracted: 01/07/05</b>											
<b>Blank Analyzed: 01/07/2005 (5A07033-BLK1)</b>											
Aroclor 1016	ND	1.0	0.067	ug/l							
Aroclor 1221	ND	1.0	0.057	ug/l							
Aroclor 1232	ND	1.0	0.13	ug/l							
Aroclor 1242	ND	1.0	0.12	ug/l							
Aroclor 1248	ND	1.0	0.21	ug/l							
Aroclor 1254	ND	1.0	0.16	ug/l							
Aroclor 1260	ND	1.0	0.17	ug/l							
Surrogate: Decachlorobiphenyl	0.361			ug/l	0.500		72	45-120			
<b>LCS Analyzed: 01/07/2005 (5A07033-BS2)</b>											
Aroclor 1016	2.92	1.0	0.067	ug/l	4.00		73	50-115			M-NR1
Aroclor 1260	3.17	1.0	0.17	ug/l	4.00		79	60-115			
Surrogate: Decachlorobiphenyl	0.407			ug/l	0.500		81	45-120			
<b>LCS Dup Analyzed: 01/07/2005 (5A07033-BSD2)</b>											
Aroclor 1016	2.66	1.0	0.067	ug/l	4.00		66	50-115	9	30	
Aroclor 1260	2.95	1.0	0.17	ug/l	4.00		74	60-115	7	25	
Surrogate: Decachlorobiphenyl	0.401			ug/l	0.500		80	45-120			

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05092 Extracted: 01/05/05</b>										
<b>Blank Analyzed: 01/06/2005 (5A05092-BLK1)</b>										
Antimony	ND	2.0	0.18	ug/l						
Arsenic	ND	1.0	0.49	ug/l						
Barium	ND	0.0010	0.00014	mg/l						
Beryllium	ND	0.50	0.037	ug/l						
Cadmium	ND	1.0	0.015	ug/l						
Chromium	ND	1.0	0.26	ug/l						
Cobalt	ND	1.0	0.10	ug/l						
Copper	ND	2.0	0.49	ug/l						
Iron	0.00392	0.010	0.0032	mg/l						J
Lead	ND	1.0	0.13	ug/l						
Manganese	0.632	1.0	0.44	ug/l						J
Nickel	ND	1.0	0.15	ug/l						
Selenium	ND	2.0	0.36	ug/l						
Silver	ND	1.0	0.089	ug/l						
Thallium	ND	1.0	0.075	ug/l						
Vanadium	ND	1.0	0.86	ug/l						
Zinc	ND	20	3.1	ug/l						
<b>LCS Analyzed: 01/06/2005 (5A05092-BS1)</b>										
Antimony	86.6	2.0	0.18	ug/l	80.0		108	85-115		
Arsenic	87.1	1.0	0.49	ug/l	80.0		109	85-115		
Barium	0.0825	0.0010	0.00014	mg/l	0.0800		103	85-115		
Beryllium	81.7	0.50	0.037	ug/l	80.0		102	85-115		
Cadmium	79.6	1.0	0.015	ug/l	80.0		100	85-115		
Chromium	82.9	1.0	0.26	ug/l	80.0		104	85-115		
Cobalt	81.9	1.0	0.10	ug/l	80.0		102	85-115		
Copper	80.9	2.0	0.49	ug/l	80.0		101	85-115		
Iron	0.850	0.010	0.0032	mg/l	0.800		106	85-115		
Lead	83.1	1.0	0.13	ug/l	80.0		104	85-115		
Manganese	83.8	1.0	0.44	ug/l	80.0		105	85-115		
Nickel	82.9	1.0	0.15	ug/l	80.0		104	85-115		
Selenium	82.7	2.0	0.36	ug/l	80.0		103	85-115		
Silver	82.3	1.0	0.089	ug/l	80.0		103	85-115		
Thallium	82.5	1.0	0.075	ug/l	80.0		103	85-115		
Vanadium	80.9	1.0	0.86	ug/l	80.0		101	85-115		
Zinc	77.9	20	3.1	ug/l	80.0		97	85-115		

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

METALS

Analyte Result Reporting Limit MDL Units Spike Level Source Result %REC Limits RPD RPD Limit Data Qualifiers  
Batch: 5A05092 Extracted: 01/05/05

Matrix Spike Analyzed: 01/06/2005 (5A05092-MS1)

Source: IOA0121-01

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Data Qualifiers
Antimony	98.6	2.0	0.18	ug/l	80.0	0.87	122	70-130			
Arsenic	99.7	1.0	0.49	ug/l	80.0	0.80	124	70-130			
Barium	0.118	0.0010	0.00014	mg/l	0.0800	0.025	116	70-130			
Beryllium	97.1	0.50	0.037	ug/l	80.0	0.14	121	70-130			
Cadmium	92.2	1.0	0.015	ug/l	80.0	0.25	115	70-130			
Chromium	93.9	1.0	0.26	ug/l	80.0	3.5	113	70-130			
Cobalt	90.1	1.0	0.10	ug/l	80.0	0.59	112	70-130			
Copper	92.5	2.0	0.49	ug/l	80.0	6.3	108	70-130			
Iron	1.96	0.010	0.0032	mg/l	0.800	1.5	58	70-130			M2
Lead	97.3	1.0	0.13	ug/l	80.0	1.4	120	70-130			
Manganese	113	1.0	0.44	ug/l	80.0	26	109	70-130			
Nickel	92.4	1.0	0.15	ug/l	80.0	3.5	111	70-130			
Selenium	91.6	2.0	0.36	ug/l	80.0	0.63	114	70-130			
Silver	93.3	1.0	0.089	ug/l	80.0	ND	117	70-130			
Thallium	97.9	1.0	0.075	ug/l	80.0	ND	122	70-130			
Vanadium	92.5	1.0	0.86	ug/l	80.0	2.4	113	70-130			
Zinc	101	20	3.1	ug/l	80.0	22	99	70-130			

Matrix Spike Dup Analyzed: 01/06/2005 (5A05092-MSD1)

Source: IOA0121-01

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Data Qualifiers
Antimony	97.7	2.0	0.18	ug/l	80.0	0.87	121	70-130	1	20	
Arsenic	97.2	1.0	0.49	ug/l	80.0	0.80	120	70-130	3	20	
Barium	0.118	0.0010	0.00014	mg/l	0.0800	0.025	116	70-130	0	20	
Beryllium	94.3	0.50	0.037	ug/l	80.0	0.14	118	70-130	3	20	
Cadmium	91.3	1.0	0.015	ug/l	80.0	0.25	114	70-130	1	20	
Chromium	93.3	1.0	0.26	ug/l	80.0	3.5	112	70-130	1	20	
Cobalt	89.8	1.0	0.10	ug/l	80.0	0.59	112	70-130	0	20	
Copper	92.4	2.0	0.49	ug/l	80.0	6.3	108	70-130	0	20	
Iron	1.99	0.010	0.0032	mg/l	0.800	1.5	61	70-130	2	20	M2
Lead	97.1	1.0	0.13	ug/l	80.0	1.4	120	70-130	0	20	
Manganese	113	1.0	0.44	ug/l	80.0	26	109	70-130	0	20	
Nickel	92.2	1.0	0.15	ug/l	80.0	3.5	111	70-130	0	20	
Selenium	89.6	2.0	0.36	ug/l	80.0	0.63	111	70-130	2	20	
Silver	92.4	1.0	0.089	ug/l	80.0	ND	116	70-130	1	20	
Thallium	98.3	1.0	0.075	ug/l	80.0	ND	123	70-130	0	20	
Vanadium	92.3	1.0	0.86	ug/l	80.0	2.4	112	70-130	0	20	
Zinc	100	20	3.1	ug/l	80.0	22	98	70-130	1	20	

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A06051 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06051-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 01/06/2005 (5A06051-BS1)</b>											
Mercury	8.28	0.20	0.063	ug/l	8.00		104	85-115			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06051-MS1)</b>											
Mercury	8.23	0.20	0.063	ug/l	8.00	0.26	100	70-130			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06051-MSD1)</b>											
Mercury	8.19	0.20	0.063	ug/l	8.00	0.26	99	70-130	1	20	
<b>Batch: 5A06063 Extracted: 01/06/05</b>											
<b>Blank Analyzed: 01/06/2005 (5A06063-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 01/06/2005 (5A06063-BS1)</b>											
Boron	0.479	0.050	0.0074	mg/l	0.500		96	85-115			
<b>Matrix Spike Analyzed: 01/06/2005 (5A06063-MS1)</b>											
Boron	0.471	0.050	0.0074	mg/l	0.500	ND	94	70-130			
<b>Matrix Spike Dup Analyzed: 01/06/2005 (5A06063-MSD1)</b>											
Boron	0.457	0.050	0.0074	mg/l	0.500	ND	91	70-130	3	20	

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05050 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05050-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.074	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05050-BS1)</b>											
Chloride	4.79	0.50	0.26	mg/l	5.00		96	90-110			
Fluoride	4.59	0.50	0.074	mg/l	5.00		92	90-110			
Sulfate	9.98	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05050-MS1)</b>											
						<b>Source: IOA0131-01</b>					
Chloride	9.12	0.50	0.26	mg/l	5.00	4.3	96	80-120			
Fluoride	4.67	0.50	0.074	mg/l	5.00	0.28	88	80-120			
Sulfate	16.0	0.50	0.18	mg/l	10.0	6.0	100	80-120			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05050-MSD1)</b>											
						<b>Source: IOA0131-01</b>					
Chloride	9.10	0.50	0.26	mg/l	5.00	4.3	96	80-120	0	20	
Fluoride	4.67	0.50	0.074	mg/l	5.00	0.28	88	80-120	0	20	
Sulfate	16.0	0.50	0.18	mg/l	10.0	6.0	100	80-120	0	20	
<b>Batch: 5A05054 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/10/2005 (5A05054-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 01/10/2005 (5A05054-BS1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05054 Extracted: 01/05/05</b>											
<b>LCS Dup Analyzed: 01/10/2005 (5A05054-BSD1)</b>											
Biochemical Oxygen Demand	200	100	30	mg/l	198		101	85-115	4	20	
<b>Batch: 5A05058 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05058-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.56	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05058-BS1)</b>											
Total Organic Carbon	11.0	1.0	0.56	mg/l	10.0		110	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05058-MS1)</b>											
Total Organic Carbon	5.62	1.0	0.56	mg/l	5.00	ND	112	80-120			
						<b>Source: IOA0113-06</b>					
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05058-MSD1)</b>											
Total Organic Carbon	5.39	1.0	0.56	mg/l	5.00	ND	108	80-120	4	20	
<b>Batch: 5A05064 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05064-BLK1)</b>											
Chromium VI	0.150	1.0	0.041	ug/l							J
<b>LCS Analyzed: 01/05/2005 (5A05064-BS1)</b>											
Chromium VI	51.9	1.0	0.041	ug/l	50.0		104	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05064-MS1)</b>											
Chromium VI	49.3	1.0	0.041	ug/l	50.0	0.17	98	90-110			
						<b>Source: IOA0121-01</b>					

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05064 Extracted: 01/05/05</b>											
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05064-MSD1)</b>											
Chromium VI	52.2	1.0	0.041	ug/l	50.0	0.17	104	90-110	6	10	
<b>Batch: 5A05066 Extracted: 01/05/05</b>											
<b>Duplicate Analyzed: 01/05/2005 (5A05066-DUP1)</b>											
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5A05067 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05067-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05067-BS1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0		101	80-115			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05067-MS1)</b>											
Ammonia-N (Distilled)	10.4	0.50	0.30	mg/l	10.0	0.56	98	70-120			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05067-MSD1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	0.56	95	70-120	3	15	
<b>Batch: 5A05068 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05068-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05068 Extracted: 01/05/05</b>											
<b>LCS Analyzed: 01/05/2005 (5A05068-BS1)</b>											
Oil & Grease	20.1	5.0	0.94	mg/l	20.0		100	65-120			M-NRI
<b>LCS Dup Analyzed: 01/05/2005 (5A05068-BSD1)</b>											
Oil & Grease	21.1	5.0	0.94	mg/l	20.0		106	65-120	5	20	
<b>Batch: 5A05078 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05078-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 01/05/2005 (5A05078-BS1)</b>											
Total Cyanide	191	5.0	2.2	ug/l	200		96	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05078-MS1)</b>											
Total Cyanide	153	5.0	2.2	ug/l	200	ND	76	70-115			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05078-MSD1)</b>											
Total Cyanide	157	5.0	2.2	ug/l	200	ND	78	70-115	3	15	
<b>Batch: 5A05079 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05079-BLK1)</b>											
Turbidity	ND	1.0	0.040	NTU							
<b>Duplicate Analyzed: 01/05/2005 (5A05079-DUP1)</b>											
Turbidity	0.0900	1.0	0.040	NTU		0.10			11	20	J

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A05099 Extracted: 01/05/05</b>											
<b>Blank Analyzed: 01/05/2005 (5A05099-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 01/05/2005 (5A05099-BS1)</b>											
Surfactants (MBAS)	0.257	0.10	0.044	mg/l	0.250		103	90-110			
<b>Matrix Spike Analyzed: 01/05/2005 (5A05099-MS1)</b>											
Surfactants (MBAS)	0.228	0.10	0.044	mg/l	0.250	ND	91	50-125			
<b>Matrix Spike Dup Analyzed: 01/05/2005 (5A05099-MSD1)</b>											
Surfactants (MBAS)	0.233	0.10	0.044	mg/l	0.250	ND	93	50-125	2	20	
<b>Batch: 5A06081 Extracted: 01/06/05</b>											
<b>Duplicate Analyzed: 01/06/2005 (5A06081-DUP1)</b>											
Specific Conductance	865	1.0	1.0	umhos/cm					2	5	
<b>Batch: 5A07077 Extracted: 01/07/05</b>											
<b>Blank Analyzed: 01/07/2005 (5A07077-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/07/2005 (5A07077-BS1)</b>											
Total Suspended Solids	989	10	10	mg/l	1000		99	85-115			
<b>Duplicate Analyzed: 01/07/2005 (5A07077-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l		ND				10	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A07084 Extracted: 01/07/05</b>											
<b>Blank Analyzed: 01/07/2005 (5A07084-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 01/07/2005 (5A07084-BS1)</b>											
Total Dissolved Solids	990	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 01/07/2005 (5A07084-DUP1)</b>											
Total Dissolved Solids	614	10	10	mg/l		<b>Source: IOA0251-02</b> 610			1	10	
<b>Batch: 5A12035 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12035-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 01/12/2005 (5A12035-BS1)</b>											
Perchlorate	48.2	4.0	0.80	ug/l	50.0		96	85-115			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12035-MS1)</b>											
Perchlorate	48.1	4.0	0.80	ug/l	50.0	<b>Source: IOA0131-01</b> ND	96	80-120			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12035-MSD1)</b>											
Perchlorate	47.4	4.0	0.80	ug/l	50.0	<b>Source: IOA0131-01</b> ND	95	80-120	1	20	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

METHOD BLANK/QC DATA

1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5A1103 Extracted: 01/11/05</b>											
<b>Blank Analyzed: 01/11/2005 (P5A1103-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.01			ug/l	1.00		101	80-125			
<b>LCS Analyzed: 01/11/2005 (P5A1103-BS1)</b>											
1,4-Dioxane	10.2	1.0	0.49	ug/l	10.0		102	70-130			
Surrogate: Dibromofluoromethane	1.10			ug/l	1.00		110	80-125			
<b>LCS Dup Analyzed: 01/11/2005 (P5A1103-BSD1)</b>											
1,4-Dioxane	10.5	1.0	0.49	ug/l	10.0		105	70-130	3	20	
Surrogate: Dibromofluoromethane	1.04			ug/l	1.00		104	80-125			
<b>Matrix Spike Analyzed: 01/11/2005 (P5A1103-MS1)</b>											
						<b>Source: POA0025-09</b>					
1,4-Dioxane	8.32	1.0	0.49	ug/l	10.0	0.63	77	70-150			
Surrogate: Dibromofluoromethane	1.11			ug/l	1.00		111	80-125			
<b>Matrix Spike Dup Analyzed: 01/11/2005 (P5A1103-MSD1)</b>											
						<b>Source: POA0025-09</b>					
1,4-Dioxane	8.31	1.0	0.49	ug/l	10.0	0.63	77	70-150	0	25	
Surrogate: Dibromofluoromethane	1.09			ug/l	1.00		109	80-125			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).

### Subcontracted Laboratories

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chmic

Samples: IOA0131-01

Analysis Performed: Bioassay-Acute 96hr

Samples: IOA0131-01

#### Del Mar Analytical - Phoenix NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
Received: 01/04/05

**Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Samples: IOA0131-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Gross Alpha

Samples: IOA0131-01

Analysis Performed: Gross Beta

Samples: IOA0131-01

Analysis Performed: Level 3 Data Package

Samples: IOA0131-01

Analysis Performed: Strontium 90

Samples: IOA0131-01

Analysis Performed: Tritium

Samples: IOA0131-01

**Pace Analytical, MN- SUB**

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR

Samples: IOA0131-01

Analysis Performed: EDD + Level 4

Samples: IOA0131-01

**Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine

Samples: IOA0131-01

Analysis Performed: Level 4 Data Package

Samples: IOA0131-01

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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IOA0131 <Page 60 of 60>

10A0131

CHAIN OF CUSTODY FORM

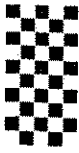
Client Name/Address:		Project:		Preservative		ANALYSIS REQUIRED													Field Readings:	
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 - 13267 Sampling Perimeter Pond		None		<input type="checkbox"/> Total Releasable Metals: B <input type="checkbox"/> Se, Ag, Ti, Zn, Co, V <input type="checkbox"/> Ba, Fe, Mn, Sb, As, Be, Cd, Ni <input type="checkbox"/> 418.1 (TRPH) <input type="checkbox"/> Residual Chlorine													Temp = 52.0 pH = 6.7	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	8015B (GRO)	8015 (Extractable Fuel Hydrocarbons), Dioxane-8260B-out	VOCs 624 + A+A+2CVE	Monomethylhydrazine	Bioassay-Acute, Bioassay-7 day Chronic	VOCs 624 + Xylenes + Freon 113 + 1,1-DCE + Freon 123a + Cyclohexane	625 - PP List, (608)-Pest + PCB	Fluoride, Cr VI	Total Releasable Metals: B, Se, Ag, Ti, Zn, Co, V	Ba, Fe, Mn, Sb, As, Be, Cd, Ni	418.1 (TRPH)	Residual Chlorine	Comments			
Outfall 011	W	Poly-1Gal	2	11/4/05 10:45	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 27600 Flow (gpm) = 141		
Outfall 011	W	Poly-1Gal	1	11/4/05 11:05	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 30500 Flow (gpm) = 173		
Outfall 011	W	Poly-1Gal	1	11/4/05 11:20	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 36300 Flow (gpm) = 206		
Outfall 011	W	Poly-1Gal	1	11/4/05 11:40	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 41100 Flow (gpm) = 268		
Outfall 011	W	Poly-1Gal	1	11/4/05 12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 44500 Flow (gpm) = 254		
Outfall 011	W	Poly-1Gal	1	11/4/05 12:20	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 51100 Flow (gpm) = 296		
Outfall 011	W	Poly-1Gal	1	11/4/05 12:40	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 55800 Flow (gpm) = 328		
Outfall 011	W	Poly-1Gal	1	11/4/05 3:00	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 60400 Flow (gpm) = 360		
Outfall 011	W	Poly-1Gal	1	11/4/05 3:20	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 64500 Flow (gpm) = 393		
Outfall 011	W	Poly-1Gal	1	11/4/05 3:40	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 68600 Flow (gpm) = 411		
Outfall 011	W	Poly-1Gal	1	11/4/05 4:00	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 72600 Flow (gpm) = 498		
Outfall 011	W	Poly-1Gal	1	11/4/05 4:20	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 76600 Flow (gpm) = 526		
Trip Blank	W	VOAs	1		X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 236		

Received By: <i>Indo Hoyt</i>	Date/Time: 11/4/05 15:05	Turn around Time (check): 5 Days
Received By: <i>B.D. Speer</i>	Date/Time: 11/4/05 15:05	48 Hours
Received By: <i>B.D. Speer</i>	Date/Time: 11/4/05 18:05	72 Hours
Received By:	Date/Time:	Perchlorate Only 72 Hours
Received By:	Date/Time:	Metals Only 72 Hours
Received By:	Date/Time:	Sample Integrity (Check) Intact
Received By:	Date/Time:	On Ice:

\*Note: Composite and analyze according to 13267 Sampling protocol. \* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA > 15pCi/L

• = Outliners used for gross sample analysis of RADIONUCLIDES  
 © Bioworld S



**MWH**

300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 02/17/05

To: Michele Harper / Del Mar Analytical **Fax No:** 949-260-3297  
 Patti Meeks / AMEC 303-935-6575  
 Krissi McIlvenna / MWH 925-975-3412

From: Bronwyn K. Kelly

sign: *Bronwyn K. Kelly*

Subject: Chain-of-Custody Form Analytical Request Change **No. of Pages: 2**  
(including cover)

**Per Request:**

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOB0988	Outfall 003	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1002	Outfall 004	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB0990	Outfall 005	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.

IOB0992	Outfall 006	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1008	Outfall 018	02/11/05	Annual Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg, B, V, Al, +PP; TCDD (and all congeners); Oil and Grease (EPA 413.1); Cl-, SO4, N)3+NO2-N, Perchlorate; TDS, TSS VOCs (624); VOCs, A+A+2CVE; NPDES + PP; Pesticides/PCBs-PP; Gross Alpha, Gross Beta, Tritium (906.0), Sr-90, Total Combined Radium 226&228; SVOCs - PP; Acute toxicity; Cyanide.	Routine Constituents per 2004 NPDES Permit - Total Recoverable Metals: Sb, Cd, Cu, Pb, Hg; TCDD (and all congeners); Oil and Grease (EPA 413.1); TDS, TSS.
IOB1014	Outfall 011	02/11/04	Chromium IV	
IOA0131	Outfall 011 -- Composite	01/04/05		Ammonia, BOD, Chloride, Nitrate/Nitrite as N, Oil and Grease, Sulfate, MBAS, TDS, TSS, TOC, Settleable Solids, Turbidity, Cr, Cyanide, perchlorate, Conductivity, Cu, Hg, TCDD
IOA0121	Outfall 011 -- Grab	01/04/05		Total Recoverable Hydrocarbons, Extractable Fuel Hydrocarbons, GRO, Fluoride, Residual Chlorine, TOC, Cr VI, 1,4-Dioxane, Monomethyl Hydrazine, Bioassays, SVOC (625)-PP list, Pcs/PCB-PP list (608), Total Recoverable Metals, Cyclohexane & Freon 123a & A+A+2CVE (624), Radchem

The reason for these changes:

*Incorrectly marked on COC form*

*Lack of sample volume*

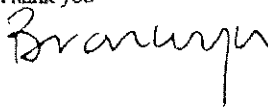
*MWH office personnel require this change*

*Other: Containers mislabeled*

\_\_\_\_\_  
 x  
 \_\_\_\_\_  
 x  
 \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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February 25, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)  
 Outfall 011 Composite  
 Sampled: 1/4/05  
 Del Mar Analytical Number: IOA0131

Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96hr Percent Survival Bioassay by EPA Method 2000.0 and Ceriodaphnia Survival and Reproduction Test by EPA Method 1002, Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), and Strontium-90 (Sr-90, EPA 905.0), Pace Analytical performed the TCDD analysis by USEPA Method 1613B, and Truesdail Laboratories performed the Hydrazines by EPA 8315B for the project referenced above. Please use the following cross-reference table when reviewing your results.

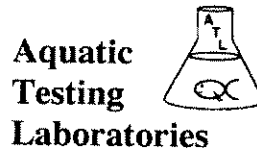
MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	PACE ID	TRUESDAIL ID
Outfall 011-Composite	IOA0131-01	A-05010507-001/002	R501013/8147-001	105773001	938345-1

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

  
 Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650- 0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** January 12, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05010507-001/002  
**Sample I.D.:** IOA0131-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 01/05/05  
Date Received: 01/05/05  
Date Tested: 01/05/05 to 01/11/05

**Sample Analysis:** The following analyses were performed on your sample:

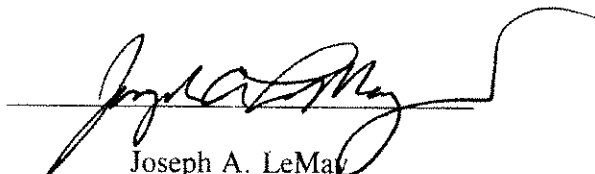
Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b><u>Survival</u></b>	<b><u>TUa</u></b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b><u>NOEC</u></b>	<b><u>TUc</u></b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:



Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05010507-001  
 Client/ID: Del Mar - IOA0131-01

Start Date: 01/05/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 11 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050104.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.5	9.1	8.0	0	0	RW 1430
	100%	19.9	10.9	7.0	0	0	
24 Hr	Control	19.3	8.6	7.6	0	0	RW 1230
	100%	19.4	8.5	7.1	0	0	
48 Hr	Control	19.7	8.1	7.7	0	0	RW 1300
	100%	20.0	7.6	7.2	0	0	
Renewal	Control	19.5	8.8	8.0	0	0	RW 1300
	100%	19.8	10.1	7.1	0	0	
72 Hr	Control	20.5	7.8	7.7	0	0	RW 1200
	100%	20.6	7.8	7.1	0	0	
96 Hr	Control	20.7	7.4	7.2	0	0	RW 1400
	100%	20.8	7.0	7.3	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 7.0; Conductivity: 93 umho; Temp: 6°C;  
 DO: 10.9 mg/l; Alkalinity: 20 mg/l; Hardness: 27 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No.  
 Control: Alkalinity: 58 mg/l; Hardness: 96 mg/l; Conductivity: 300 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes / No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05010507-002  
Client/ID: Del Mar IOA0131-01

Date Tested: 01/05/05 to 01/11/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050104.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	25.5
6.25%	100%	22.3
12.5%	100%	21.8
25%	100%	21.0
50%	100%	22.9
100%	100%	24.3

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (25.5 young)
≥60% surviving controls had 3 broods	Pass (90% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 28.1%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (no sig. response at conc. tested)





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOA0131

<p style="text-align: center;"><b>SENDING LABORATORY:</b></p> <p>Del Mar Analytical, Irvine        17461 Derian Avenue, Suite 100        Irvine, CA 92614        Phone: (949) 261-1022        Fax: (949) 261-1228        Project Manager: Michele Harper</p>	<p style="text-align: center;"><b>RECEIVING LABORATORY:</b></p> <p>Aquatic Testing Laboratories-SUB        4350 Transport Street, Unit 107        Ventura, CA 93003        Phone : (805) 650-0546        Fax: (805) 650-0756</p>
--	--

Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0131-01 Water	Sampled: 01/05/05 11:30	Instant Notification
Bioassay-7 dy Chrnrc	01/06/05 23:30	ceriodaphnia
Bioassay-Acute 96hr	01/06/05 23:30	fathead minnow

**Containers Supplied:**  
 1 gal Poly (IOA0131-01Y)  
 1 gal Poly (IOA0131-01Z)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): 6°C

Released By: Date: 1/5/05 Time: 1150 Received By: Date: 1/5/05 Time: 1150

Released By: Date: 1/5/05 Time: 1405 Received By: Date: 1-5-05 Time: 1405



February 14, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOA0131  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R501013-8147

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on January 6, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MCM/njv*

*Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice*

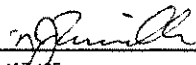
Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8147</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501013-01</u>	Contract <u>PROJECT# IQA0131</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IQA0131-01	8147-001	01/05/05	01/22/05	GrossAlpha	-0.671 ± 1.0	pCi/L	1.99
			01/22/05	Gross Beta	2.37 ± 1.2	pCi/L	1.80
			01/26/05	H3	-125 ± 170	pCi/L	300
			01/14/05	Sr90	0.002 ± 0.22	pCi/L	0.446

Certified by <u></u>
Report Date <u>02/13/05</u>
Page 1

Eberline Services

QC RESULTS

SDG <u>8147</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501013-01</u>	Contract <u>PROJECT# IOA0131</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>	8147-002	GrossAlpha	11.7 ± 1.3	pCi/Smpl	11.2	0.522	104% recovery
		Gross Beta	11.8 ± 0.84	pCi/Smpl	12.1	0.607	98% recovery
		H3	264 ± 18	pCi/Smpl	260	15.8	102% recovery
		Sr90	11.7 ± 0.57	pCi/Smpl	11.1	0.229	105% recovery

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>BLANK</u>	8147-003	GrossAlpha	0.122 ± 0.23	pCi/Smpl	NA	0.411	<MDA
		Gross Beta	0.050 ± 0.34	pCi/Smpl	NA	0.577	<MDA
		H3	-3.80 ± 17	pCi/Smpl	NA	30.2	<MDA
		Sr90	-0.041 ± 0.12	pCi/Smpl	NA	0.243	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-004	GrossAlpha	1.13 ± 0.74	0.963
	Gross Beta	2.74 ± 1.1	1.71
	H3	-62.6 ± 170	299
	Sr90	0.058 ± 0.35	0.608

<u>ORIGINALS</u>			
Sample ID	Results ± 2σ	MDA	3σ RPD (Tot) Eval
8147-001	-0.671 ± 1.0	1.99	200 212 satis.
	2.37 ± 1.2	1.80	14 101 satis.
	-125 ± 170	300	- 0 satis.
	0.002 ± 0.22	0.446	- 0 satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8147-005	GrossAlpha	76.1 ± 4.9	1.11
	Gross Beta	79.6 ± 3.6	1.75
	H3	18900 ± 610	311

<u>ORIGINAL SAMPLE</u>				
Sample ID	Results ± 2σ	MDA	Added	%Recv
8147-001	-0.671 ± 1.0	1.99	76.6	100
	2.37 ± 1.2	1.80	74.1	104
	-125 ± 170	300	19000	100

Certified by [Signature]  
 Report Date 02/13/05  
 Page 2



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
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 2520 E. Sunaef Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOA0131

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services - SUB 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOA0131-01 Water      Sampled: 01/05/05 11:30</b>		
Gross Alpha-O	01/05/06 11:30	Instant Notification 900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/05/06 11:30	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Level 4 Data Package - Out	02/02/05 11:30	**LEVEL IV QC, ACCESS 7 EDD**
Radium, Combined-O	01/05/06 11:30	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/05/06 11:30	905.0
Tritium-O	01/05/06 11:30	906
<b>Containers Supplied:</b>		
1 gal Poly (IOA0131-01X)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____

	1/5/05			1-06-05	10:00
Released By	Date	Time	Received By	Date	Time

Released By	Date	Time	Received By	Date	Time
-------------	------	------	-------------	------	------



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client Del Mar City Irvine State CA

Date/Time received 1-06-05 10:00 CoC No. IOA 0131

Container I.D. No. Styrofoam in cardboard Requested TAT (Days) 14 P.O. Received Yes [ ] No [ ]

**INSPECTION**

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [X]

2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [X]

3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [X]

4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [X]

5. Packing material is: Wet [X] Dry [ ]

6. Number of samples in shipping container: 1 Sample Matrix Water

7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)

8. Samples are in correct container Yes [X] No [ ]

9. Paperwork agrees with samples? Yes [ ] No [X]

10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]

11. Samples are: In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]

12. Samples are: Preserved [ ] Not preserved [X] pH 7 Preservative \_\_\_\_\_

13. Describe any anomalies: Shipping container received wet. Styrofoam cooler broken, not reusable. No sample lost.  
Also CoC indicates samples collected in year 2006. F/K/K

14. Was P.M. notified of any anomalies? Yes [X] No [ ] Date 1-06-05

15. Inspected by F. J. Boyd Date: 1-06-05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0131-01		
Lab Sample ID	105773001		
Filename	F50127B_03		
Injected By	MRO		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/05/2005
ICAL Date	11/29/2004	Received	01/06/2005
CCal Filename(s)	F50127A_13	Extracted	01/24/2005
Method Blank ID	BLANK-6202	Analyzed	01/27/2005 22:36

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	2.30	2,3,7,8-TCDF-13C	2.00	59
Total TCDF	ND	----	2.30	2,3,7,8-TCDD-13C	2.00	68
				1,2,3,7,8-PeCDF-13C	2.00	81
2,3,7,8-TCDD	ND	----	3.10	2,3,4,7,8-PeCDF-13C	2.00	77
Total TCDD	ND	----	3.10	1,2,3,7,8-PeCDD-13C	2.00	89
				1,2,3,4,7,8-HxCDF-13C	2.00	76
1,2,3,7,8-PeCDF	ND	----	2.60	1,2,3,6,7,8-HxCDF-13C	2.00	103
2,3,4,7,8-PeCDF	ND	----	1.20	2,3,4,6,7,8-HxCDF-13C	2.00	95
Total PeCDF	ND	----	1.90	1,2,3,7,8,9-HxCDF-13C	2.00	83
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	----	1.50	1,2,3,6,7,8-HxCDD-13C	2.00	97
Total PeCDD	ND	----	1.50	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
				1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	----	1.30	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
1,2,3,6,7,8-HxCDF	ND	----	1.10	OCDD-13C	4.00	92
2,3,4,6,7,8-HxCDF	ND	----	0.87			
1,2,3,7,8,9-HxCDF	ND	----	1.50	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	1.20	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.50	2,3,7,8-TCDD-37Cl4	0.20	64
1,2,3,6,7,8-HxCDD	ND	----	1.20			
1,2,3,7,8,9-HxCDD	ND	----	1.70			
Total HxCDD	ND	----	1.50			
1,2,3,4,6,7,8-HpCDF	2.1	----	1.90 J			
1,2,3,4,7,8,9-HpCDF	ND	----	2.90			
Total HpCDF	7.4	----	2.40 J			
1,2,3,4,6,7,8-HpCDD	7.1	----	2.20 BJ			
Total HpCDD	17.0	----	2.20 BJ			
OCDF	----	6.3	2.10 I			
OCDD	83.0	----	2.70 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105773

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Blank Analysis Results**

Client - Del Mar Analytical

Lab Sample ID	BLANK-6202	Matrix	Water
Filename	F50127A_06	Dilution	NA
Total Amount Extracted	982 mL	Extracted	01/24/2005
ICAL Date	11/29/2004	Analyzed	01/27/2005 14:13
CCal Filename(s)	F50127A_02	Injected By	MRO

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	4.7	2,3,7,8-TCDF-13C	2.00	33
Total TCDF	ND	----	----	2,3,7,8-TCDD-13C	2.00	45
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	----	5.1	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	----	----	1,2,3,7,8-PeCDD-13C	2.00	81
				1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	----	2.2	1,2,3,6,7,8-HxCDF-13C	2.00	95
2,3,4,7,8-PeCDF	ND	----	1.5	2,3,4,6,7,8-HxCDF-13C	2.00	98
Total PeCDF	ND	----	----	1,2,3,7,8,9-HxCDF-13C	2.00	85
				1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	----	1.6	1,2,3,6,7,8-HxCDD-13C	2.00	94
Total PeCDD	ND	----	----	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
				1,2,3,4,7,8,9-HpCDF-13C	2.00	78
1,2,3,4,7,8-HxCDF	ND	----	1.6	1,2,3,4,6,7,8-HpCDD-13C	2.00	99
1,2,3,6,7,8-HxCDF	ND	----	1.4	OCDD-13C	4.00	97
2,3,4,6,7,8-HxCDF	ND	----	1.1			
1,2,3,7,8,9-HxCDF	ND	----	1.6	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	----	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.6	2,3,7,8-TCDD-37Cl4	0.20	40
1,2,3,6,7,8-HxCDD	ND	----	1.2			
1,2,3,7,8,9-HxCDD	ND	----	1.7			
Total HxCDD	ND	----	----			
1,2,3,4,6,7,8-HpCDF	ND	----	1.5			
1,2,3,4,7,8,9-HpCDF	ND	----	1.4			
Total HpCDF	ND	----	----			
1,2,3,4,6,7,8-HpCDD	1.9	----	1.3 J			
Total HpCDD	1.9	----	----			
OCDF	8.3	----	1.9 J			
OCDD	26.0	----	2.3 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105645

**REPORT OF LABORATORY ANALYSIS**

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-6203	Matrix	Water
Filename	F50127A_03	Dilution	NA
Total Amount Extracted	1030 mL	Extracted	01/24/2005
ICAL Date	11/29/2004	Analyzed	01/27/2005 11:44
CCal Filename	F50127A_02	Injected By	MRO
Method Blank ID	BLANK-6202		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10.2	7.5	15.8	102
2,3,7,8-TCDD	10	9.0	6.7	15.8	90
1,2,3,7,8-PeCDF	50	50.1	40.0	67.0	100
2,3,4,7,8-PeCDF	50	48.4	34.0	80.0	97
1,2,3,7,8-PeCDD	50	43.4	35.0	71.0	87
1,2,3,4,7,8-HxCDF	50	44.8	36.0	67.0	90
1,2,3,6,7,8-HxCDF	50	48.0	42.0	65.0	96
2,3,4,6,7,8-HxCDF	50	48.6	35.0	78.0	97
1,2,3,7,8,9-HxCDF	50	46.4	39.0	65.0	93
1,2,3,4,7,8-HxCDD	50	50.0	35.0	82.0	100
1,2,3,6,7,8-HxCDD	50	51.7	38.0	67.0	103
1,2,3,7,8,9-HxCDD	50	48.5	32.0	81.0	97
1,2,3,4,6,7,8-HpCDF	50	51.4	41.0	61.0	103
1,2,3,4,7,8,9-HpCDF	50	52.3	39.0	69.0	105
1,2,3,4,6,7,8-HpCDD	50	43.4	35.0	70.0	87
OCDF	100	89.5	63.0	170.0	90
OCDD	100	96.9	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.2	3.1	19.1	62
2,3,7,8-TCDF-13C	100	49.8	22.0	152.0	50
2,3,7,8-TCDD-13C	100	65.8	20.0	175.0	66
1,2,3,7,8-PeCDF-13C	100	75.7	21.0	192.0	76
2,3,4,7,8-PeCDF-13C	100	76.9	13.0	328.0	77
1,2,3,7,8-PeCDD-13C	100	93.4	21.0	227.0	93
1,2,3,4,7,8-HxCDF-13C	100	78.9	19.0	202.0	79
1,2,3,6,7,8-HxCDF-13C	100	89.8	21.0	159.0	90
2,3,4,6,7,8-HxCDF-13C	100	88.2	22.0	176.0	88
1,2,3,7,8,9-HxCDF-13C	100	81.5	17.0	205.0	81
1,2,3,4,7,8-HxCDD-13C	100	82.2	21.0	193.0	82
1,2,3,6,7,8-HxCDD-13C	100	95.2	25.0	163.0	95
1,2,3,4,6,7,8-HpCDF-13C	100	86.3	21.0	158.0	86
1,2,3,4,7,8,9-HpCDF-13C	100	75.6	20.0	186.0	76
1,2,3,4,6,7,8-HpCDD-13C	100	102.9	26.0	166.0	103
OCDD-13C	200	195.1	26.0	397.0	98

Cs = Concentration Spiked (ng/mL)  
 Cr = Concentration Recovered (ng/mL)  
 Rec. = Recovery (Expressed as Percent)  
 Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
 X = Background subtracted value  
 P = Recovery outside of control limits  
 Nn = Value obtained from additional analysis  
 \* = See Discussion

Report No.....105645

## REPORT OF LABORATORY ANALYSIS

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## Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-6204	Matrix	Water
Filename	F50127A_04	Dilution	NA
Total Amount Extracted	1000 mL	Extracted	01/24/2005
ICAL Date	11/29/2004	Analyzed	01/27/2005 12:32
CCal Filename	F50127A_02	Injected By	MRO
Method Blank ID	BLANK-6202		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.9	7.5	15.8	99
2,3,7,8-TCDD	10	8.8	6.7	15.8	88
1,2,3,7,8-PeCDF	50	49.8	40.0	67.0	100
2,3,4,7,8-PeCDF	50	47.6	34.0	80.0	95
1,2,3,7,8-PeCDD	50	41.4	35.0	71.0	83
1,2,3,4,7,8-HxCDF	50	46.6	36.0	67.0	93
1,2,3,6,7,8-HxCDF	50	44.0	42.0	65.0	88
2,3,4,6,7,8-HxCDF	50	47.2	35.0	78.0	94
1,2,3,7,8,9-HxCDF	50	44.8	39.0	65.0	90
1,2,3,4,7,8-HxCDD	50	46.5	35.0	82.0	93
1,2,3,6,7,8-HxCDD	50	48.9	38.0	67.0	98
1,2,3,7,8,9-HxCDD	50	46.7	32.0	81.0	93
1,2,3,4,6,7,8-HpCDF	50	48.7	41.0	61.0	97
1,2,3,4,7,8,9-HpCDF	50	49.9	39.0	69.0	100
1,2,3,4,6,7,8-HpCDD	50	42.7	35.0	70.0	85
OCDF	100	84.8	63.0	170.0	85
OCDD	100	92.5	78.0	144.0	92
2,3,7,8-TCDD-37Cl4	10	7.5	3.1	19.1	75
2,3,7,8-TCDF-13C	100	65.7	22.0	152.0	66
2,3,7,8-TCDD-13C	100	83.8	20.0	175.0	84
1,2,3,7,8-PeCDF-13C	100	84.9	21.0	192.0	85
2,3,4,7,8-PeCDF-13C	100	85.6	13.0	328.0	86
1,2,3,7,8-PeCDD-13C	100	105.3	21.0	227.0	105
1,2,3,4,7,8-HxCDF-13C	100	82.6	19.0	202.0	83
1,2,3,6,7,8-HxCDF-13C	100	96.7	21.0	159.0	97
2,3,4,6,7,8-HxCDF-13C	100	92.3	22.0	176.0	92
1,2,3,7,8,9-HxCDF-13C	100	84.5	17.0	205.0	84
1,2,3,4,7,8-HxCDD-13C	100	81.9	21.0	193.0	82
1,2,3,6,7,8-HxCDD-13C	100	102.0	25.0	163.0	102
1,2,3,4,6,7,8-HpCDF-13C	100	90.1	21.0	158.0	90
1,2,3,4,7,8,9-HpCDF-13C	100	78.6	20.0	186.0	79
1,2,3,4,6,7,8-HpCDD-13C	100	106.1	26.0	166.0	106
OCDD-13C	200	196.4	26.0	397.0	98

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....105645

## REPORT OF LABORATORY ANALYSIS

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**Pace Analytical Services, Inc.**  
 1700 Elm Street  
 Minneapolis, MN 55414  
 Phone: 612.607.1700  
 Fax: 612.607.6444

**SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS**

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-6203  
 SPIKE 1 Filename..... F50127A\_03  
 SPIKE 2 ID..... LCSD-6204  
 SPIKE 2 Filename..... F50127A\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	102	99	3.0
2378-TCDD	90	88	2.2
12378-PeCDF	100	100	0.0
23478-PeCDF	97	95	2.1
12378-PeCDD	87	83	4.7
123478-HxCDF	90	93	3.3
123678-HxCDF	96	88	8.7
234678-HxCDF	97	94	3.1
123789-HxCDF	93	90	3.3
123478-HxCDD	100	93	7.3
123678-HxCDD	103	98	5.0
123789-HxCDD	97	93	4.2
1234678-HpCDF	103	97	6.0
1234789-HpCDF	105	100	4.9
1234678-HpCDD	87	85	2.3
OCDF	90	85	5.7
OCDD	97	92	5.3

REC = Percent Recovered  
 RPD = The difference between the two values divided by the average.  
 NA = Not Applicable

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**TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans**

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

\*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

## REPORT OF LABORATORY ANALYSIS

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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOA0131** 105773

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Pace Analytical, MN- SUB  
 1700 Elm Street, Ste 200  
 Minneapolis, MN 55414  
 Phone: (612) 607-1700  
 Fax: (612) 607-6444

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0131-01 Water	Sampled: 01/05/05 11:30	Instant Notification
1613-Dioxin-HR	01/12/05 11:30	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	02/02/05 11:30	Excel EDD email to pm, Include Std logs for Lvl IV

105773001

**Containers Supplied:**  
 1 L Amber (IOA0131-01G)  
 1 L Amber (IOA0131-01H)

**SAMPLE INTEGRITY:**

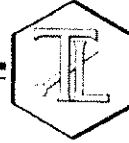
All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): 0°C

Released By: Date: 1/5/05 Time: 1700 Received By: Bright Fleam Date: 1/6/05 Time: 9:25

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

January 12, 2005

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TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

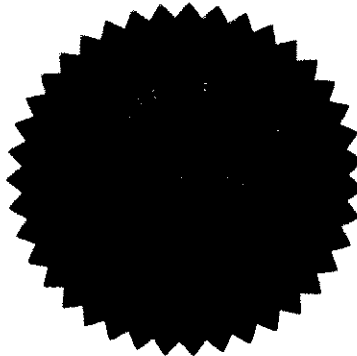
**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOA0131  
**Date Received:** 01/05/05

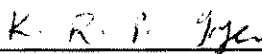
**Truesdail Project:** 938345  
**Sample Matrix:** Water / 1


## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
938345-1	IOA0131-01	01/05/05	1130	Hydrazines by EPA 8315M



Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

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www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOA0131  
**Date Received:** 01/05/05

**Truesdail Project:** 938345  
**Sample Matrix:** Water / 1

## Case Narrative

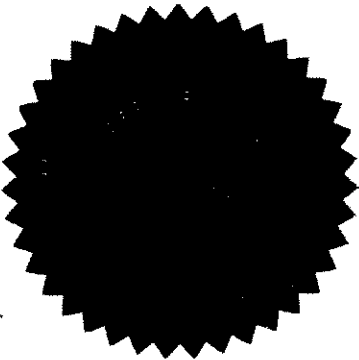
**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

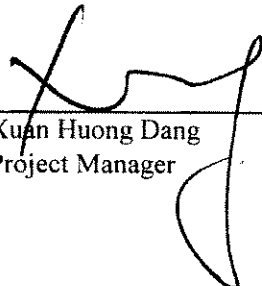
**Analysis** The analysis was performed as requested on the chain-of-custody.

**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



## REPORT

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**Client:** Del Mar Analytical-Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0131  
**P.O. Number:** IOA0131  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938345  
**Report Date:** January 10, 2005  
**Sampling Date:** January 5, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

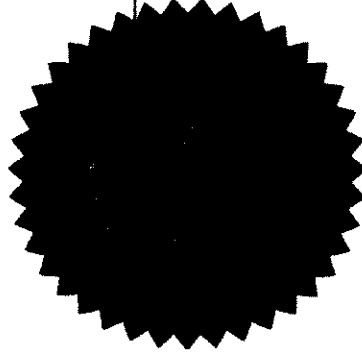
### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
704641-MB	Method Blank	ND	ND	ND	ND	
938345	IOA0131-01	ND	ND	ND	ND	
PQL		5.0	5.0	5.0	1.0	
Sample Report Limits		5.0	5.0	5.0	1.0	

Page 1 of 1

PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.



Xuan Pang, Project Manager  
Environmental Services

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**Client:** Del Mar Analytical - Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOA0131  
**P.O. Number:** IOA0131  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2908; Analysis: 352  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704641  
**Project Lab. No.:** 938345  
**Spiked Sample ID:** 938345  
**Report Date:** January 10, 2005  
**Sampling Date:** January 5, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Reported By:** RC

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	24.9	99.8	85-115	PASS
u-Dimethyl Hydrazine	25.0	26.3	105	85-115	PASS
Hydrazine	5.0	5.08	102	85-115	PASS

#### QCS

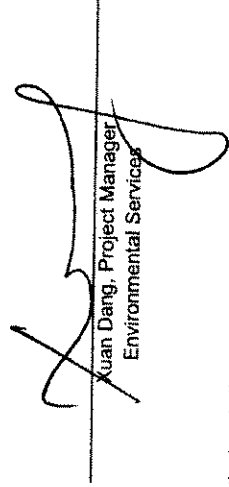
Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	50.0	50.9	102	85-115	PASS
u-Dimethyl Hydrazine	50.0	52.1	104	85-115	PASS
Hydrazine	10.0	11.0	110	85-115	PASS

### Quality Control/Quality Assurance Spikes Report MS/MSD

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		LCS/LCSD		Control Limits			
	ug/L	MS	MSD	MS	LCS	LCSD	%D	%D	%D	% Rec.		
Monomethyl Hydrazine	50.0	39.8	39.9	0.0	111	111	0.49%	111	0.49%	PASS	20	70-130
u-Dimethyl Hydrazine	50.0	49.1	49.4	0.0	108	108	0.11%	108	0.11%	PASS	20	70-130
Hydrazine	10.0	10.4	10.6	0.0	124	122	1.0%	124	1.0%	PASS	20	70-130

ICV: Initial Calibration Verification  
CCV: Continued Calibration Verification  
LCS: Laboratory Control Spike  
MS: Matrix Spike  
%D: Percent Difference  
Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
Juan Dang, Project Manager  
Environmental Services

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Del Mar Analytical

938345

SUBCONTRACT ORDER - PROJECT # IOA0131

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228

1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046

9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689

9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851

2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SENDING LABORATORY:

Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 261-1228
Project Manager: Michele Harper

RECEIVING LABORATORY:

Truesdail Laboratories-SUB
14201 Franklin Avenue
Tustin, CA 92680
Phone : (714) 730-6239
Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: Initials:

Table with columns: Analysis, Expiration, Comments. Includes sample details for IOA0131-01 Water, Instant Notification, and Containers Supplied.

Rec'd 01/05/05
s14b 938345

ALERT !!
Level IV QC

For Sample Conditions
See Form Attached

SAMPLE INTEGRITY:

All containers intact: Yes No Sample labels/COC agree: Yes No Samples Received On Ice: Yes No
Custody Seals Present: Yes No Samples Preserved Properly: Yes No Samples Received at (temp):

Handwritten release and receipt information including names, dates (1/5/05), and times (1300, 1315).



TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 938345

Date Delivered: 01/05/05 Time: 13:15 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  Yes  No  N/A  
Temperature (if yes)? 4 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  Yes  No  N/A  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  Yes  No  N/A  
If not, notify the Project Manager.
14. Have Project due dates been checked and accepted?  Yes  No  N/A  
Turn Around Time (TAT):  RUSH  Std

**ALERT !!**  
**Level IV QC**

15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water

16. Comments: \_\_\_\_\_

17. Sample Check-In completed by Truesdail Log-In/Receiving: J. Brown

# **APPENDIX A**

## **Section 36**

Outfall 011, January 4, 2005

MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF20

Task Order 313150010

SDG No. Multiple

No. of Analyses 15

Laboratory Alta

Date: February 11, 2005

Reviewer K. Shadowlight

Reviewer's Signature

Analysis/Method Dioxins

*K. Shadowlight*

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were assigned for the following: * Method blank contamination * EMPCs * Detects below the lower method calibration level
COMMENTS <sup>b</sup>	<u>Rev. 1</u>
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 15  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: February 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 003	IOA0026-01	105648001	water	1613
Outfall 004	IOA0027-01	105646001	water	1613
Outfall 005	IOA0028-01	105645001	water	1613
Outfall 007	IOA0108-01	105774001	water	1613
Outfall 008	IOA0109-01	105775001	water	1613
Outfall 009	IOA0110-01	105770001	water	1613
Outfall 010	IOA0111-01	105758001	water	1613
Outfall 001	IOA0112-01	105778001	water	1613
Outfall 002	IOA0119-01	105772001	water	1613
Outfall 018	IOA0122-01	105779001	water	1613
Outfall 011	IOA0131-01	105773001	water	1613
Outfall 006	IOA0458-01	106048001	water	1613
Outfall 004	IOA0460-01	106050001	water	1613
Outfall 005	IOA0464-01	106052001	water	1613
Outfall 003	IOA0466-01	106051001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All of the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . Several of the samples in these SDGs were received at Pace Analytical Services below the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ; however, as none of the samples were noted to have been damaged, no qualifications were required. The samples were received in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC and transfer COC were signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory (Del Mar Analytical), custody seals were not required. There was no information regarding custody seals upon receipt at Pace. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A column performance standard was combined with the daily calibration verification and analyzed at the beginning of each analytical sequence. The GC column performance was acceptable with the chromatographic separation of 2,3,7,8-TCDD and other TCDD isomers resolved with a valley of  $\leq 25\%$ . No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance could not be evaluated as the laboratory did not provide selected ion current profiles for the lock-mass ions. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 11/29/04 on Instrument 10MSHR05. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the 2 native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in the Table 6 of the EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

One method blank (Blank-6202) was extracted and analyzed with the samples in these SDGs. Target compounds 1,2,3,4,6,7,8-HpCDD, total HpCDD, OCDF, and OCDD were reported in the method blank. Any detects for the aforementioned target compounds reported at concentrations  $< 5x$  the concentrations reported in the method blank were qualified as estimated nondetects "UJ," at the levels of interference in the samples of these SDGs. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One LCS/LCSD pair (LCS-6203/LCSD-6204) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. There were no QC limits established for RPDs. The reported RPDs were within  $\pm 20\%$ . No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy and precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration limit (MCL) were qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0112-01 *outfall cell*  
 Lab Sample ID 105778001  
 Filename F50127B\_14  
 Injected By MRO  
 Total Amount Extracted 1040 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_13  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/04/2005  
 Received 01/06/2005  
 Extracted 01/24/2005  
 Analyzed 01/28/2005 07:52

Res Sml	Quot Coll	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	----	1.00	2,3,7,8-TCDF-13C	2.00	65
J	DNQ	Total TCDF	1.60	----	1.00 J	2,3,7,8-TCDD-13C	2.00	81
U		2,3,7,8-TCDD	ND	----	1.00	1,2,3,7,8-PeCDF-13C	2.00	103
U		Total TCDD	ND	----	1.00	2,3,4,7,8-PeCDF-13C	2.00	99
						1,2,3,7,8-PeCDD-13C	2.00	120
U		1,2,3,7,8-PeCDF	ND	----	0.57	1,2,3,4,7,8-HxCDF-13C	2.00	72
U		2,3,4,7,8-PeCDF	ND	----	0.42	1,2,3,6,7,8-HxCDF-13C	2.00	84
J	DNQ	Total PeCDF	0.70	----	0.49 J	2,3,4,6,7,8-HxCDF-13C	2.00	79
						1,2,3,7,8,9-HxCDF-13C	2.00	77
U		1,2,3,7,8-PeCDD	ND	----	0.60	1,2,3,4,7,8-HxCDD-13C	2.00	67
U		Total PeCDD	ND	----	0.60	1,2,3,6,7,8-HxCDD-13C	2.00	90
						1,2,3,4,6,7,8-HpCDF-13C	2.00	76
J	DNQ	1,2,3,4,7,8-HxCDF	0.96	----	0.46 J	1,2,3,4,7,8,9-HpCDF-13C	2.00	67
U		1,2,3,6,7,8-HxCDF	ND	----	0.40	1,2,3,4,6,7,8-HpCDD-13C	2.00	90
U		2,3,4,6,7,8-HxCDF	ND	----	0.59	OCDD-13C	4.00	75
U		1,2,3,7,8,9-HxCDF	ND	----	0.39	1,2,3,4-TCDD-13C	2.00	NA
J	DNQ	Total HxCDF	0.96	----	0.46 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U		1,2,3,4,7,8-HxCDD	ND	----	0.71	2,3,7,8-TCDD-37Cl4	0.20	80
U		1,2,3,6,7,8-HxCDD	ND	----	0.69			
U		1,2,3,7,8,9-HxCDD	ND	----	0.72			
U		Total HxCDD	ND	----	0.71			
US	HO	1,2,3,4,6,7,8-HpCDF	----	1.9	0.82 I			
U		1,2,3,4,7,8,9-HpCDF	ND	----	0.68			
J	DNQ	Total HpCDF	2.10	----	0.75 J			
J	DNQ	1,2,3,4,6,7,8-HpCDD	13.00	----	0.82 BJ			
J	DNQ	Total HpCDD	24.00	----	0.82 J			
US	B	OCDF	11.00	----	0.78 BJ			
		OCDD	140.00	----	1.00 B			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105778

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOA0026-01 *Del Mar 002*  
 Lab Sample ID 105648001  
 Filename F50127A\_10  
 Injected By MRO  
 Total Amount Extracted 994 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_02  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/03/2005  
 Received 01/04/2005  
 Extracted 01/24/2005  
 Analyzed 01/27/2005 17:34

Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U	2,3,7,8-TCDF	ND	----	2.80	2,3,7,8-TCDF-13C	2.00	60
U	Total TCDF	ND	----	2.80	2,3,7,8-TCDD-13C	2.00	71
U					1,2,3,7,8-PeCDF-13C	2.00	83
U	2,3,7,8-TCDD	ND	----	2.60	2,3,4,7,8-PeCDF-13C	2.00	86
U	Total TCDD	ND	----	2.60	1,2,3,7,8-PeCDD-13C	2.00	100
U					1,2,3,4,7,8-HxCDF-13C	2.00	80
U	1,2,3,7,8-PeCDF	ND	----	1.50	1,2,3,6,7,8-HxCDF-13C	2.00	101
U	2,3,4,7,8-PeCDF	ND	----	1.20	2,3,4,6,7,8-HxCDF-13C	2.00	97
U	Total PeCDF	ND	----	1.30	1,2,3,7,8,9-HxCDF-13C	2.00	87
U					1,2,3,4,7,8-HxCDD-13C	2.00	75
U	1,2,3,7,8-PeCDD	ND	----	1.50	1,2,3,6,7,8-HxCDD-13C	2.00	98
U	Total PeCDD	ND	----	1.50	1,2,3,4,6,7,8-HpCDF-13C	2.00	90
U					1,2,3,4,7,8,9-HpCDF-13C	2.00	79
U	1,2,3,4,7,8-HxCDF	ND	----	1.10	1,2,3,4,6,7,8-HpCDD-13C	2.00	103
U	1,2,3,6,7,8-HxCDF	ND	----	0.91	OCDD-13C	4.00	100
U	2,3,4,6,7,8-HxCDF	ND	----	0.94			
U	1,2,3,7,8,9-HxCDF	ND	----	0.95	1,2,3,4-TCDD-13C	2.00	NA
U	Total HxCDF	1.3	----	0.98 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U							
U	1,2,3,4,7,8-HxCDD	ND	----	1.60	2,3,7,8-TCDD-37Cl4	0.20	70
U	1,2,3,6,7,8-HxCDD	ND	----	1.80			
U	1,2,3,7,8,9-HxCDD	ND	----	1.80			
U	Total HxCDD	ND	----	1.70			
U							
U	1,2,3,4,6,7,8-HpCDF	1.7	----	1.10 J			
U	1,2,3,4,7,8,9-HpCDF	ND	----	1.50			
U	Total HpCDF	5.5	----	1.30 J			
U							
U	1,2,3,4,6,7,8-HpCDD	5.8	----	1.70 BJ			
U	Total HpCDD	17.0	----	1.70 BJ			
U							
U	OCDF	7.4	----	2.00 BJ			
U	OCDD	62.0	----	3.10 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105648

**ANALYSIS VALIDATED**

**REPORT OF LABORATORY ANALYSIS**

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**LEVEL IV**



## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0027-01	<i>out call only</i>
Lab Sample ID	105646001	
Filename	F50127A_09	
Injected By	MRO	
Total Amount Extracted	1040 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/03/2005
ICAL Date	11/29/2004	Received 01/04/2005
CCal Filename(s)	F50127A_02	Extracted 01/24/2005
Method Blank ID	BLANK-6202	Analyzed 01/27/2005 16:44

<i>Qual</i>	<i>Qual</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>U</i>		2,3,7,8-TCDF	ND	----	2.7	2,3,7,8-TCDF-13C	2.00	51
		Total TCDF	ND	----	2.7	2,3,7,8-TCDD-13C	2.00	64
<i>U</i>		2,3,7,8-TCDD	ND	----	3.1	1,2,3,7,8-PeCDF-13C	2.00	80
		Total TCDD	ND	----	3.1	2,3,4,7,8-PeCDF-13C	2.00	77
<i>U</i>		1,2,3,7,8-PeCDF	ND	----	1.7	1,2,3,7,8-PeCDD-13C	2.00	90
<i>U</i>		2,3,4,7,8-PeCDF	ND	----	1.2	1,2,3,4,7,8-HxCDF-13C	2.00	77
<i>U</i>		Total PeCDF	ND	----	1.5	1,2,3,6,7,8-HxCDF-13C	2.00	102
<i>U</i>		1,2,3,7,8-PeCDD	ND	----	2.6	2,3,4,6,7,8-HxCDF-13C	2.00	94
<i>U</i>		Total PeCDD	ND	----	2.6	1,2,3,7,8,9-HxCDF-13C	2.00	83
<i>U</i>		1,2,3,4,7,8-HxCDF	ND	----	1.6	1,2,3,4,7,8-HxCDD-13C	2.00	74
<i>U</i>		1,2,3,6,7,8-HxCDF	ND	----	1.3	1,2,3,6,7,8-HxCDD-13C	2.00	96
<i>U</i>		2,3,4,6,7,8-HxCDF	ND	----	1.1	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
<i>U</i>		1,2,3,7,8,9-HxCDF	ND	----	2.0	1,2,3,4,7,8,9-HpCDF-13C	2.00	74
<i>U</i>		Total HxCDF	ND	----	1.5	1,2,3,4-TCDD-13C	2.00	NA
<i>U</i>		1,2,3,4,7,8-HxCDD	ND	----	1.6	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>U</i>		1,2,3,6,7,8-HxCDD	ND	----	1.5			
<i>U</i>		1,2,3,7,8,9-HxCDD	ND	----	1.4			
<i>U</i>		Total HxCDD	ND	----	1.5			
<i>U</i>	<i>*10</i>	1,2,3,4,6,7,8-HpCDF	----	2.1	1.7	2,3,7,8-TCDD-37Cl4	0.20	58
<i>U</i>		1,2,3,4,7,8,9-HpCDF	ND	----	2.2			
<i>U</i>		Total HpCDF	ND	----	2.0			
<i>U</i>	<i>B</i>	1,2,3,4,6,7,8-HpCDD	8.8	----	1.6			
<i>U</i>	<i>B</i>	Total HpCDD	17.0	----	1.6			
<i>U</i>	<i>B</i>	OCDF	9.0	----	2.1			
<i>U</i>	<i>B</i>	OCDD	110.0	----	3.3			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105646

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0028-01  
 Lab Sample ID 105645001  
 Filename F50127A\_08  
 Injected By MRO  
 Total Amount Extracted 1030 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_02  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/03/2005  
 Received 01/04/2005  
 Extracted 01/24/2005  
 Analyzed 01/27/2005 15:54

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	4.0	2,3,7,8-TCDF-13C	2.00	39
Total TCDF	ND	----	4.0	2,3,7,8-TCDD-13C	2.00	51
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	----	3.4	2,3,4,7,8-PeCDF-13C	2.00	69
Total TCDD	ND	----	3.4	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	----	2.3	1,2,3,6,7,8-HxCDF-13C	2.00	89
2,3,4,7,8-PeCDF	ND	----	1.4	2,3,4,6,7,8-HxCDF-13C	2.00	90
Total PeCDF	ND	----	1.9	1,2,3,7,8,9-HxCDF-13C	2.00	78
				1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	----	2.3	1,2,3,6,7,8-HxCDD-13C	2.00	87
Total PeCDD	ND	----	2.3	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
				1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	----	2.3	1,2,3,4,6,7,8-HpCDD-13C	2.00	92
1,2,3,6,7,8-HxCDF	ND	----	1.8	OCDD-13C	4.00	88
2,3,4,6,7,8-HxCDF	ND	----	1.3			
1,2,3,7,8,9-HxCDF	ND	----	1.5	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	1.7	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	2.2	2,3,7,8-TCDD-37Cl4	0.20	48
1,2,3,6,7,8-HxCDD	ND	----	2.0			
1,2,3,7,8,9-HxCDD	ND	----	1.4			
Total HxCDD	ND	----	1.9			
1,2,3,4,6,7,8-HpCDF	11	----	3.3 J			
1,2,3,4,7,8,9-HpCDF	ND	----	1.8			
Total HpCDF	11	----	2.5 J			
1,2,3,4,6,7,8-HpCDD	21	----	1.9 J			
Total HpCDD	35	----	1.9 J			
OCDF	79	----	3.5 BJ			
OCDD	310	----	3.0			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105645

### **REPORT OF LABORATORY ANALYSIS**

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### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0109-01 *output 608*  
 Lab Sample ID 105775001  
 Filename F50127B\_12  
 Injected By MRO  
 Total Amount Extracted 1020 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_13  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/04/2005  
 Received 01/06/2005  
 Extracted 01/24/2005  
 Analyzed 01/28/2005 06:11

Res Qual	Final ID	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	3.7	2,3,7,8-TCDF-13C	2.00	50
u		Total TCDF	ND	----	3.7	2,3,7,8-TCDD-13C	2.00	65
						1,2,3,7,8-PeCDF-13C	2.00	82
u		2,3,7,8-TCDD	ND	----	3.3	2,3,4,7,8-PeCDF-13C	2.00	80
u		Total TCDD	ND	----	3.3	1,2,3,7,8-PeCDD-13C	2.00	94
						1,2,3,4,7,8-HxCDF-13C	2.00	75
u		1,2,3,7,8-PeCDF	ND	----	1.8	1,2,3,6,7,8-HxCDF-13C	2.00	100
u		2,3,4,7,8-PeCDF	ND	----	1.1	2,3,4,6,7,8-HxCDF-13C	2.00	91
u		Total PeCDF	ND	----	1.4	1,2,3,7,8,9-HxCDF-13C	2.00	81
						1,2,3,4,7,8-HxCDD-13C	2.00	70
u		1,2,3,7,8-PeCDD	ND	----	1.7	1,2,3,6,7,8-HxCDD-13C	2.00	95
u		Total PeCDD	ND	----	1.7	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
						1,2,3,4,7,8,9-HpCDF-13C	2.00	73
u		1,2,3,4,7,8-HxCDF	ND	----	2.5	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
u		1,2,3,6,7,8-HxCDF	ND	----	1.6	OCDD-13C	4.00	88
u		2,3,4,6,7,8-HxCDF	ND	----	1.5			
u		1,2,3,7,8,9-HxCDF	ND	----	1.5	1,2,3,4-TCDD-13C	2.00	NA
u		Total HxCDF	ND	----	1.8	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	----	1.3	2,3,7,8-TCDD-37Cl4	0.20	62
u		1,2,3,6,7,8-HxCDD	ND	----	1.6			
u		1,2,3,7,8,9-HxCDD	ND	----	1.6			
u		Total HxCDD	ND	----	1.5			
u		1,2,3,4,6,7,8-HpCDF	ND	----	1.9			
u		1,2,3,4,7,8,9-HpCDF	ND	----	2.1			
J	DNV	Total HpCDF	4.3	----	2.0 J			
u	B	1,2,3,4,6,7,8-HpCDD	2.3	----	1.7 BJ			
u	B	Total HpCDD	4.3	----	1.7 BJ			
u	B	OCDF	6.8	----	1.8 BJ			
u	B	OCDD	16.0	----	2.5 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105775

## AMIC VALIDATED REPORT OF LABORATORY ANALYSIS

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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID	IOA0108-01	<i>Outfall 007</i>
Lab Sample ID	105774001	
Filename	F50127A_12	
Injected By	MRO	
Total Amount Extracted	1040 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/04/2005
ICAL Date	11/29/2004	Received 01/06/2005
CCal Filename(s)	F50127A_02	Extracted 01/24/2005
Method Blank ID	BLANK-6202	Analyzed 01/27/2005 19:14

<i>Res Qual</i>	<i>Qual</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>		2,3,7,8-TCDF	ND	----	3.4	2,3,7,8-TCDF-13C	2.00	45
<i>u</i>		Total TCDF	ND	----	3.4	2,3,7,8-TCDD-13C	2.00	57
						1,2,3,7,8-PeCDF-13C	2.00	77
<i>u</i>		2,3,7,8-TCDD	ND	----	3.3	2,3,4,7,8-PeCDF-13C	2.00	72
<i>u</i>		Total TCDD	ND	----	3.3	1,2,3,7,8-PeCDD-13C	2.00	85
						1,2,3,4,7,8-HxCDF-13C	2.00	71
<i>u</i>		1,2,3,7,8-PeCDF	ND	----	2.0	1,2,3,6,7,8-HxCDF-13C	2.00	95
<i>↓</i>		2,3,4,7,8-PeCDF	ND	----	1.2	2,3,4,6,7,8-HxCDF-13C	2.00	84
		Total PeCDF	ND	----	1.6	1,2,3,7,8,9-HxCDF-13C	2.00	78
						1,2,3,4,7,8-HxCDD-13C	2.00	67
<i>u</i>		1,2,3,7,8-PeCDD	ND	----	1.7	1,2,3,6,7,8-HxCDD-13C	2.00	87
<i>u</i>		Total PeCDD	ND	----	1.7	1,2,3,4,6,7,8-HpCDF-13C	2.00	79
						1,2,3,4,7,8,9-HpCDF-13C	2.00	73
<i>u</i>	<i>DNR</i>	1,2,3,4,7,8-HxCDF	1.6	----	1.2 J	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
<i>u</i>		1,2,3,6,7,8-HxCDF	ND	----	1.2	OCDD-13C	4.00	94
<i>↓</i>		2,3,4,6,7,8-HxCDF	ND	----	1.1			
<i>↓</i>	<i>DNR</i>	1,2,3,7,8,9-HxCDF	ND	----	1.6	1,2,3,4-TCDD-13C	2.00	NA
<i>↓</i>		Total HxCDF	1.6	----	1.3 J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>		1,2,3,4,7,8-HxCDD	ND	----	1.6	2,3,7,8-TCDD-37Cl4	0.20	57
<i>↓</i>		1,2,3,6,7,8-HxCDD	ND	----	1.8			
		1,2,3,7,8,9-HxCDD	ND	----	1.4			
		Total HxCDD	ND	----	1.6			
<i>u</i>	<i>DNR</i>	1,2,3,4,6,7,8-HpCDF	4.2	----	1.2 J			
<i>u</i>		1,2,3,4,7,8,9-HpCDF	ND	----	1.6			
<i>↓</i>	<i>DNR</i>	Total HpCDF	24.0	----	1.4 J			
<i>u</i>	<i>B</i>	1,2,3,4,6,7,8-HpCDD	6.4	----	1.2 BJ			
<i>u</i>	<i>B</i>	Total HpCDD	6.4	----	1.2 BJ			
<i>u</i>	<i>B</i>	OCDF	22.0	----	2.6 BJ			
<i>u</i>	<i>B</i>	OCDD	38.0	----	4.1 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....105774

**REPORT OF LABORATORY ANALYSIS**

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0119-01 *out fall 02*  
 Lab Sample ID 105772001  
 Filename F50127A\_11  
 Injected By MRO  
 Total Amount Extracted 1040 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_02  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/04/2005  
 Received 01/06/2005  
 Extracted 01/24/2005  
 Analyzed 01/27/2005 18:24

Res Qual	Qual Code	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	----	1.60	2,3,7,8-TCDF-13C	2.00	58
J	DNQ	Total TCDF	2.5	----	1.60	2,3,7,8-TCDD-13C	2.00	69
U		2,3,7,8-TCDD	ND	----	2.00	1,2,3,7,8-PeCDF-13C	2.00	81
U		Total TCDD	ND	----	2.00	2,3,4,7,8-PeCDF-13C	2.00	83
U		1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	97
U		2,3,4,7,8-PeCDF	ND	----	0.85	1,2,3,4,7,8-HxCDF-13C	2.00	76
U		Total PeCDF	ND	----	1.00	1,2,3,6,7,8-HxCDF-13C	2.00	92
U		1,2,3,7,8-PeCDD	ND	----	1.40	1,2,3,7,8,9-HxCDF-13C	2.00	82
U		Total PeCDD	ND	----	1.40	1,2,3,4,7,8-HxCDD-13C	2.00	74
U		1,2,3,4,7,8-HxCDF	ND	----	1.50	1,2,3,6,7,8-HxCDD-13C	2.00	89
U		1,2,3,6,7,8-HxCDF	ND	----	1.40	1,2,3,4,6,7,8-HpCDF-13C	2.00	86
U		2,3,4,6,7,8-HxCDF	ND	----	0.80	1,2,3,4,7,8,9-HpCDF-13C	2.00	78
U		1,2,3,7,8,9-HxCDF	ND	----	0.59	1,2,3,4,6,7,8-HpCDD-13C	2.00	101
U		Total HxCDF	ND	----	1.10	OCDD-13C	4.00	99
U		1,2,3,4,7,8-HxCDD	ND	----	1.30	1,2,3,4-TCDD-13C	2.00	NA
U		1,2,3,6,7,8-HxCDD	ND	----	1.20	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U		1,2,3,7,8,9-HxCDD	ND	----	1.30			
U		Total HxCDD	ND	----	1.30			
J	DNQ	1,2,3,4,6,7,8-HpCDF	2.3	----	0.96	2,3,7,8-TCDD-37Cl4	0.20	63
U		1,2,3,4,7,8,9-HpCDF	ND	----	0.95			
J	DNQ	Total HpCDF	2.3	----	0.95			
US	B	1,2,3,4,6,7,8-HpCDD	7.6	----	1.20			
US	B	Total HpCDD	16.0	----	1.20			
US	B	OCDF	9.4	----	1.10			
US	B	OCDD	65.0	----	2.30			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105772

## REPORT OF LABORATORY ANALYSIS

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LEVEL IV

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID: IOA0110-01 *Outfall 2011*  
 Lab Sample ID: 105770001  
 Filename: F50127B\_13  
 Injected By: MRO  
 Total Amount Extracted: 1020 mL  
 % Moisture: NA  
 Dry Weight Extracted: NA  
 ICAL Date: 11/29/2004  
 CCal Filename(s): F50127A\_13  
 Method Blank ID: BLANK-6202

Matrix: Water  
 Dilution: NA  
 Collected: 01/04/2005  
 Received: 01/06/2005  
 Extracted: 01/24/2005  
 Analyzed: 01/28/2005 07:01

Res Qual	Qual Code	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	----	1.50	2,3,7,8-TCDF-13C	2.00	64
U		Total TCDF	ND	----	1.50	2,3,7,8-TCDD-13C	2.00	76
U		2,3,7,8-TCDD	ND	----	1.30	1,2,3,7,8-PeCDF-13C	2.00	98
U		Total TCDD	ND	----	1.30	2,3,4,7,8-PeCDF-13C	2.00	92
U		1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	107
U		2,3,4,7,8-PeCDF	ND	----	0.95	1,2,3,4,7,8-HxCDF-13C	2.00	80
U		Total PeCDF	ND	----	1.10	1,2,3,6,7,8-HxCDF-13C	2.00	93
U		1,2,3,7,8-PeCDD	ND	----	1.40	2,3,4,6,7,8-HxCDF-13C	2.00	90
U		Total PeCDD	ND	----	1.40	1,2,3,7,8,9-HxCDF-13C	2.00	83
U		1,2,3,4,7,8-HxCDF	ND	----	0.93	1,2,3,4,7,8-HxCDD-13C	2.00	78
U		1,2,3,6,7,8-HxCDF	ND	----	0.65	1,2,3,6,7,8-HxCDD-13C	2.00	93
U		2,3,4,6,7,8-HxCDF	ND	----	0.80	1,2,3,4,6,7,8-HpCDF-13C	2.00	82
U		1,2,3,7,8,9-HxCDF	ND	----	0.93	1,2,3,4,7,8,9-HpCDF-13C	2.00	73
U		Total HxCDF	ND	----	0.83	1,2,3,4,6,7,8-HpCDD-13C	2.00	98
U		1,2,3,4,7,8-HxCDD	ND	----	1.10	OCDD-13C	4.00	84
U		1,2,3,6,7,8-HxCDD	ND	----	0.97	1,2,3,4-TCDD-13C	2.00	NA
U		1,2,3,7,8,9-HxCDD	ND	----	1.10	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U		Total HxCDD	ND	----	1.10	2,3,7,8-TCDD-37Cl4	0.20	70
U		1,2,3,4,6,7,8-HpCDF	59	----	1.80			
U		1,2,3,4,7,8,9-HpCDF	ND	----	2.10			
U		Total HpCDF	500	----	2.00			
U		1,2,3,4,6,7,8-HpCDD	76	----	2.10			
U		Total HpCDD	130	----	2.10			
U		OCDF	1600	----	2.80			
U		OCDD	2100	----	4.50			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105770

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOA0111-01 *Oil spill oil*  
 Lab Sample ID 105758001  
 Filename F50127A\_07  
 Injected By MRO  
 Total Amount Extracted 1040 mL  
 Matrix Water  
 % Moisture NA  
 Dilution NA  
 Dry Weight Extracted NA  
 Collected 01/04/2005  
 ICAL Date 11/29/2004  
 Received 01/06/2005  
 CCal Filename(s) F50127A\_02  
 Extracted 01/24/2005  
 Method Blank ID BLANK-6202  
 Analyzed 01/27/2005 15:04

Conc	EMPC	LOD	Internal Standards	ng's Added	Percent Recovery
pg/L	pg/L	pg/L			
ND	----	2.1	2,3,7,8-TCDF-13C	2.00	72
2.2	----	2.1 J	2,3,7,8-TCDF-13C	2.00	83
ND	----	2.1	1,2,3,7,8-PeCDF-13C	2.00	80
ND	----	2.1	2,3,4,7,8-PeCDF-13C	2.00	82
ND	----	2.1	1,2,3,7,8-PeCDD-13C	2.00	91
ND	----	1.4	1,2,3,4,7,8-HxCDF-13C	2.00	78
ND	----	1.2	1,2,3,6,7,8-HxCDF-13C	2.00	102
ND	----	1.3	2,3,4,6,7,8-HxCDF-13C	2.00	93
ND	----	1.9	1,2,3,7,8,9-HxCDF-13C	2.00	82
ND	----	1.9	1,2,3,4,7,8-HxCDD-13C	2.00	75
ND	----	1.9	1,2,3,6,7,8-HxCDD-13C	2.00	89
ND	----	2.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
ND	----	1.6	1,2,3,4,7,8,9-HpCDF-13C	2.00	73
ND	----	1.6	1,2,3,4,6,7,8-HpCDD-13C	2.00	98
ND	----	1.6	OCDD-13C	4.00	91
ND	----	1.5	1,2,3,4-TCDD-13C	2.00	NA
ND	----	1.6	1,2,3,7,8,9-HxCDD-13C	2.00	NA
ND	----	2.6	2,3,7,8-TCDD-37Cl4	0.20	80
ND	----	2.0			
ND	----	2.2			
ND	----	2.3			
6.6	----	1.5 J			
ND	----	1.9			
6.6	----	1.7 J			
20.0	----	2.5 J			
41.0	----	2.5 J			
43.0	----	2.8 BJ			
220.0	----	2.5 B			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105758

**REPORT OF LABORATORY ANALYSIS**

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**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID IOA0122-01 *out file 017*  
 Lab Sample ID 105779001  
 Filename F50127B\_04  
 Injected By MRO  
 Total Amount Extracted 980 mL  
 % Moisture NA  
 Dry Weight Extracted NA  
 ICAL Date 11/29/2004  
 CCal Filename(s) F50127A\_13  
 Method Blank ID BLANK-6202

Matrix Water  
 Dilution NA  
 Collected 01/04/2005  
 Received 01/06/2005  
 Extracted 01/24/2005  
 Analyzed 01/27/2005 23:27

Req	Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	2.6	2,3,7,8-TCDF-13C	2.00	47
u		Total TCDF	ND	----	2.6	2,3,7,8-TCDD-13C	2.00	59
						1,2,3,7,8-PeCDF-13C	2.00	79
u		2,3,7,8-TCDD	ND	----	2.7	2,3,4,7,8-PeCDF-13C	2.00	78
u		Total TCDD	ND	----	2.7	1,2,3,7,8-PeCDD-13C	2.00	90
						1,2,3,4,7,8-HxCDF-13C	2.00	75
u		1,2,3,7,8-PeCDF	ND	----	1.7	1,2,3,6,7,8-HxCDF-13C	2.00	98
u		2,3,4,7,8-PeCDF	ND	----	2.1	2,3,4,6,7,8-HxCDF-13C	2.00	90
v		Total PeCDF	ND	----	1.9	1,2,3,7,8,9-HxCDF-13C	2.00	81
						1,2,3,4,7,8-HxCDD-13C	2.00	73
u		1,2,3,7,8-PeCDD	ND	----	2.2	1,2,3,6,7,8-HxCDD-13C	2.00	92
u		Total PeCDD	ND	----	2.2	1,2,3,4,6,7,8-HpCDF-13C	2.00	81
						1,2,3,4,7,8,9-HpCDF-13C	2.00	73
u		1,2,3,4,7,8-HxCDF	ND	----	1.4	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
u		1,2,3,6,7,8-HxCDF	ND	----	1.1	OCDD-13C	4.00	90
v		2,3,4,6,7,8-HxCDF	ND	----	1.2			
		1,2,3,7,8,9-HxCDF	ND	----	1.6	1,2,3,4-TCDD-13C	2.00	NA
		Total HxCDF	ND	----	1.3	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	----	1.5	2,3,7,8-TCDD-37Cl4	0.20	55
u		1,2,3,6,7,8-HxCDD	ND	----	1.6			
v		1,2,3,7,8,9-HxCDD	ND	----	1.8			
		Total HxCDD	ND	----	1.7			
US	#10	1,2,3,4,6,7,8-HpCDF	----	2.3	1.6 I			
u		1,2,3,4,7,8,9-HpCDF	ND	----	1.9			
u		Total HpCDF	ND	----	1.8			
US	B	1,2,3,4,6,7,8-HpCDD	9.0	----	1.8 BJ			
J	DND	Total HpCDD	18.0	----	1.8 BJ			
US	B	OCDF	12.0	----	2.4 BJ			
US	C	OCDD	110.0	----	2.7 B			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....105779

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**REPORT OF LABORATORY ANALYSIS**

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LEVEL IV



## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0458-01 *out fall carb*  
 Lab Sample ID 106048001  
 Filename F50127B\_08  
 Injected By MRO  
 Total Amount Extracted 963 mL  
 % Moisture NA Matrix Water  
 Dry Weight Extracted NA Dilution NA  
 ICAL Date 11/29/2004 Collected 01/10/2005  
 CCal Filename(s) F50127A\_13 Received 01/12/2005  
 Method Blank ID BLANK-6202 Extracted 01/24/2005  
 Analyzed 01/28/2005 02:49

Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u	2,3,7,8-TCDF	ND	----	3.5	2,3,7,8-TCDF-13C	2.00	47
	Total TCDF	ND	----	3.5	2,3,7,8-TCDD-13C	2.00	59
u	2,3,7,8-TCDD	ND	----	3.1	1,2,3,7,8-PeCDF-13C	2.00	72
u	Total TCDD	ND	----	3.1	2,3,4,7,8-PeCDF-13C	2.00	77
u	1,2,3,7,8-PeCDF	ND	----	2.3	1,2,3,7,8-PeCDD-13C	2.00	91
u	2,3,4,7,8-PeCDF	ND	----	1.1	1,2,3,4,7,8-HxCDF-13C	2.00	75
u	Total PeCDF	ND	----	1.7	1,2,3,6,7,8-HxCDF-13C	2.00	97
u	1,2,3,7,8-PeCDD	ND	----	2.4	2,3,4,6,7,8-HxCDF-13C	2.00	89
u	Total PeCDD	ND	----	2.4	1,2,3,7,8,9-HxCDF-13C	2.00	80
u	1,2,3,4,7,8-HxCDF	ND	----	1.4	1,2,3,4,7,8-HxCDD-13C	2.00	72
u	1,2,3,6,7,8-HxCDF	ND	----	1.0	1,2,3,6,7,8-HxCDD-13C	2.00	96
u	2,3,4,6,7,8-HxCDF	ND	----	1.1	1,2,3,4,6,7,8-HpCDF-13C	2.00	85
u	1,2,3,7,8,9-HxCDF	ND	----	1.3	1,2,3,4,7,8,9-HpCDF-13C	2.00	73
u	Total HxCDF	ND	----	1.2	1,2,3,4,6,7,8-HpCDD-13C	2.00	98
u	1,2,3,4,7,8-HxCDD	ND	----	1.6	OCDD-13C	4.00	83
u	1,2,3,6,7,8-HxCDD	ND	----	1.3	1,2,3,4-TCDD-13C	2.00	NA
u	1,2,3,7,8,9-HxCDD	ND	----	1.3	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u	Total HxCDD	ND	----	1.4	2,3,7,8-TCDD-37Cl4	0.20	58
u	1,2,3,4,6,7,8-HpCDF	ND	----	1.7			
u	1,2,3,4,7,8,9-HpCDF	ND	----	1.5			
u	Total HpCDF	6.4	----	1.6 J			
u	1,2,3,4,6,7,8-HpCDD	----	2.8	1.7 I			
u	Total HpCDD	ND	----	1.7			
u	OCDF	9.1	----	2.7 BJ			
u	OCDD	29.0	----	3.3 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106048

## REPORT OF LABORATORY ANALYSIS

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LEVEL IV

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0460-01	<i>Out Fall 2004</i>
Lab Sample ID	106050001	
Filename	F50127B_09	
Injected By	MRO	
Total Amount Extracted	1030 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/10/2005
CCal Filename(s)	F50127A_13	Received 01/12/2005
Method Blank ID	BLANK-6202	Extracted 01/24/2005
		Analyzed 01/28/2005 03:39

Res Qual	Qual code	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	3.0	2,3,7,8-TCDF-13C	2.00	44
u		Total TCDF	ND	----	3.0	2,3,7,8-TCDD-13C	2.00	56
u		2,3,7,8-TCDD	ND	----	3.3	1,2,3,7,8-PeCDF-13C	2.00	68
u		Total TCDD	ND	----	3.3	2,3,4,7,8-PeCDF-13C	2.00	72
u		1,2,3,7,8-PeCDF	ND	----	2.5	1,2,3,7,8-PeCDD-13C	2.00	85
u		2,3,4,7,8-PeCDF	ND	----	1.9	1,2,3,4,7,8-HxCDF-13C	2.00	72
u		Total PeCDF	ND	----	2.2	1,2,3,6,7,8-HxCDF-13C	2.00	96
u		1,2,3,7,8-PeCDD	ND	----	3.5	2,3,4,6,7,8-HxCDF-13C	2.00	92
u		Total PeCDD	ND	----	3.5	1,2,3,7,8,9-HxCDF-13C	2.00	81
u		1,2,3,4,7,8-HxCDF	ND	----	1.7	1,2,3,4,7,8-HxCDD-13C	2.00	70
u		1,2,3,6,7,8-HxCDF	ND	----	1.5	1,2,3,6,7,8-HxCDD-13C	2.00	92
u		2,3,4,6,7,8-HxCDF	ND	----	1.2	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
u		1,2,3,7,8,9-HxCDF	ND	----	1.4	1,2,3,4,7,8,9-HpCDF-13C	2.00	73
u		Total HxCDF	ND	----	1.5	1,2,3,4,6,7,8-HpCDD-13C	2.00	95
u		1,2,3,4,7,8-HxCDD	ND	----	2.3	OCDD-13C	4.00	84
u		1,2,3,6,7,8-HxCDD	ND	----	1.5			
u		1,2,3,7,8,9-HxCDD	ND	----	1.9	1,2,3,4-TCDD-13C	2.00	NA
u		Total HxCDD	ND	----	1.9	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,6,7,8-HpCDF	ND	----	2.7			
u		1,2,3,4,7,8,9-HpCDF	ND	----	2.1			
u		Total HpCDF	ND	----	2.4			
u		1,2,3,4,6,7,8-HpCDD	6.5	----	1.2			
u		Total HpCDD	13.0	----	1.2			
u		OCDF	3.6	----	1.4			
u		OCDD	85.0	----	2.7			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106050

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## REPORT OF LABORATORY ANALYSIS

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LEVEL IV

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOA0464-01 *out fall cos*  
 Lab Sample ID 106052001  
 Filename F50127B\_11  
 Injected By MRO  
 Total Amount Extracted 1040 mL  
 % Moisture NA Matrix Water  
 Dry Weight Extracted NA Dilution NA  
 ICAL Date 11/29/2004 Collected 01/10/2005  
 CCal Filename(s) F50127A\_13 Received 01/12/2005  
 Method Blank ID BLANK-6202 Extracted 01/24/2005  
 Analyzed 01/28/2005 05:20

Res Prel	Qual code	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U		2,3,7,8-TCDF	ND	----	2.20	2,3,7,8-TCDF-13C	2.00	61
U		Total TCDF	ND	----	2.20	2,3,7,8-TCDD-13C	2.00	73
U		2,3,7,8-TCDD	ND	----	3.00	1,2,3,7,8-PeCDF-13C	2.00	84
U		Total TCDD	ND	----	3.00	2,3,4,7,8-PeCDF-13C	2.00	80
						1,2,3,7,8-PeCDD-13C	2.00	93
						1,2,3,4,7,8-HxCDF-13C	2.00	75
		1,2,3,7,8-PeCDF	ND	----	1.90	1,2,3,6,7,8-HxCDF-13C	2.00	100
		2,3,4,7,8-PeCDF	ND	----	1.40	2,3,4,6,7,8-HxCDF-13C	2.00	88
		Total PeCDF	ND	----	1.70	1,2,3,7,8,9-HxCDF-13C	2.00	80
						1,2,3,4,7,8-HxCDD-13C	2.00	69
		1,2,3,7,8-PeCDD	ND	----	2.20	1,2,3,6,7,8-HxCDD-13C	2.00	94
		Total PeCDD	ND	----	2.20	1,2,3,4,6,7,8-HpCDF-13C	2.00	81
						1,2,3,4,7,8,9-HpCDF-13C	2.00	71
		1,2,3,4,7,8-HxCDF	ND	----	1.60	1,2,3,4,6,7,8-HpCDD-13C	2.00	94
		1,2,3,6,7,8-HxCDF	ND	----	0.94	OCDD-13C	4.00	85
		2,3,4,6,7,8-HxCDF	ND	----	1.00			
		1,2,3,7,8,9-HxCDF	ND	----	1.10	1,2,3,4-TCDD-13C	2.00	NA
		Total HxCDF	ND	----	1.20	1,2,3,7,8,9-HxCDD-13C	2.00	NA
		1,2,3,4,7,8-HxCDD	ND	----	1.50			
		1,2,3,6,7,8-HxCDD	ND	----	1.40	2,3,7,8-TCDD-37Cl4	0.20	67
		1,2,3,7,8,9-HxCDD	ND	----	1.50			
		Total HxCDD	3.2	----	1.50 J			
		1,2,3,4,6,7,8-HpCDF	ND	----	1.20			
		1,2,3,4,7,8,9-HpCDF	ND	----	1.70			
		Total HpCDF	2.8	----	1.40 J			
		1,2,3,4,6,7,8-HpCDD	7.8	----	1.70 BJ			
		Total HpCDD	15.0	----	1.70 BJ			
		OCDF	----	4.0	2.20 I			
		OCDD	260.0	----	2.30			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106052

### REPORT OF LABORATORY ANALYSIS

# LEVEL IV

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0466-01	Out Fall 03
Lab Sample ID	106051001	
Filename	F50127B_10	
Injected By	MRO	
Total Amount Extracted	1030 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/10/2005
CCal Filename(s)	F50127A_13	Received 01/12/2005
Method Blank ID	BLANK-6202	Extracted 01/24/2005
		Analyzed 01/28/2005 04:30

Rev	Prnt	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
4		2,3,7,8-TCDF	ND	----	2.4	2,3,7,8-TCDF-13C	2.00	70
4		Total TCDF	ND	----	2.4	2,3,7,8-TCDD-13C	2.00	82
4		2,3,7,8-TCDD	ND	----	1.9	1,2,3,7,8-PeCDF-13C	2.00	92
4		Total TCDD	ND	----	1.9	2,3,4,7,8-PeCDF-13C	2.00	88
4		1,2,3,7,8-PeCDF	ND	----	1.5	1,2,3,7,8-PeCDD-13C	2.00	102
4		2,3,4,7,8-PeCDF	ND	----	1.0	1,2,3,4,7,8-HxCDF-13C	2.00	82
4		Total PeCDF	ND	----	1.3	1,2,3,6,7,8-HxCDF-13C	2.00	102
4		1,2,3,7,8-PeCDD	ND	----	2.1	2,3,4,6,7,8-HxCDF-13C	2.00	97
4		Total PeCDD	ND	----	2.1	1,2,3,7,8,9-HxCDF-13C	2.00	83
4		1,2,3,4,7,8-HxCDF	ND	----	1.2	1,2,3,4,7,8-HxCDD-13C	2.00	77
4		1,2,3,6,7,8-HxCDF	ND	----	1.1	1,2,3,6,7,8-HxCDD-13C	2.00	93
4		2,3,4,6,7,8-HxCDF	ND	----	1.3	1,2,3,4,6,7,8-HpCDF-13C	2.00	86
4		1,2,3,7,8,9-HxCDF	ND	----	2.2	1,2,3,4,7,8,9-HpCDF-13C	2.00	76
4		Total HxCDF	ND	----	1.5	1,2,3,4,6,7,8-HpCDD-13C	2.00	100
4		1,2,3,4,7,8-HxCDD	ND	----	1.7	OCDD-13C	4.00	90
4		1,2,3,6,7,8-HxCDD	ND	----	1.3	1,2,3,4-TCDD-13C	2.00	NA
4		1,2,3,7,8,9-HxCDD	ND	----	2.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
4		Total HxCDD	3.7	----	1.7	2,3,7,8-TCDD-37Cl4	0.20	78
4		1,2,3,4,6,7,8-HpCDF	----	3.9	1.3			
4		1,2,3,4,7,8,9-HpCDF	ND	----	1.9			
4		Total HpCDF	ND	----	1.6			
4		1,2,3,4,6,7,8-HpCDD	18.0	----	1.8			
4		Total HpCDD	66.0	----	1.8			
4		OCDF	18.0	----	2.2			
4		OCDD	280.0	----	3.9			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106051

REC VALIDATED

## REPORT OF LABORATORY ANALYSIS

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REC VALIDATED

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0131-01	oil/fall oil
Lab Sample ID	105773001	
Filename	F50127B_03	
Injected By	MRO	
Total Amount Extracted	1040 mL	
% Moisture	NA	Matrix: Water
Dry Weight Extracted	NA	Dilution: NA
ICAL Date	11/29/2004	Collected: 01/05/2005
CCal Filename(s)	F50127A_13	Received: 01/06/2005
Method Blank ID	BLANK-6202	Extracted: 01/24/2005
		Analyzed: 01/27/2005 22:36

Res Qucl	Qucl code	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	2.30	2,3,7,8-TCDF-13C	2.00	59
u		Total TCDF	ND	----	2.30	2,3,7,8-TCDD-13C	2.00	68
u		2,3,7,8-TCDD	ND	----	3.10	1,2,3,7,8-PeCDF-13C	2.00	81
u		Total TCDD	ND	----	3.10	2,3,4,7,8-PeCDF-13C	2.00	77
u		1,2,3,7,8-PeCDF	ND	----	2.60	1,2,3,7,8-PeCDD-13C	2.00	89
u		2,3,4,7,8-PeCDF	ND	----	1.20	1,2,3,4,7,8-HxCDF-13C	2.00	76
u		Total PeCDF	ND	----	1.90	1,2,3,6,7,8-HxCDF-13C	2.00	103
u		1,2,3,7,8-PeCDD	ND	----	1.50	2,3,4,6,7,8-HxCDF-13C	2.00	95
u		Total PeCDD	ND	----	1.50	1,2,3,7,8,9-HxCDF-13C	2.00	83
u		1,2,3,4,7,8-HxCDF	ND	----	1.30	1,2,3,4,7,8-HxCDD-13C	2.00	74
u		1,2,3,6,7,8-HxCDF	ND	----	1.10	1,2,3,6,7,8-HxCDD-13C	2.00	97
u		2,3,4,6,7,8-HxCDF	ND	----	0.87	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
u		1,2,3,7,8,9-HxCDF	ND	----	1.50	1,2,3,4,7,8,9-HpCDF-13C	2.00	73
u		Total HxCDF	ND	----	1.20	1,2,3,4,6,7,8-HpCDD-13C	2.00	96
u		1,2,3,4,7,8-HxCDD	ND	----	1.50	OCDD-13C	4.00	92
u		1,2,3,6,7,8-HxCDD	ND	----	1.20	1,2,3,4-TCDD-13C	2.00	NA
u		1,2,3,7,8,9-HxCDD	ND	----	1.70	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		Total HxCDD	ND	----	1.50			
J	DNX	1,2,3,4,6,7,8-HpCDF	2.1	----	1.90			J
u		1,2,3,4,7,8,9-HpCDF	ND	----	2.90			
J	DNX	Total HpCDF	7.4	----	2.40			J
uS	B	1,2,3,4,6,7,8-HpCDD	7.1	----	2.20			BJ
J	DNX	Total HpCDD	17.0	----	2.20			BJ
uS	10	OCDF	----	6.3	2.10			I
uS	B	OCDD	83.0	----	2.70			BJ

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....105773

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOA0121 & IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0121 & IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: February 10, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011	IOA0121-01	938344	water	Hydrazines by 8315
Outfall 011	IOA0131-01	938345	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. The transfer COCs accounted for the samples. The original COC for the Outfall 011 grab sample in SDG IOA0121 did not request hydrazine analyses while the original COC for the Outfall 011 composite sample in SDG IOA0131 did request monomethyl hydrazine analysis. Both transfer COCs requested only monomethyl hydrazine; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. A memo from MWH personnel dated 02/15/05 requested monomethyl hydrazine analysis for the Outfall 011 grab sample in SDG IOA0121.

The case narratives for these SDGs noted that the samples were received intact. As the samples were transported to Del Mar by courier, no custody seals were required. No custody seals were present upon arrival at Truesdail Laboratories. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met and the samples were analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 01/07/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

### 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on the Outfall 011 composite sample in SDG IOA0131. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . No qualifications were required.

### 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

#### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

#### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

### 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data, at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



## REPORT

Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
 (714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** Del Mar Analytical - Alt.  
 17461 Derian Ave.  
 Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0131  
**P.O. Number:** IOA0131  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938345  
**Report Date:** January 10, 2005  
**Sampling Date:** January 5, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Raw Qual	Qual Code	Raw Qual	Qual Code	Raw Qual	Qual Code
704641-MB	Method Blank	ND		ND		ND	
938345	IOA0131-01	ND		ND		ND	
PQL	Outfall Oil	5.0		5.0		5.0	
Sample Report Limits		5.0		5.0		5.0	

\*Analysis not validated

pm 2/17/05

PQL: Practical Quantitation Limit, µg/L  
 ND: Not Detected  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Pang, Project Manager  
 Environmental Services

# AMEC VALIDATED LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



## REPORT

Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** Del Mar Analytical- Alt.  
17451 Derlan Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0121  
**P.O. Number:** IOA0121  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

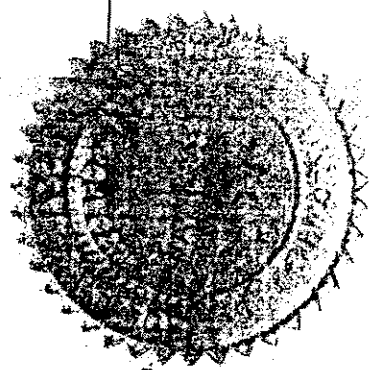
**Laboratory No:** 938344  
**Report Date:** January 10, 2005  
**Sampling Date:** January 4, 2005  
**Receiving Date:** January 5, 2005  
**Extraction Date:** January 6, 2005  
**Analysis Date:** January 7, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

### Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	Rev. Qual. Code	Qual. Code
		Hydrazine	Rev. Qual. Code	Hydrazine	Rev. Qual. Code			
704641-MB	Method Blank	ND	U	ND	X	ND		
938344	IOA0121-01	ND	U	ND	U	ND		
PQL	Outfall Oil	5.0		5.0		5.0		
Sample Report Limits		5.0		5.0		5.0		

AM 2/17/05

Xuan Dang, Project Manager  
Environmental Services



PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

# AMEC VALIDATED LEVEL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT29  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1

Laboratory Del Mar Analytical

Date: 2/15/05

Reviewer K. Okonzak

Reviewer's Signature

Analysis/Method metals

*P. Meeks for K. Okonzak*

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were applied for detects in the bracketing ICP/MS CCB analyses. Qualifications were applied to analytes detected below the laboratory reporting limit.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Okonzak-Lowry  
Date of Review: February 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0131-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses but did not report %RSDs. The laboratory SOP states that to be acceptable, the %RSD must be less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The applicable reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

## 2.4 BLANKS

There were detects and negative results reported for the method blanks and bracketing ICBs/CCBs associated with the sample in this SDG. Arsenic and silver were detected in a bracketing CCB at 0.63305 and 0.36341  $\mu\text{g/L}$ , respectively; therefore, the arsenic and silver detected in sample Outfall 011 were qualified "UJ." Selenium was detected in both bracketing CCBs at 0.90784 and 0.80914  $\mu\text{g/L}$ , respectively; therefore, the selenium detected in sample Outfall 011 was qualified "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

No ICPMS interference check samples were analyzed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

An ICSA analysis was included in the raw data for the ICP boron analysis. This ICSA analysis was performed two days before the site sample analysis and was not associated with the initial calibration performed for sample Outfall.011. The laboratory's ICP SOP No. MET-200.7/6010B, Revision 8, states that the ICSA and ICSAB samples need to be run consecutively at the beginning and end of each analytical run. Due to the low level of matrix interferents in the site sample matrix, no sample qualifications were required due to the ICP ICS analysis.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5A05092-BS1, the ICP LCS sample was identified as 5A06063-BS1, and the Hg LCS sample was identified as 5A06051-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## **2.11 INTERNAL STANDARDS PERFORMANCE**

The ICP and ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## **2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.13.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site sample.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Antimony	EPA 200.8	5A05092	0.18	2.0	0.42	1	01/05/05	01/06/05	J J Rev Qual
Arsenic	EPA 200.8	5A05092	0.49	1.0	0.97	1	01/05/05	01/06/05	J J Qual
Beryllium	EPA 200.8	5A05092	0.037	0.50	0.072	1	01/05/05	01/06/05	J J R DNQ
Cadmium	EPA 200.8	5A05092	0.015	1.0	0.12	1	01/05/05	01/06/05	J J DNQ
Chromium	EPA 200.8	5A05092	0.26	1.0	1.9	1	01/05/05	01/06/05	J J DNQ
Cobalt	EPA 200.8	5A05092	0.10	1.0	0.34	1	01/05/05	01/06/05	J J DNQ
Copper	EPA 200.8	5A05092	0.49	2.0	4.4	1	01/05/05	01/06/05	J J DNQ
Lead	EPA 200.8	5A05092	0.13	1.0	0.82	1	01/05/05	01/06/05	J J DNQ
Manganese	EPA 200.8	5A05092	0.44	1.0	14	1	01/05/05	01/06/05	J J DNQ
Mercury	EPA 245.1	5A06051	0.063	0.20	0.17	1	01/06/05	01/06/05	J J DNQ
Nickel	EPA 200.8	5A05092	0.15	1.0	2.1	1	01/05/05	01/06/05	J J DNQ
Selenium	EPA 200.8	5A05092	0.36	2.0	0.66	1	01/05/05	01/06/05	U J J B
Silver	EPA 200.8	5A05092	0.089	1.0	0.13	1	01/05/05	01/06/05	U J J B
Thallium	EPA 200.8	5A05092	0.075	1.0	ND	1	01/05/05	01/06/05	U DNQ
Vanadium	EPA 200.8	5A05092	0.86	1.0	1.1	1	01/05/05	01/06/05	J J DNQ
Zinc	EPA 200.8	5A05092	3.1	20	15	1	01/05/05	01/06/05	J J DNQ

*1002  
2/15/05*

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LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					
Reporting Units: mg/l									Rev Anal	Qual code
Barium	EPA 200.8	5A05092	0.00014	0.0010	0.015	1	01/05/05	01/06/05		
Boron	EPA 200.7	5A06063	0.0074	0.050	0.051	1	01/06/05	01/06/05		
Iron	EPA 200.8	5A05092	0.0032	0.010	0.81	1	01/05/05	01/06/05		

# AMEC VALIDATED

## LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP11  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1

Laboratory Del Mar Analytical

Date: February 17, 2005

Reviewer L. Calvin

Reviewer's Signature  


Analysis/Method Pesticides/PCBs by Method 608

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were assigned for continuing calibration %Ds >15%
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 16, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $4^{\circ}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narrative noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 12/29/04 associated with pesticide analysis of sample Outfall 011, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  on both analytical columns. There was one initial calibration dated 01/04/05 associated with the PCB analysis of the sample. The PCB calibration consisted of five points for Arochlor 1016 and Arochlor 1260. Single point calibrations for Arochlor 1242, Arochlor 1248, and Arochlor 1254 were analyzed but were not provided in the data package. The average %RSDs for the individual peaks of Arochlor 1016 and Arochlor 1260 were  $\leq 10\%$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The pesticide sample analysis of this SDG was bracketed by four continuing calibrations. In one of the bracketing calibrations following the sample analysis %Ds exceeded 15% on channel A for 4,4'-DDT and methoxychlor. As all results in this SDG were reported from channel A, nondetect results for both compounds were qualified as estimated, "UJ," in sample Outfall 011. The %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. The PCB analysis of this sample was bracketed by two CCVs and the %Ds for Arochlor 1016 and Arochlor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of the analytical sequence. Cross-contamination was not evident in the sample. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5A07033-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5A07033-BS1/BSD1) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.



## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for this SDG were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water sample. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG; however, as there were no detects reported in this SDG, quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the

DATA VALIDATION REPORT

Project: NPDES  
SDG: IOA0131  
Analysis: Pest/PCB

initial calibration and the laboratory MDL study. The water reporting limits were not adjusted for sample amount on the result summary; however, the dilution listed on the summary reflected the sample volume extracted. Results were reported in  $\mu\text{g/L}$  (ppb). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Aldrin	EPA 608	5A07033	0.029	0.10	ND	0.98	01/07/05	01/07/05	u
alpha-BHC	EPA 608	5A07033	0.010	0.10	ND	0.98	01/07/05	01/07/05	u
beta-BHC	EPA 608	5A07033	0.011	0.10	ND	0.98	01/07/05	01/07/05	u
delta-BHC	EPA 608	5A07033	0.010	0.20	ND	0.98	01/07/05	01/07/05	u
gamma-BHC (Lindane)	EPA 608	5A07033	0.0097	0.10	ND	0.98	01/07/05	01/07/05	u
Chlordane	EPA 608	5A07033	0.18	1.0	ND	0.98	01/07/05	01/07/05	u
4,4'-DDD	EPA 608	5A07033	0.011	0.10	ND	0.98	01/07/05	01/07/05	u
4,4'-DDE	EPA 608	5A07033	0.017	0.10	ND	0.98	01/07/05	01/07/05	u
4,4'-DDT	EPA 608	5A07033	0.015	0.10	ND	0.98	01/07/05	01/07/05	u
Dieldrin	EPA 608	5A07033	0.010	0.10	ND	0.98	01/07/05	01/07/05	u
Endosulfan I	EPA 608	5A07033	0.015	0.10	ND	0.98	01/07/05	01/07/05	u
Endosulfan II	EPA 608	5A07033	0.037	0.10	ND	0.98	01/07/05	01/07/05	u
Endosulfan sulfate	EPA 608	5A07033	0.013	0.20	ND	0.98	01/07/05	01/07/05	u
Endrin	EPA 608	5A07033	0.0082	0.10	ND	0.98	01/07/05	01/07/05	u
Endrin aldehyde	EPA 608	5A07033	0.045	0.10	ND	0.98	01/07/05	01/07/05	u
Endrin ketone	EPA 608	5A07033	0.020	0.10	ND	0.98	01/07/05	01/07/05	u
Heptachlor	EPA 608	5A07033	0.030	0.10	ND	0.98	01/07/05	01/07/05	u
Heptachlor epoxide	EPA 608	5A07033	0.012	0.10	ND	0.98	01/07/05	01/07/05	u
Methoxychlor	EPA 608	5A07033	0.034	0.10	ND	0.98	01/07/05	01/07/05	u
Toxaphene	EPA 608	5A07033	0.77	5.0	ND	0.98	01/07/05	01/07/05	u
Surrogate: Tetrachloro-m-xylene (35-120%)						58 %			
Surrogate: Decachlorobiphenyl (45-120%)						82 %			

*Handwritten signature and date: 02-15-05*

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 LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5A07033	0.067	1.0	ND	0.98	01/07/05	01/07/05	u
Aroclor 1221	EPA 608	5A07033	0.057	1.0	ND	0.98	01/07/05	01/07/05	see qual code ↓
Aroclor 1232	EPA 608	5A07033	0.13	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1242	EPA 608	5A07033	0.12	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1248	EPA 608	5A07033	0.21	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1254	EPA 608	5A07033	0.16	1.0	ND	0.98	01/07/05	01/07/05	
Aroclor 1260	EPA 608	5A07033	0.17	1.0	ND	0.98	01/07/05	01/07/05	
Surrogate: Decachlorobiphenyl (45-120%)					71%				

**AMEC VALIDATED**  
**LEVEL IV**

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UU	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOA0115, IOA0121, IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
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## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0115, IOA0121, IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 03, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID <sup>a</sup>	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 003 Unfiltered	IOA0115-01	8149-01	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOA0115-02	8149-02	water	900.0, 905.0, 906.0
Outfall 011	IOA0121-01	8148-01	water	900.0, 905.0, 906.0
Outfall 011 - Composite	IOA0131-01	8147-01	water	900.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were intact and in good condition.

According to the Eberline login sheet, none of the samples were received preserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As the strontium aliquot for Outfall 003 Filtered was not preserved; the nondetect strontium result was qualified as estimated, "UJ." Additionally, according to the 01/12/05 LARWQCB guidance letter, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As none of the tritium samples were submitted on glass containers, all nondetect tritium results were qualified as estimated, "UJ." No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. The original COCs for Outfall 003 did not request that an aliquot of each sample be filtered; however, the Del Mar project manager confirmed in a telephone conversation dated 1/31/05, that this was required by MWH. The original COC for Outfall 011 (SDG IOA0121) did not request that the sample containers received be analyzed for radionuclides. A memo from MWH personnel dated 2/17/05 requested these analyses. The transfer COCs accounted for all samples. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium and strontium samples were analyzed within 180 days of collection. The gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, the gross alpha and gross beta results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the nondetected alpha results were qualified as estimated, "UJ," for nondetects and "J," for detects.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable.

### Gross Beta and Strontium-90

The initial calibrations were performed in June 1997. All detector efficiencies were at least 20% and were considered acceptable. All continuing calibration results were within the laboratory control limits; therefore, no qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One blank spike (8147-002) was analyzed in association with the samples in these SDGs. All recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed a duplicate analysis on Outfall 011 Composite. The RPDs for gross beta, tritium, and strontium were  $\leq 20\%$ . The RPD for gross alpha was  $>20\%$ ; however, as the results were within the 3 sigma limit, no qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 Composite for gross alpha, gross beta and tritium. The recoveries were within both 3-sigma limits and the laboratory control limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples in these SDGs:

Eberline Services

ANALYSIS RESULTS

SDG <u>8149</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501015-01</u>	Contract <u>PROJECT# IOA0115</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 003 Unfiltered IOA0115-01	8149-001	01/04/05	01/26/05	GrossAlpha	8.96 ± 2.2	pCi/L	1.30	J	H, *2
			01/26/05	Gross Beta	10.7 ± 1.6	pCi/L	1.78	J	H
			01/27/05	H3	25.3 ± 180	pCi/L	303	UJ	*1
			01/14/05	Sr90	0.740 ± 0.25	pCi/L	0.344		
Outfall 003 Filtered IOA0115-02	8149-002	01/04/05	01/26/05	GrossAlpha	0.179 ± 0.60	pCi/L	1.15	UJ	H, *2
			01/26/05	Gross Beta	4.87 ± 1.3	pCi/L	1.76	J	H
			01/27/05	H3	-12.7 ± 180	pCi/L	302	UJ	*1
			01/14/05	Sr90	0.822 ± 0.33	pCi/L	0.420	J	*1

pm 3/4/05

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**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u><i>ng</i></u>
Report Date <u>02/13/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8148</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501014-01</u>	Contract <u>PROJECT# IOA0121</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Sample ID <u>Outfall 011</u> IOA0121-01	8148-001	01/04/05	01/26/05	GrossAlpha	1.64 ± 0.96	pCi/L	0.839	J	H, *2	
			01/26/05	Gross Beta	2.65 ± 1.2	pCi/L	1.74	J	H	
			01/27/05	H3	-93.0 ± 170	pCi/L	303	UJ	*1	
			01/14/05	Sr90	0.188 ± 0.25	pCi/L	0.456	U		

pm 3/4/05

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Report Date <u>02/13/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8147</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501013-01</u>	Contract <u>PROJECT# IOA0131</u>
Received Date <u>01/06/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
<u>Sample ID</u>	<u>Sample ID</u>								
<u>Outfall Oil Composite</u>									
IOA0131-01	8147-001	01/05/05	01/22/05	GrossAlpha	-0.671 ± 1.0	pCi/L	1.99	UJ	H,*2
			01/22/05	Gross Beta	2.37 ± 1.2	pCi/L	1.80	J	H
			01/26/05	H3	-125 ± 170	pCi/L	300	UJ	*1
			01/14/05	Sr90	0.002 ± 0.22	pCi/L	0.446	U	

PM 3/4/05

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Page 1

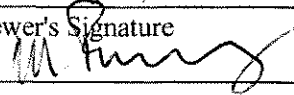


**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711SV25  
Task Order 313150010  
SDG No. IOA0131  
No. of Analyses 1

Laboratory Del Mar  
Reviewer M. Pokorny  
Analysis/Method Semivolatiles

Date: February 14, 2005  
Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were required for LCS outliers.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.	
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 14, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of 4°C ±2°C, at 4°C. The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFIPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFIPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 01/12/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 01/13/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20$ . A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.4 BLANKS

One method blank (5A10039-BLK1) was extracted and analyzed with this SDG. There were no reportable detects for the target compounds listed on the summary form. Review of the raw data indicated no reportable false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5A10039-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary,

to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples. All percent recoveries and RPDs were within the laboratory QC limits except for the recoveries of less than 10% for benzidine in both the LCS and LCSD. Benzidine was rejected, "R," in the sample of this SDG. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.



## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial and the method detection limit study. Detects below the reporting limit were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05				
Reporting Units: ug/l									REV QUAL
Acenaphthene	EPA 625	5A10039	0.10	0.50	ND	0.98	01/10/05	01/14/05	U
Acenaphthylene	EPA 625	5A10039	0.10	0.50	ND	0.98	01/10/05	01/14/05	
Aniline	EPA 625	5A10039	2.9	10	ND	0.98	01/10/05	01/14/05	
Anthracene	EPA 625	5A10039	0.083	0.50	ND	0.98	01/10/05	01/14/05	
Benzidine	EPA 625	5A10039	2.4	5.0	ND	0.98	01/10/05	01/14/05	R L2 L
Benzoic acid	EPA 625	5A10039	3.7	20	ND	0.98	01/10/05	01/14/05	U
Benzo(a)anthracene	EPA 625	5A10039	0.038	5.0	ND	0.98	01/10/05	01/14/05	
Benzo(a)pyrene	EPA 625	5A10039	0.14	2.0	ND	0.98	01/10/05	01/14/05	
Benzo(b)fluoranthene	EPA 625	5A10039	0.050	2.0	ND	0.98	01/10/05	01/14/05	
Benzo(g,h,i)perylene	EPA 625	5A10039	0.059	5.0	ND	0.98	01/10/05	01/14/05	
Benzo(k)fluoranthene	EPA 625	5A10039	0.053	0.50	ND	0.98	01/10/05	01/14/05	
Benzyl alcohol	EPA 625	5A10039	0.21	5.0	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroethoxy)methane	EPA 625	5A10039	0.072	0.50	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroethyl)ether	EPA 625	5A10039	0.084	0.50	ND	0.98	01/10/05	01/14/05	
Bis(2-chloroisopropyl)ether	EPA 625	5A10039	0.11	0.50	ND	0.98	01/10/05	01/14/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5A10039	1.1	5.0	1.2	0.98	01/10/05	01/14/05	J I DNQ
4-Bromophenyl phenyl ether	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	U
Butyl benzyl phthalate	EPA 625	5A10039	0.34	5.0	ND	0.98	01/10/05	01/14/05	
4-Chloroaniline	EPA 625	5A10039	0.20	2.0	ND	0.98	01/10/05	01/14/05	
2-Chloronaphthalene	EPA 625	5A10039	0.059	0.50	ND	0.98	01/10/05	01/14/05	
4-Chloro-3-methylphenol	EPA 625	5A10039	0.34	2.0	ND	0.98	01/10/05	01/14/05	
4-Chlorophenyl phenyl ether	EPA 625	5A10039	0.056	0.50	ND	0.98	01/10/05	01/14/05	
2-Chlorophenol	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	
Chrysene	EPA 625	5A10039	0.072	0.50	ND	0.98	01/10/05	01/14/05	
Dibenz(a,h)anthracene	EPA 625	5A10039	0.083	0.50	ND	0.98	01/10/05	01/14/05	
Dibenzofuran	EPA 625	5A10039	0.075	0.50	ND	0.98	01/10/05	01/14/05	
Di-n-butyl phthalate	EPA 625	5A10039	0.26	2.0	ND	0.98	01/10/05	01/14/05	
1,2-Dichlorobenzene	EPA 625	5A10039	0.11	0.50	ND	0.98	01/10/05	01/14/05	
1,3-Dichlorobenzene	EPA 625	5A10039	0.13	0.50	ND	0.98	01/10/05	01/14/05	
1,4-Dichlorobenzene	EPA 625	5A10039	0.050	0.50	ND	0.98	01/10/05	01/14/05	
3,3-Dichlorobenzidine	EPA 625	5A10039	0.93	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dichlorophenol	EPA 625	5A10039	0.21	2.0	ND	0.98	01/10/05	01/14/05	
Diethyl phthalate	EPA 625	5A10039	0.12	1.0	ND	0.98	01/10/05	01/14/05	
2,4-Dimethylphenol	EPA 625	5A10039	0.31	2.0	ND	0.98	01/10/05	01/14/05	
Dimethyl phthalate	EPA 625	5A10039	0.081	0.50	ND	0.98	01/10/05	01/14/05	
4,6-Dinitro-2-methylphenol	EPA 625	5A10039	0.38	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dinitrophenol	EPA 625	5A10039	2.7	5.0	ND	0.98	01/10/05	01/14/05	
2,4-Dinitrotoluene	EPA 625	5A10039	0.23	5.0	ND	0.98	01/10/05	01/14/05	
2,6-Dinitrotoluene	EPA 625	5A10039	0.24	5.0	ND	0.98	01/10/05	01/14/05	
Di-n-octyl phthalate	EPA 625	5A10039	0.17	5.0	ND	0.98	01/10/05	01/14/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A10039	0.087	1.0	ND	0.98	01/10/05	01/14/05	

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**AMEC VALIDATED**

IOA0131 <Page 11 of 14>

LEVEL IV



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05						
Reporting Units: ug/l											
Fluoranthene	EPA 625	5A10039	0.089	0.50	ND	0.98	01/10/05	01/14/05		U	
Fluorene	EPA 625	5A10039	0.075	0.50	ND	0.98	01/10/05	01/14/05			
Hexachlorobenzene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05			
Hexachlorobutadiene	EPA 625	5A10039	0.38	2.0	ND	0.98	01/10/05	01/14/05			
Hexachlorocyclopentadiene	EPA 625	5A10039	1.8	5.0	ND	0.98	01/10/05	01/14/05			
Hexachloroethane	EPA 625	5A10039	0.51	3.0	ND	0.98	01/10/05	01/14/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5A10039	0.19	2.0	ND	0.98	01/10/05	01/14/05			
Isophorone	EPA 625	5A10039	0.059	1.0	0.098	0.98	01/10/05	01/14/05		J J	DNQ
2-Methylnaphthalene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05		U	
2-Methylphenol	EPA 625	5A10039	0.28	2.0	ND	0.98	01/10/05	01/14/05			
4-Methylphenol	EPA 625	5A10039	0.20	5.0	ND	0.98	01/10/05	01/14/05			
Naphthalene	EPA 625	5A10039	0.13	1.0	ND	0.98	01/10/05	01/14/05			
2-Nitroaniline	EPA 625	5A10039	0.18	5.0	ND	0.98	01/10/05	01/14/05			
3-Nitroaniline	EPA 625	5A10039	0.35	5.0	ND	0.98	01/10/05	01/14/05			
4-Nitroaniline	EPA 625	5A10039	0.49	5.0	ND	0.98	01/10/05	01/14/05			
Nitrobenzene	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05			
2-Nitrophenol	EPA 625	5A10039	0.23	2.0	ND	0.98	01/10/05	01/14/05			
4-Nitrophenol	EPA 625	5A10039	0.73	5.0	ND	0.98	01/10/05	01/14/05			
N-Nitrosodimethylamine	EPA 625	5A10039	0.22	2.0	ND	0.98	01/10/05	01/14/05			
N-Nitroso-di-n-propylamine	EPA 625	5A10039	0.18	2.0	ND	0.98	01/10/05	01/14/05			
N-Nitrosodiphenylamine	EPA 625	5A10039	0.077	1.0	ND	0.98	01/10/05	01/14/05			
Pentachlorophenol	EPA 625	5A10039	0.78	2.0	ND	0.98	01/10/05	01/14/05			
Phenanthrene	EPA 625	5A10039	0.071	0.50	ND	0.98	01/10/05	01/14/05			
Phenol	EPA 625	5A10039	0.14	1.0	ND	0.98	01/10/05	01/14/05			
Pyrene	EPA 625	5A10039	0.059	0.50	ND	0.98	01/10/05	01/14/05			
1,2,4-Trichlorobenzene	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05			
2,4,5-Trichlorophenol	EPA 625	5A10039	0.075	2.0	ND	0.98	01/10/05	01/14/05			
2,4,6-Trichlorophenol	EPA 625	5A10039	0.10	1.0	ND	0.98	01/10/05	01/14/05			
Surrogate: 2-Fluorophenol (35-120%)											74 %
Surrogate: Phenol-d6 (45-120%)											80 %
Surrogate: 2,4,6-Tribromophenol (50-125%)											89 %
Surrogate: Nitrobenzene-d5 (45-120%)											77 %
Surrogate: 2-Fluorobiphenyl (45-120%)											82 %
Surrogate: Terphenyl-d14 (45-135%)											83 %

**AMEC VALIDATED**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

LEVEL IV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF34  
 Task Order 313150010  
 SDG No. IOA0131  
 No. of Analyses 1

Laboratory Del Mar Analytical  
 Reviewer L. Calvin  
 Analysis/Method TPH/Extractable by Method 8015M

Date: February 17, 2005
Reviewer's Signature <i>L. Calvin</i>

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative</b> <b>Deficiencies</b>	_____
2. <b>Out of Scope</b> <b>Analyses</b>	_____
3. <b>Analyses Not Conducted</b>	_____
4. <b>Missing Hardcopy</b> <b>Deliverables</b>	_____
5. <b>Incorrect Hardcopy</b> <b>Deliverables</b>	_____
6. <b>Deviations from Analysis</b> <b>Protocol, e.g.,</b> Holding Times _____ GC/MS Tune/Inst. Performance _____ Calibration _____ Method blanks _____ Surrogates _____ Matrix Spike/Dup LCS _____ Field QC _____ Internal Standard Performance _____ Compound Identification _____ Quantitation _____ System Performance _____	_____
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0121  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 17, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	8015M/EFH



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 12/21/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5A06045-BLK1) was extracted and analyzed with the sample in this SDG. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5A06045-BS1/BSD1) was extracted and analyzed with the sample in this SDG. The recoveries of alkane range C13-C40 from spiked diesel were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample was fortified with the surrogate compound n-octacosane. The sample surrogate recovery was within the laboratory-established QC of 40-125%. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the sample of this SDG. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factor on the sample result summary reflected the sample amount extracted. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <i>real time</i>  <i>qual</i>  <i>leade</i> </div>
Reporting Units: mg/l										
EFH (C13 - C22)	EPA 8015B	5A06045	0.082	0.50	ND	0.962	01/06/05	01/06/05	U	
Surrogate: n-Octacosane (40-125%)										

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF35  
 Task Order 313150010  
 SDG No. IOA0131  
 No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer L. Calvin  
 Analysis/Method TPH/GRO by Method 8015M

Date: February 17, 2005  
 Reviewer's Signature L. Calvin

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/PURGEABLE

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 17, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	8015M/GRO
Trip Blank	Trip Blank	IOA0131-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved, without headspace in the VOA vials. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/26/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5A06001-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5A06001-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.



## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140% for both samples. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. There were no field blank or equipment rinsate samples associated with this SDG. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibrations and by the laboratory MDL. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267  
 Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					<div style="border-left: 1px solid black; border-right: 1px solid black; padding: 5px;">           red qual            good         </div>
Reporting Units: mg/l										
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	u	
Surrogate: 4-BFB (FID) (65-140%)							86 %			
Sample ID: IOA0131-02 (DRAFT: Trip Blank - Water)					Sampled: 01/04/05					
Reporting Units: mg/l										
GRO (C4 - C12)	EPA 8015 Mod.	5A06001	0.050	0.10	ND	1	01/06/05	01/06/05	u	
Surrogate: 4-BFB (FID) (65-140%)							84 %			

**AMEC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

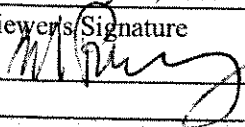
Package ID T711VO44  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 2

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles

Date: February 15, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were required for calibration outliers.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 15, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	624
Trip Blank	Trip Blank	IOA0131-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . According to the COC, the samples were received intact, without headspace, and in good condition. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals are not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation report were consistent with those specified in the EPA Method 624. All ion abundances were within the established windows and were therefore acceptable. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations, dated 11/03/04 and 01/04/05, were associated with this SDG. The average RRFs were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  for the target compounds listed on the sample summary forms. Two continuing calibrations, dated 01/07/05 (10:03 and 11:16), were associated with this SDG. The RRFs for all target compounds were  $\geq 0.05$  and the %Ds were  $\leq 20\%$  except for the %Ds for chloromethane, bromomethane, Freon 113, and chloroethane. The aforementioned compounds were qualified as estimated nondetects, "UJ," in the site sample of this SDG. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blank (5A06024-BLK1 and 5A07016-BLK1) were associated with this SDG. There were no detects for the target compounds listed on the summary forms. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5A06024-BS1 and 5A07016-BS1) were associated with this SDG. All spike recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were within the QC limits of 80-120%. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample Outfall 011 was the MS/MSD analyses performed with this SDG. All spike recoveries and RPDs were within the laboratory-established QC limits. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOA0131-02) was the trip blank associated with the site sample of this SDG. Methylene chloride was detected in the trip blank; however, methylene chloride was not reported in the sample of this SDG. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no other field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG.



## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for a subset of volatile target compounds by EPA Method 624. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted.

The laboratory analyzed for 1,2-dichloro-1,1,2-trifluorethane and cyclohexane as TICs for this SDG. 1,2-dichloro-1,1,2-trifluorethane was present in the calibration standards. Neither compound was reported either as a TIC or as a target compound in the samples of this SDG and were reported as estimated nondetects, "UJ."

No further qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by MDL study. Compound quantitation was verified by recalculating any sample detect, and/or a representative number of blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory searched for 1,2-dichloro-1,1,2-trifluorethane and cyclohexane as TICs for this SDG. Neither compound was detected as a TIC in the samples of this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	QUAL CODE
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05					
Reporting Units: ug/l										
Benzene	EPA 624	5A06024	0.28	1.0	ND	1	01/06/05	01/06/05	U	
Bromodichloromethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	U	
Bromoform	EPA 624	5A06024	0.32	5.0	ND	1	01/06/05	01/06/05	U	
Bromomethane	EPA 624	5A06024	0.34	5.0	ND	1	01/06/05	01/06/05	U	
Carbon tetrachloride	EPA 624	5A06024	0.28	0.50	ND	1	01/06/05	01/06/05	U	
Chlorobenzene	EPA 624	5A06024	0.36	2.0	ND	1	01/06/05	01/06/05	U	
Chloroethane	EPA 624	5A06024	0.33	5.0	ND	1	01/06/05	01/06/05	U	
Chloroform	EPA 624	5A06024	0.33	2.0	ND	1	01/06/05	01/06/05	U	
Chloromethane	EPA 624	5A06024	0.30	5.0	ND	1	01/06/05	01/06/05	U	
Dibromochloromethane	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05	U	
1,2-Dichlorobenzene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	U	
1,3-Dichlorobenzene	EPA 624	5A06024	0.35	2.0	ND	1	01/06/05	01/06/05	U	
1,4-Dichlorobenzene	EPA 624	5A06024	0.37	2.0	ND	1	01/06/05	01/06/05	U	
1,1-Dichloroethane	EPA 624	5A06024	0.27	2.0	ND	1	01/06/05	01/06/05	U	
1,2-Dichloroethane	EPA 624	5A06024	0.28	0.50	ND	1	01/06/05	01/06/05	U	
1,1-Dichloroethene	EPA 624	5A06024	0.32	5.0	ND	1	01/06/05	01/06/05	U	
trans-1,2-Dichloroethene	EPA 624	5A06024	0.27	2.0	ND	1	01/06/05	01/06/05	U	
1,2-Dichloropropane	EPA 624	5A06024	0.35	2.0	ND	1	01/06/05	01/06/05	U	
cis-1,3-Dichloropropene	EPA 624	5A06024	0.22	2.0	ND	1	01/06/05	01/06/05	U	
trans-1,3-Dichloropropene	EPA 624	5A06024	0.24	2.0	ND	1	01/06/05	01/06/05	U	
Ethylbenzene	EPA 624	5A06024	0.25	2.0	ND	1	01/06/05	01/06/05	U	
Methylene chloride	EPA 624	5A06024	0.48	5.0	ND	1	01/06/05	01/06/05	U	
1,1,2,2-Tetrachloroethane	EPA 624	5A06024	0.24	2.0	ND	1	01/06/05	01/06/05	U	
Tetrachloroethene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05	U	
Toluene	EPA 624	5A06024	0.36	2.0	ND	1	01/06/05	01/06/05	U	
1,1,1-Trichloroethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	U	
1,1,2-Trichloroethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05	U	
Trichloroethene	EPA 624	5A06024	0.26	2.0	ND	1	01/06/05	01/06/05	U	
Trichlorofluoromethane	EPA 624	5A06024	0.34	5.0	ND	1	01/06/05	01/06/05	U	
Vinyl chloride	EPA 624	5A06024	0.26	0.50	ND	1	01/06/05	01/06/05	U	
Xylenes, Total	EPA 624	5A06024	0.52	4.0	ND	1	01/06/05	01/06/05	U	
Surrogate: Dibromofluoromethane (80-120%)					104 %					
Surrogate: Toluene-d8 (80-120%)					102 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers	REV QUAL	QUAL CODE
Sample ID: IOA0131-02 (DRAFT: Trip Blank - Water)					Sampled: 01/04/05						
Reporting Units: ug/l											
Benzene	EPA 624	5A06024	0.23	2.0	ND	1	01/06/05	01/06/05		U	
Bromodichloromethane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05			
Bromoform	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05			
Bromomethane	EPA 624	5A06024	0.46	5.0	ND	1	01/06/05	01/06/05			
Carbon tetrachloride	EPA 624	5A06024	0.29	5.0	ND	1	01/06/05	01/06/05			
Chlorobenzene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05			
Chloroethane	EPA 624	5A06024	0.86	5.0	ND	1	01/06/05	01/06/05			
Chloroform	EPA 624	5A06024	0.23	2.0	ND	1	01/06/05	01/06/05			
Chloromethane	EPA 624	5A06024	0.44	5.0	ND	1	01/06/05	01/06/05			
Dibromochloromethane	EPA 624	5A06024	0.48	2.0	ND	1	01/06/05	01/06/05			
1,2-Dichlorobenzene	EPA 624	5A06024	0.39	2.0	ND	1	01/06/05	01/06/05			
1,3-Dichlorobenzene	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05			
1,4-Dichlorobenzene	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05			
1,1-Dichloroethane	EPA 624	5A06024	0.17	2.0	ND	1	01/06/05	01/06/05			
1,2-Dichloroethane	EPA 624	5A06024	0.43	2.0	ND	1	01/06/05	01/06/05			
1,1-Dichloroethene	EPA 624	5A06024	0.24	5.0	ND	1	01/06/05	01/06/05			
cis-1,2-Dichloroethene	EPA 624	5A06024	0.26	2.0	ND	1	01/06/05	01/06/05			
trans-1,2-Dichloroethene	EPA 624	5A06024	0.20	2.0	ND	1	01/06/05	01/06/05			
1,2-Dichloropropane	EPA 624	5A06024	0.30	2.0	ND	1	01/06/05	01/06/05			
cis-1,3-Dichloropropene	EPA 624	5A06024	0.31	2.0	ND	1	01/06/05	01/06/05			
trans-1,3-Dichloropropene	EPA 624	5A06024	0.32	2.0	ND	1	01/06/05	01/06/05			
Ethylbenzene	EPA 624	5A06024	0.31	2.0	ND	1	01/06/05	01/06/05			
Methylene chloride	EPA 624	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05			
1,1,2,2-Tetrachloroethane	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05			
Tetrachloroethene	EPA 624	5A06024	0.39	2.0	ND	1	01/06/05	01/06/05			
Toluene	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05			
1,1,1-Trichloroethane	EPA 624	5A06024	0.28	2.0	ND	1	01/06/05	01/06/05			
1,1,2-Trichloroethane	EPA 624	5A06024	0.41	2.0	ND	1	01/06/05	01/06/05			
Trichloroethene	EPA 624	5A06024	0.38	2.0	ND	1	01/06/05	01/06/05			
Trichlorofluoromethane	EPA 624	5A06024	0.37	5.0	ND	1	01/06/05	01/06/05			
Vinyl chloride	EPA 624	5A06024	0.24	5.0	ND	1	01/06/05	01/06/05			
Surrogate: Dibromofluoromethane (80-120%)					103 %						
Surrogate: Toluene-d8 (80-120%)					103 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %						

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LEVEL IV

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01-04-05

## DRAFT: FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	QUAL CODE
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05					
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05	UJ	C
Surrogate: Dibromofluoromethane (80-120%)					104 %					
Surrogate: Toluene-d8 (80-120%)					102 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					
Sample ID: IOA0131-02 (DRAFT: Trip Blank - Water)					Sampled: 01/04/05					
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A06024	1.2	5.0	ND	1	01/06/05	01/06/05	U	
Surrogate: Dibromofluoromethane (80-120%)					103 %					
Surrogate: Toluene-d8 (80-120%)					103 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %					

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers					
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05					<table border="1"> <tr> <td>REL</td> <td>QUAL</td> </tr> <tr> <td>QUAL</td> <td>CODE</td> </tr> </table>	REL	QUAL	QUAL	CODE
REL	QUAL													
QUAL	CODE													
Reporting Units: ug/l														
Acrolein	EPA 624	5A07016	4.6	50	ND	1	01/07/05	01/07/05	U					
Acrylonitrile	EPA 624	5A07016	5.1	50	ND	1	01/07/05	01/07/05	U					
2-Chloroethyl vinyl ether	EPA 624	5A07016	1.3	5.0	ND	1	01/07/05	01/07/05	U					
Surrogate: Dibromofluoromethane (80-120%)					108 %									
Surrogate: Toluene-d8 (80-120%)					103 %									
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %									

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					REV QUAL
Reporting Units: ug/l										CODE
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	UJ	*10
Cyclohexane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	UJ	*10
Sample ID: IOA0131-02 (DRAFT: Trip Blank - Water)					Sampled: 01/04/05					
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	UJ	*10
Cyclohexane	EPA 624 (MOD.)	5A06024	N/A	2.5	ND	1	01/06/05	01/06/05	UJ	*10

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

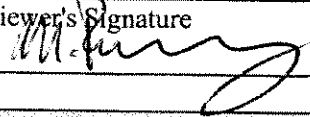
Package ID T711VO46  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles (1,4-dioxane)

Date: February 11, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
<b>1. Case Narrative Deficiencies</b>	<hr/> <hr/>
<b>2. Out of Scope Analyses</b>	<hr/> <hr/>
<b>3. Analyses Not Conducted</b>	<hr/> <hr/>
<b>4. Missing Hardcopy Deliverables</b>	<hr/> <hr/>
<b>5. Incorrect Hardcopy Deliverables</b>	<hr/> <hr/>
<b>6. Deviations from Analysis Protocol, e.g.,</b>	<hr/>
Holding Times	<hr/>
GC/MS Tune/Inst. Perform	<hr/>
Calibrations	<hr/>
Blanks	<hr/>
Surrogates	<hr/>
Matrix Spike/Dup LCS	<hr/>
Field QC	<hr/>
Internal Standard Performance	<hr/>
Compound Identification and	<hr/>
Quantitation	<hr/>
System Performance	<hr/>
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: February 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0131-01	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The sample was properly preserved. The COC noted that the sample was received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel. The COCs accounted for the analysis presented in this SDG. According to the sample login sheet, custody seals were not present on the cooler. No qualifications were required.

#### 2.1.3 Holding Times

The sample was analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the sample was analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 01/07/04, was associated with this SDG. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the %RSD was  $\leq 15\%$ . One continuing calibration, dated 01/07/05 was associated with this SDG. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The %RSD and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

### 2.4 BLANKS

One water method blank (P5A1103-BLK1) was associated with this SDG. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5A1105-BS1/BS1D) with this SDG. The recoveries and RPD for 1,4-dioxane were within the laboratory QC limits. A representative recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recovery for this sample was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample Outfall 011 was the MS/MSD analyses performed with this SDG. The recoveries and RPD for 1,4-dioxane were within the laboratory QC limits. A representative recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The sample in this SDG had no associated trip blank. No qualifications were required.

### 2.8.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the sample were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the sample and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers					
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					<table border="1"> <tr> <td>RES</td> <td>QUAL</td> </tr> <tr> <td>U</td> <td>COD</td> </tr> </table>	RES	QUAL	U	COD
RES	QUAL													
U	COD													
1,4-Dioxane	EPA 8260B	P5A.1103	0.49	1.0	ND	1	01/11/05	01/11/05	U					
Surrogate: Dibromofluoromethane (80-125%)					108 %									

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC61  
 Task Order 313150010  
 SDG No. IOA0131

No. of Analyses 1  
 Date: 02/14/05  
 Reviewer's Signature  
P. Meeks

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method General Minerals

ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not	
Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from	<u>Qualifications applied for hexavalent chromium detected in the method blank</u>
Analysis Protocol, e.g.,	<u>and detects below the reporting limits.</u>
Holding Times	
GC/MS Tune/Inst.	
Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard	
Performance	
Compound Identification	
and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

---

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

---



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS  
SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: February 14, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 218.6, 160.2, 160.5, 180.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Methods SM5540-C and SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011 Composite	IOA0131-01	water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analyses. The remaining analyses were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for biological oxygen demand, surfactants, turbidity, nitrate/nitrite, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding time were met, and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . All ICV and continuing calibration information was acceptable with %Rs within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine or total settleable solids. No qualifications were required.

### 2.3 BLANKS

Hexavalent chromium was detected in the method blank at  $0.15 \mu\text{g/L}$  and in the bracketing CCB at  $0.20 \mu\text{g/L}$ ; therefore, hexavalent chromium detected in Outfall 011 (composite) was qualified as an estimated nondetect, "UJ." The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No further qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

## **2.6 LABORATORY DUPLICATES**

A duplicate analysis was performed on Outfall 011 for chloride, fluoride, and sulfate only. The RPDs were within the laboratory-established control limit of  $\leq 20\%$ . No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on Outfall 011 for chloride, fluoride, and sulfate only. All recoveries were within the laboratory-established control limits of 80-120% and no qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculations errors were noted. MBAS was analyzed at a 10 $\times$  dilution, as the sample had formed an emulsion. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05				Rev Qual
Reporting Units: mg/l									Qual Code
Total Recoverable Hydrocarbons	EPA 418.1	5A06070	0.31	1.0	ND	1	01/06/05	01/06/05	U

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				Rev Qual	Qual Code
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5A05067	0.30	0.50	ND	1	01/05/05	01/05/05	U	
Biochemical Oxygen Demand	EPA 405.1	5A05054	0.59	2.0	1.3	1	01/05/05	01/10/05	J J	DNG
Chloride	EPA 300.0	5A05050	0.26	0.50	4.3	1	01/05/05	01/05/05		
Fluoride	EPA 300.0	5A05050	0.074	0.50	0.28	1	01/05/05	01/05/05	J J	DNG
Nitrate/Nitrite-N	EPA 300.0	5A05050	0.072	0.26	2.1	1	01/05/05	01/05/05		
Oil & Grease	EPA 413.1	5A05068	0.94	5.0	0.95	1	01/05/05	01/05/05	J J	DNG
Residual Chlorine	EPA 330.5	5A05066	0.10	0.10	ND	1	01/05/05	01/05/05	U	
Sulfate	EPA 300.0	5A05050	0.18	0.50	6.0	1	01/05/05	01/05/05		
Surfactants (MBAS)	SM5540-C	5A05099	0.44	1.0	0.46	10	01/05/05	01/05/05	J RL-1, J	DNG
Total Dissolved Solids	SM2540C	5A07084	10	10	100	1	01/07/05	01/07/05		
Total Organic Carbon	EPA 415.1	5A05058	0.56	1.0	13	1	01/05/05	01/05/05		
Total Suspended Solids	EPA 160.2	5A07077	10	10	ND	1	01/07/05	01/07/05	U	

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### LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					Per Qual
Reporting Units: ml/hr										
Total Settleable Solids	EPA 160.5	5A05055	0.10	0.10	ND	1	01/05/05	01/05/05	U	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05						
Reporting Units: NTU											
Turbidity	EPA 180.1	5A05079	0.040	1.0	24	1	01/05/05	01/05/05	<table border="1"> <tr> <td>Riv Qual</td> <td>Qual Code</td> </tr> </table>	Riv Qual	Qual Code
Riv Qual	Qual Code										

### AMEC VALIDATED

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Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					
Reporting Units: ug/l									Per Qual	Qual Code
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.16	1	01/05/05	01/05/05	UJ	B, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05	U	
Perchlorate	EPA 314.0	5A12035	0.80	4.0	ND	1	01/12/05	01/12/05	*	

\*Analysis not validated

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Sampled: 01/04/05-01/05/05  
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**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers					
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					<table border="1"> <tr> <td>Qual</td> <td>Qual</td> </tr> <tr> <td>Code</td> <td>Code</td> </tr> </table>	Qual	Qual	Code	Code
Qual	Qual													
Code	Code													
Specific Conductance	EPA 120.1	5A06081	1.0	1.0	110	1	01/06/05	01/06/05						

**AMEC VALIDATED**

**LEVEL IV**

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## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
**	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: February 17, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0131-01	water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel; however, the COC did not account for the sample and analysis presented in this SDG. A memo dated 02/16/05 from MWH personnel requested the perchlorate analysis for the sample in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in this SDG.

## 2.6 LABORATORY DUPLICATES

The MS/MSD analyses were performed on water sample Outfall 011 in association with the samples in this SDG. The RPD was within the control limits of  $\leq 20\%$ . No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The MS/MSD analyses were performed on water sample Outfall 011 in association with the samples in this SDG. The recoveries were within the control limits of 80-120%. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample result reported on the Form I was verified against the raw data. No transcription errors or calculations errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with this package.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					REV QUAL
Reporting Units: ug/l										
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.16	1	01/05/05	01/05/05		* B, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05		↓
Perchlorate	EPA 314.0	5A12035	0.80	4.0	ND	1	01/12/05	01/12/05		U

# AMEC VALIDATED

# LEVEL IV

\*Analysis Not Validated

DRAFT REPORT  
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## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analyses. The remaining analyses were requested in a memo from MWH personnel dated 02/16/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for biological oxygen demand, surfactants, turbidity, nitrate/nitrite, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding time were met, and no qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . All ICV and continuing calibration information was acceptable with %Rs within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine or total settleable solids. No qualifications were required.

### 2.3 BLANKS

Hexavalent chromium was detected in the method blank at  $0.15 \mu\text{g/L}$  and in the bracketing CCB at  $0.20 \mu\text{g/L}$ ; therefore, hexavalent chromium detected in Outfall 011 (composite) was qualified as an estimated nondetect, "UJ." The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No further qualifications were required.



## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

## **2.6 LABORATORY DUPLICATES**

A duplicate analysis was performed on Outfall 011 for chloride, fluoride, and sulfate only. The RPDs were within the laboratory-established control limit of  $\leq 20\%$ . No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on Outfall 011 for chloride, fluoride, and sulfate only. All recoveries were within the laboratory-established control limits of 80-120% and no qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculations errors were noted. MBAS was analyzed at a 10 $\times$  dilution, as the sample had formed an emulsion. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water)					Sampled: 01/05/05				Rev Qual
Reporting Units: mg/l									Qual Code
Total Recoverable Hydrocarbons	EPA 418.1	5A06070	0.31	1.0	ND	1	01/06/05	01/06/05	U

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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05				Rev Qual	Qual Code
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5A05067	0.30	0.50	ND	1	01/05/05	01/05/05	U	
Biochemical Oxygen Demand	EPA 405.1	5A05054	0.59	2.0	1.3	1	01/05/05	01/10/05	J J	DNG
Chloride	EPA 300.0	5A05050	0.26	0.50	4.3	1	01/05/05	01/05/05		
Fluoride	EPA 300.0	5A05050	0.074	0.50	0.28	1	01/05/05	01/05/05	J J	DNG
Nitrate/Nitrite-N	EPA 300.0	5A05050	0.072	0.26	2.1	1	01/05/05	01/05/05		
Oil & Grease	EPA 413.1	5A05068	0.94	5.0	0.95	1	01/05/05	01/05/05	J J	DNG
Residual Chlorine	EPA 330.5	5A05066	0.10	0.10	ND	1	01/05/05	01/05/05	U	
Sulfate	EPA 300.0	5A05050	0.18	0.50	6.0	1	01/05/05	01/05/05		
Surfactants (MBAS)	SM5540-C	5A05099	0.44	1.0	0.46	10	01/05/05	01/05/05	J RL-1, J	DNG
Total Dissolved Solids	SM2540C	5A07084	10	10	100	1	01/07/05	01/07/05		
Total Organic Carbon	EPA 415.1	5A05058	0.56	1.0	13	1	01/05/05	01/05/05		
Total Suspended Solids	EPA 160.2	5A07077	10	10	ND	1	01/07/05	01/07/05	U	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					Per Qual
Reporting Units: ml/hr										
Total Settleable Solids	EPA 160.5	5A05055	0.10	0.10	ND	1	01/05/05	01/05/05	U	

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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers		
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05						
Reporting Units: NTU											
Turbidity	EPA 180.1	5A05079	0.040	1.0	24	1	01/05/05	01/05/05	<table border="1"> <tr> <td>Riv Qual</td> <td>Qual Code</td> </tr> </table>	Riv Qual	Qual Code
Riv Qual	Qual Code										

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### LEVEL IV

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					
Reporting Units: ug/l									Per Qual	Qual Code
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.16	1	01/05/05	01/05/05	UJ	B, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05	U	
Perchlorate	EPA 314.0	5A12035	0.80	4.0	ND	1	01/12/05	01/12/05	*	

\*Analysis not validated

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers					
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					<table border="1"> <tr> <td>Qual</td> <td>Qual</td> </tr> <tr> <td>Code</td> <td>Code</td> </tr> </table>	Qual	Qual	Code	Code
Qual	Qual													
Code	Code													
Specific Conductance	EPA 120.1	5A06081	1.0	1.0	110	1	01/06/05	01/06/05						

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## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
**	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section I, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOA0131

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0131  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: February 17, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0131-01	water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel; however, the COC did not account for the sample and analysis presented in this SDG. A memo dated 02/16/05 from MWH personnel requested the perchlorate analysis for the sample in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in this SDG.

## 2.6 LABORATORY DUPLICATES

The MS/MSD analyses were performed on water sample Outfall 011 in association with the samples in this SDG. The RPD was within the control limits of  $\leq 20\%$ . No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The MS/MSD analyses were performed on water sample Outfall 011 in association with the samples in this SDG. The recoveries were within the control limits of 80-120%. No qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample result reported on the Form I was verified against the raw data. No transcription errors or calculations errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with this package.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 011 + 13267

Report Number: IOA0131

Sampled: 01/04/05-01/05/05  
 Received: 01/04/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOA0131-01 (DRAFT: Outfall 011 - composite - Water) - cont.					Sampled: 01/05/05					REV QUAL
Reporting Units: ug/l										
Chromium VI	EPA 218.6	5A05064	0.041	1.0	0.16	1	01/05/05	01/05/05		* B, J
Total Cyanide	EPA 335.2	5A05078	2.2	5.0	ND	1	01/05/05	01/05/05		↓
Perchlorate	EPA 314.0	5A12035	0.80	4.0	ND	1	01/12/05	01/12/05		U

# AMEC VALIDATED

# LEVEL IV

*\*Analysis Not Validated*

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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# **APPENDIX A**

## **Section 37**

Outfall 011, January 11, 2005

Del Mar Analytical Laboratory Report



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: Outfall 011

Sampled: 01/11/05-01/12/05  
Received: 01/11/05  
Issued: 03/09/05 19:55

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOA0567-01	Outfall 011 - composite	Water
IOA0567-02	Trip Blank	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

## CORRECTIVE ACTION REPORT

Department: Extractions

Date: 01/18/2005

Method: EPA 625

Matrix: Water

QC Batch: 5A13038

### Identification and Definition of Problem:

The percent recoveries for benzidine in the LCS and LCSD were below method acceptance limits.

### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:



Dave Dawes

Date: 01/31/2005 11:56 AM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5A12075	N/A	1.0	ND	1	01/12/05	01/12/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5A13035	N/A	0.50	ND	0.99	01/13/05	01/13/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					65 %				

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A13005	N/A	0.10	ND	1	01/13/05	01/13/05	
Surrogate: 4-BFB (FID) (65-140%)					93 %				
<b>Sample ID: IOA0567-02 (Trip Blank - Water)</b>					<b>Sampled: 01/11/05</b>				
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5A13005	N/A	0.10	ND	1	01/13/05	01/13/05	
Surrogate: 4-BFB (FID) (65-140%)					94 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					102 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					101 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					96 %				
<b>Sample ID: IOA0567-02 (Trip Blank - Water)</b>					<b>Sampled: 01/11/05</b>				
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					98 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					100 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					98 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5A13008	N/A	1.0	ND	1	01/13/05	01/13/05	
Bromodichloromethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Bromoform	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
Bromomethane	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
Carbon tetrachloride	EPA 624	5A13008	N/A	0.50	ND	1	01/13/05	01/13/05	
Chlorobenzene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Chloroethane	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
Chloroform	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Chloromethane	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
Dibromochloromethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,2-Dichlorobenzene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,3-Dichlorobenzene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,4-Dichlorobenzene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,1-Dichloroethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,2-Dichloroethane	EPA 624	5A13008	N/A	0.50	ND	1	01/13/05	01/13/05	
1,1-Dichloroethene	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
trans-1,2-Dichloroethene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,2-Dichloropropane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
cis-1,3-Dichloropropene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
trans-1,3-Dichloropropene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Ethylbenzene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Methylene chloride	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Tetrachloroethene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Toluene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,1,1-Trichloroethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
1,1,2-Trichloroethane	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Trichloroethene	EPA 624	5A13008	N/A	2.0	ND	1	01/13/05	01/13/05	
Trichlorofluoromethane	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
Vinyl chloride	EPA 624	5A13008	N/A	0.50	ND	1	01/13/05	01/13/05	
Xylenes, Total	EPA 624	5A13008	N/A	4.0	ND	1	01/13/05	01/13/05	
Surrogate: Dibromofluoromethane (80-120%)					102 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

**Del Mar Analytical, Irvine**  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-02 (Trip Blank - Water)</b>					<b>Sampled: 01/11/05</b>				
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5A12019	N/A	1.0	ND	1	01/12/05	01/12/05	
Bromodichloromethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Bromoform	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
Bromomethane	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
Carbon tetrachloride	EPA 624	5A12019	N/A	0.50	ND	1	01/12/05	01/12/05	
Chlorobenzene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Chloroethane	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
Chloroform	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Chloromethane	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
Dibromochloromethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichlorobenzene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,3-Dichlorobenzene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,4-Dichlorobenzene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,1-Dichloroethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloroethane	EPA 624	5A12019	N/A	0.50	ND	1	01/12/05	01/12/05	
1,1-Dichloroethene	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
trans-1,2-Dichloroethene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloropropane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
cis-1,3-Dichloropropene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
trans-1,3-Dichloropropene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Ethylbenzene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Methylene chloride	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Tetrachloroethene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Toluene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,1,1-Trichloroethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
1,1,2-Trichloroethane	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Trichloroethene	EPA 624	5A12019	N/A	2.0	ND	1	01/12/05	01/12/05	
Trichlorofluoromethane	EPA 624	5A12019	N/A	5.0	ND	1	01/12/05	01/12/05	
Vinyl chloride	EPA 624	5A12019	N/A	0.50	ND	1	01/12/05	01/12/05	
Xylenes, Total	EPA 624	5A12019	N/A	4.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)					98 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Acrolein	EPA 624	5A13008	N/A	50	ND	1	01/13/05	01/13/05	
Acrylonitrile	EPA 624	5A13008	N/A	50	ND	1	01/13/05	01/13/05	
2-Chloroethyl vinyl ether	EPA 624	5A13008	N/A	5.0	ND	1	01/13/05	01/13/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					102 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					101 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					96 %				

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A13008	N/A	2.5	ND	1	01/13/05	01/13/05	
Cyclohexane	EPA 624 (MOD.)	5A13008	N/A	2.5	ND	1	01/13/05	01/13/05	
<b>Sample ID: IOA0567-02 (Trip Blank - Water)</b>					<b>Sampled: 01/11/05</b>				
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A12019	N/A	2.5	ND	1	01/12/05	01/12/05	
Cyclohexane	EPA 624 (MOD.)	5A12019	N/A	2.5	ND	1	01/12/05	01/12/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water)</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5A13038	N/A	0.50	11	1	01/13/05	01/18/05	
Acenaphthylene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Aniline	EPA 625	5A13038	N/A	10	ND	1	01/13/05	01/18/05	
Anthracene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Benzidine	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Benzoic acid	EPA 625	5A13038	N/A	20	ND	1	01/13/05	01/18/05	
Benzo(a)anthracene	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Benzo(a)pyrene	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Benzo(b)fluoranthene	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Benzo(g,h,i)perylene	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Benzo(k)fluoranthene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Benzyl alcohol	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Bis(2-chloroethoxy)methane	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Bis(2-chloroethyl)ether	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Bis(2-chloroisopropyl)ether	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
4-Bromophenyl phenyl ether	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Butyl benzyl phthalate	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
4-Chloroaniline	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
2-Chloronaphthalene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
4-Chloro-3-methylphenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
4-Chlorophenyl phenyl ether	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
2-Chlorophenol	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Chrysene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Dibenz(a,h)anthracene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Dibenzofuran	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
Di-n-butyl phthalate	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
1,2-Dichlorobenzene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
1,3-Dichlorobenzene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
1,4-Dichlorobenzene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
3,3-Dichlorobenzidine	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
2,4-Dichlorophenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Diethyl phthalate	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
2,4-Dimethylphenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Dimethyl phthalate	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
4,6-Dinitro-2-methylphenol	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
2,4-Dinitrophenol	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
2,4-Dinitrotoluene	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
2,6-Dinitrotoluene	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Di-n-octyl phthalate	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									
Fluoranthene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
<b>Fluorene</b>	EPA 625	5A13038	N/A	0.50	<b>4.7</b>	1	01/13/05	01/18/05	
Hexachlorobenzene	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Hexachlorobutadiene	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Hexachlorocyclopentadiene	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Hexachloroethane	EPA 625	5A13038	N/A	3.0	ND	1	01/13/05	01/18/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
Isophorone	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
<b>2-Methylnaphthalene</b>	EPA 625	5A13038	N/A	1.0	<b>9.5</b>	1	01/13/05	01/18/05	
2-Methylphenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
4-Methylphenol	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
<b>Naphthalene</b>	EPA 625	5A13038	N/A	1.0	<b>8.3</b>	1	01/13/05	01/18/05	
2-Nitroaniline	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
3-Nitroaniline	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
4-Nitroaniline	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
Nitrobenzene	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
2-Nitrophenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
4-Nitrophenol	EPA 625	5A13038	N/A	5.0	ND	1	01/13/05	01/18/05	
N-Nitrosodimethylamine	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
N-Nitroso-di-n-propylamine	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
N-Nitrosodiphenylamine	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Pentachlorophenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
<b>Phenanthrene</b>	EPA 625	5A13038	N/A	0.50	<b>0.98</b>	1	01/13/05	01/18/05	
Phenol	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Pyrene	EPA 625	5A13038	N/A	0.50	ND	1	01/13/05	01/18/05	
1,2,4-Trichlorobenzene	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
2,4,5-Trichlorophenol	EPA 625	5A13038	N/A	2.0	ND	1	01/13/05	01/18/05	
2,4,6-Trichlorophenol	EPA 625	5A13038	N/A	1.0	ND	1	01/13/05	01/18/05	
Surrogate: 2-Fluorophenol (35-120%)					66 %				
Surrogate: Phenol-d6 (45-120%)					69 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					78 %				
Surrogate: Nitrobenzene-d5 (45-120%)					69 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					74 %				
Surrogate: Terphenyl-d14 (45-135%)					74 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									
Aldrin	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
alpha-BHC	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
beta-BHC	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
delta-BHC	EPA 608	5A13049	N/A	0.20	ND	1	01/13/05	01/13/05	
gamma-BHC (Lindane)	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Chlordane	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/13/05	
4,4'-DDD	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
4,4'-DDE	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
4,4'-DDT	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Dieldrin	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Endosulfan I	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Endosulfan II	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Endosulfan sulfate	EPA 608	5A13049	N/A	0.20	ND	1	01/13/05	01/13/05	
Endrin	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Endrin aldehyde	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Endrin ketone	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Heptachlor	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Heptachlor epoxide	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Methoxychlor	EPA 608	5A13049	N/A	0.10	ND	1	01/13/05	01/13/05	
Toxaphene	EPA 608	5A13049	N/A	5.0	ND	1	01/13/05	01/13/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					50 %				
Surrogate: Decachlorobiphenyl (45-120%)					66 %				

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 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1221	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1232	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1242	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1248	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1254	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1260	EPA 608	5A13049	N/A	1.0	ND	1	01/13/05	01/14/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					64 %				

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 Received: 01/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: mg/l									
Barium	EPA 200.8	5A13044	N/A	0.0010	0.018	1	01/13/05	01/13/05	
Boron	EPA 200.7	5A13042	N/A	0.050	0.069	1	01/13/05	01/13/05	
Iron	EPA 200.8	5A13044	N/A	0.010	1.0	1	01/13/05	01/13/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Antimony	EPA 200.8	5A13044	N/A	2.0	ND	1	01/13/05	01/13/05	
Arsenic	EPA 200.8	5A13044	N/A	1.0	1.8	1	01/13/05	01/13/05	
Beryllium	EPA 200.8	5A13044	N/A	0.50	ND	1	01/13/05	01/13/05	
Cadmium	EPA 200.8	5A13044	N/A	1.0	ND	1	01/13/05	01/13/05	B
Chromium	EPA 200.8	5A13044	N/A	1.0	2.2	1	01/13/05	01/13/05	B
Cobalt	EPA 200.8	5A13044	N/A	1.0	ND	1	01/13/05	01/13/05	
Copper	EPA 200.8	5A13044	N/A	2.0	7.2	1	01/13/05	01/13/05	
Lead	EPA 200.8	5A13044	N/A	1.0	ND	1	01/13/05	01/13/05	
Manganese	EPA 200.8	5A13044	N/A	1.0	15	1	01/13/05	01/13/05	
Mercury	EPA 245.1	5A13050	N/A	0.20	ND	1	01/13/05	01/13/05	
Nickel	EPA 200.8	5A13044	N/A	1.0	2.4	1	01/13/05	01/13/05	
Selenium	EPA 200.8	5A13044	N/A	2.0	ND	1	01/13/05	01/13/05	
Silver	EPA 200.8	5A13044	N/A	1.0	ND	1	01/13/05	01/13/05	
Thallium	EPA 200.8	5A13044	N/A	1.0	ND	1	01/13/05	01/13/05	
Vanadium	EPA 200.8	5A13044	N/A	1.0	2.7	1	01/13/05	01/13/05	
Zinc	EPA 200.8	5A13044	N/A	20	21	1	01/13/05	01/13/05	

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 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5A13063	N/A	0.50	ND	1	01/13/05	01/13/05	
Biochemical Oxygen Demand	EPA 405.1	5A12041	N/A	2.0	ND	1	01/12/05	01/17/05	
<b>Chloride</b>	EPA 300.0	5A12036	N/A	0.50	<b>3.6</b>	1	01/12/05	01/12/05	
Fluoride	EPA 300.0	5A12036	N/A	0.50	ND	1	01/12/05	01/12/05	
Nitrate/Nitrite-N	EPA 300.0	5A12036	N/A	0.26	<b>0.92</b>	1	01/12/05	01/12/05	
<b>Oil &amp; Grease</b>	EPA 413.1	5A13065	N/A	5.0	<b>43</b>	1	01/13/05	01/13/05	
Residual Chlorine	EPA 330.5	5A12045	N/A	0.10	ND	1	01/12/05	01/12/05	
<b>Sulfate</b>	EPA 300.0	5A12036	N/A	0.50	<b>4.7</b>	1	01/12/05	01/12/05	
Surfactants (MBAS)	SM5540-C	5A12059	N/A	0.10	ND	1	01/12/05	01/12/05	
<b>Total Dissolved Solids</b>	SM2540C	5A13089	N/A	10	<b>99</b>	1	01/13/05	01/13/05	
<b>Total Organic Carbon</b>	EPA 415.1	5A13053	N/A	1.0	<b>9.2</b>	1	01/12/05	01/12/05	
Total Suspended Solids	EPA 160.2	5A17060	N/A	10	ND	1	01/17/05	01/17/05	

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 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5A12043	N/A	0.10	ND	1	01/12/05	01/12/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: NTU									
Turbidity	EPA 180.1	5A13082	N/A	1.0	18	1	01/13/05	01/13/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5A12034	N/A	1.0	ND	1	01/12/05	01/12/05	
Total Cyanide	EPA 335.2	5A18093	N/A	5.0	ND	1	01/18/05	01/19/05	M2
Perchlorate	EPA 314.0	5A13051	N/A	4.0	ND	1	01/13/05	01/13/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.</b>					<b>Sampled: 01/12/05</b>				
<b>Reporting Units: umhos/cm</b>									
Specific Conductance	EPA 120.1	5A14087	N/A	1.0	94	1	01/14/05	01/14/05	

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Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (Outfall 011 - composite - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5A1502	0.49	1.0	ND	1	01/15/05	01/15/05	
Surrogate: Dibromofluoromethane (80-125%)					105 %				

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Sampled: 01/11/05-01/12/05  
Received: 01/11/05

**SHORT HOLD TIME DETAIL REPORT**

Sample ID: Outfall 011 - composite (IOA0567-01) - Water	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
EPA 160.5	2	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 13:00	01/12/2005 15:20
EPA 180.1	2	01/12/2005 13:00	01/11/2005 18:50	01/13/2005 12:30	01/13/2005 13:30
EPA 218.6	1	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 16:00	01/12/2005 16:08
EPA 300.0	2	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 16:30	01/12/2005 17:08
EPA 330.5	1	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 13:30	01/12/2005 13:40
EPA 405.1	2	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 19:00	01/17/2005 20:00
EPA 624	3	01/12/2005 13:00	01/11/2005 18:50	01/13/2005 00:00	01/13/2005 15:39
SM5540-C	2	01/12/2005 13:00	01/11/2005 18:50	01/12/2005 13:06	01/12/2005 20:16

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Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12075 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12075-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	N/A	mg/l							
<b>LCS Analyzed: 01/12/2005 (5A12075-BS1)</b>											
Total Recoverable Hydrocarbons	4.64	1.0	N/A	mg/l	5.00		93	65-120			M-NR1
<b>LCS Dup Analyzed: 01/12/2005 (5A12075-BSD1)</b>											
Total Recoverable Hydrocarbons	4.99	1.0	N/A	mg/l	5.00		100	65-120	7	20	

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METHOD BLANK/QC DATA

EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13035 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/14/2005 (5A13035-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	N/A	mg/l							
EFH (C13 - C40)	ND	0.50	N/A	mg/l							
Surrogate: n-Octacosane	0.143			mg/l	0.200		72	40-125			
<b>LCS Analyzed: 01/14/2005 (5A13035-BS1)</b>											
EFH (C13 - C40)	0.651	0.50	N/A	mg/l	0.775		84	40-120			
Surrogate: n-Octacosane	0.151			mg/l	0.200		75	40-125			
<b>Matrix Spike Analyzed: 01/14/2005 (5A13035-MS1)</b>											
						<b>Source: IOA0635-03</b>					
EFH (C13 - C40)	0.647	0.50	N/A	mg/l	0.731	ND	89	40-120			
Surrogate: n-Octacosane	0.151			mg/l	0.189		80	40-125			
<b>Matrix Spike Dup Analyzed: 01/14/2005 (5A13035-MSD1)</b>											
						<b>Source: IOA0635-03</b>					
EFH (C13 - C40)	0.456	0.50	N/A	mg/l	0.731	ND	62	40-120	35	30	R-2
Surrogate: n-Octacosane	0.103			mg/l	0.189		54	40-125			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13005 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13005-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	N/A	mg/l							
Surrogate: 4-BFB (FID)	0.00936			mg/l	0.0100		94	65-140			
<b>LCS Analyzed: 01/13/2005 (5A13005-BS1)</b>											
GRO (C4 - C12)	0.230	0.10	N/A	mg/l	0.220		105	70-140			
Surrogate: 4-BFB (FID)	0.0119			mg/l	0.0100		119	65-140			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13005-MS1)</b>											
						<b>Source: IOA0425-01</b>					
GRO (C4 - C12)	0.251	0.10	N/A	mg/l	0.220	ND	114	60-140			
Surrogate: 4-BFB (FID)	0.0120			mg/l	0.0100		120	65-140			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13005-MSD1)</b>											
						<b>Source: IOA0425-01</b>					
GRO (C4 - C12)	0.249	0.10	N/A	mg/l	0.220	ND	113	60-140	1	20	
Surrogate: 4-BFB (FID)	0.0116			mg/l	0.0100		116	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12019 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12019-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	N/A	ug/l							
Surrogate: Dibromofluoromethane	24.7			ug/l	25.0		99	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13008-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	N/A	ug/l							
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96	80-120			

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METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12019 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12019-BLK1)</b>											
1,2,3-Trichloropropane	ND	10	N/A	ug/l							
Benzene	ND	1.0	N/A	ug/l							
Bromodichloromethane	ND	2.0	N/A	ug/l							
Bromoform	ND	5.0	N/A	ug/l							
Bromomethane	ND	5.0	N/A	ug/l							
Carbon tetrachloride	ND	0.50	N/A	ug/l							
Chlorobenzene	ND	2.0	N/A	ug/l							
Chloroethane	ND	5.0	N/A	ug/l							
Chloroform	ND	2.0	N/A	ug/l							
Chloromethane	ND	5.0	N/A	ug/l							
Dibromochloromethane	ND	2.0	N/A	ug/l							
1,2-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,3-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,4-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,1-Dichloroethane	ND	2.0	N/A	ug/l							
1,2-Dichloroethane	ND	0.50	N/A	ug/l							
1,1-Dichloroethene	ND	5.0	N/A	ug/l							
trans-1,2-Dichloroethene	ND	2.0	N/A	ug/l							
1,2-Dichloropropane	ND	2.0	N/A	ug/l							
cis-1,3-Dichloropropene	ND	2.0	N/A	ug/l							
trans-1,3-Dichloropropene	ND	2.0	N/A	ug/l							
Ethylbenzene	ND	2.0	N/A	ug/l							
Methylene chloride	ND	5.0	N/A	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	N/A	ug/l							
Tetrachloroethene	ND	2.0	N/A	ug/l							
Toluene	ND	2.0	N/A	ug/l							
1,1,1-Trichloroethane	ND	2.0	N/A	ug/l							
1,1,2-Trichloroethane	ND	2.0	N/A	ug/l							
Trichloroethene	ND	2.0	N/A	ug/l							
Trichlorofluoromethane	ND	5.0	N/A	ug/l							
Vinyl chloride	ND	0.50	N/A	ug/l							
Xylenes, Total	ND	4.0	N/A	ug/l							
Surrogate: Dibromofluoromethane	24.7			ug/l	25.0		99	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12019 Extracted: 01/12/05</b>										
<b>LCS Analyzed: 01/12/2005 (5A12019-BS1)</b>										
Benzene	23.4	1.0	N/A	ug/l	25.0		94 70-120			
Bromodichloromethane	26.4	2.0	N/A	ug/l	25.0		106 70-140			
Bromoform	25.2	5.0	N/A	ug/l	25.0		101 55-135			
Bromomethane	29.0	5.0	N/A	ug/l	25.0		116 60-140			
Carbon tetrachloride	28.8	0.50	N/A	ug/l	25.0		115 70-140			
Chlorobenzene	25.5	2.0	N/A	ug/l	25.0		102 80-125			
Chloroethane	26.8	5.0	N/A	ug/l	25.0		107 60-145			
Chloroform	24.9	2.0	N/A	ug/l	25.0		100 75-130			
Chloromethane	24.5	5.0	N/A	ug/l	25.0		98 40-145			
Dibromochloromethane	26.2	2.0	N/A	ug/l	25.0		105 65-145			
1,2-Dichlorobenzene	25.9	2.0	N/A	ug/l	25.0		104 80-120			
1,3-Dichlorobenzene	24.9	2.0	N/A	ug/l	25.0		100 80-120			
1,4-Dichlorobenzene	24.6	2.0	N/A	ug/l	25.0		98 80-120			
1,1-Dichloroethane	24.4	2.0	N/A	ug/l	25.0		98 70-135			
1,2-Dichloroethane	26.6	0.50	N/A	ug/l	25.0		106 60-150			
1,1-Dichloroethene	25.0	5.0	N/A	ug/l	25.0		100 75-135			
trans-1,2-Dichloroethene	25.9	2.0	N/A	ug/l	25.0		104 70-130			
1,2-Dichloropropane	24.7	2.0	N/A	ug/l	25.0		99 70-120			
cis-1,3-Dichloropropene	26.9	2.0	N/A	ug/l	25.0		108 75-130			
trans-1,3-Dichloropropene	26.9	2.0	N/A	ug/l	25.0		108 75-135			
Ethylbenzene	26.6	2.0	N/A	ug/l	25.0		106 80-120			
Methylene chloride	26.1	5.0	N/A	ug/l	25.0		104 60-135			
1,1,2,2-Tetrachloroethane	22.3	2.0	N/A	ug/l	25.0		89 60-135			
Tetrachloroethene	26.9	2.0	N/A	ug/l	25.0		108 75-125			
Toluene	24.6	2.0	N/A	ug/l	25.0		98 75-120			
1,1,1-Trichloroethane	28.4	2.0	N/A	ug/l	25.0		114 75-140			
1,1,2-Trichloroethane	24.6	2.0	N/A	ug/l	25.0		98 70-125			
Trichloroethene	25.2	2.0	N/A	ug/l	25.0		101 80-120			
Trichlorofluoromethane	29.3	5.0	N/A	ug/l	25.0		117 65-145			
Vinyl chloride	23.7	0.50	N/A	ug/l	25.0		95 50-130			
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97 80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100 80-120			
Surrogate: 4-Bromofluorobenzene	25.0			ug/l	25.0		100 80-120			

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12019 Extracted: 01/12/05</b>											
<b>Matrix Spike Analyzed: 01/12/2005 (5A12019-MS1)</b>											
<b>Source: IOA0503-01</b>											
Benzene	24.5	1.0	N/A	ug/l	25.0	ND	98	70-120			
Bromodichloromethane	27.5	2.0	N/A	ug/l	25.0	ND	110	70-140			
Bromoform	24.0	5.0	N/A	ug/l	25.0	ND	96	55-140			
Bromomethane	30.7	5.0	N/A	ug/l	25.0	ND	123	50-145			
Carbon tetrachloride	30.7	0.50	N/A	ug/l	25.0	ND	123	70-145			
Chlorobenzene	26.9	2.0	N/A	ug/l	25.0	ND	108	80-125			
Chloroethane	28.5	5.0	N/A	ug/l	25.0	ND	114	50-145			
Chloroform	26.6	2.0	N/A	ug/l	25.0	ND	106	70-135			
Chloromethane	25.7	5.0	N/A	ug/l	25.0	ND	103	35-145			
Dibromochloromethane	26.1	2.0	N/A	ug/l	25.0	ND	104	65-145			
1,2-Dichlorobenzene	26.5	2.0	N/A	ug/l	25.0	ND	106	75-130			
1,3-Dichlorobenzene	25.7	2.0	N/A	ug/l	25.0	ND	103	75-130			
1,4-Dichlorobenzene	25.5	2.0	N/A	ug/l	25.0	ND	102	80-120			
1,1-Dichloroethane	25.9	2.0	N/A	ug/l	25.0	ND	104	65-135			
1,2-Dichloroethane	26.9	0.50	N/A	ug/l	25.0	ND	108	60-150			
1,1-Dichloroethene	26.3	5.0	N/A	ug/l	25.0	ND	105	65-140			
trans-1,2-Dichloroethene	27.3	2.0	N/A	ug/l	25.0	ND	109	65-135			
1,2-Dichloropropane	25.7	2.0	N/A	ug/l	25.0	ND	103	65-130			
cis-1,3-Dichloropropene	27.3	2.0	N/A	ug/l	25.0	ND	109	70-140			
trans-1,3-Dichloropropene	27.0	2.0	N/A	ug/l	25.0	ND	108	70-140			
Ethylbenzene	27.8	2.0	N/A	ug/l	25.0	ND	111	70-130			
Methylene chloride	27.0	5.0	N/A	ug/l	25.0	ND	108	60-135			
1,1,2,2-Tetrachloroethane	21.5	2.0	N/A	ug/l	25.0	ND	86	60-145			
Tetrachloroethene	27.9	2.0	N/A	ug/l	25.0	ND	112	70-130			
Toluene	25.8	2.0	N/A	ug/l	25.0	ND	103	70-120			
1,1,1-Trichloroethane	30.4	2.0	N/A	ug/l	25.0	ND	122	75-140			
1,1,2-Trichloroethane	24.2	2.0	N/A	ug/l	25.0	ND	97	60-135			
Trichloroethene	26.4	2.0	N/A	ug/l	25.0	ND	106	70-125			
Trichlorofluoromethane	31.2	5.0	N/A	ug/l	25.0	ND	125	55-145			
Vinyl chloride	24.9	0.50	N/A	ug/l	25.0	ND	100	40-135			
Surrogate: Dibromofluoromethane	24.6			ug/l	25.0		98	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12019 Extracted: 01/12/05</b>											
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12019-MSD1)</b>						<b>Source: IOA0503-01</b>					
Benzene	24.0	1.0	N/A	ug/l	25.0	ND	96	70-120	2	20	
Bromodichloromethane	27.1	2.0	N/A	ug/l	25.0	ND	108	70-140	1	20	
Bromoform	27.6	5.0	N/A	ug/l	25.0	ND	110	55-140	14	25	
Bromomethane	29.8	5.0	N/A	ug/l	25.0	ND	119	50-145	3	25	
Carbon tetrachloride	29.9	0.50	N/A	ug/l	25.0	ND	120	70-145	3	25	
Chlorobenzene	26.4	2.0	N/A	ug/l	25.0	ND	106	80-125	2	20	
Chloroethane	28.1	5.0	N/A	ug/l	25.0	ND	112	50-145	1	25	
Chloroform	25.9	2.0	N/A	ug/l	25.0	ND	104	70-135	3	20	
Chloromethane	25.8	5.0	N/A	ug/l	25.0	ND	103	35-145	0	25	
Dibromochloromethane	28.2	2.0	N/A	ug/l	25.0	ND	113	65-145	8	25	
1,2-Dichlorobenzene	26.4	2.0	N/A	ug/l	25.0	ND	106	75-130	0	20	
1,3-Dichlorobenzene	25.1	2.0	N/A	ug/l	25.0	ND	100	75-130	2	20	
1,4-Dichlorobenzene	24.9	2.0	N/A	ug/l	25.0	ND	100	80-120	2	20	
1,1-Dichloroethane	25.3	2.0	N/A	ug/l	25.0	ND	101	65-135	2	20	
1,2-Dichloroethane	27.8	0.50	N/A	ug/l	25.0	ND	111	60-150	3	20	
1,1-Dichloroethene	25.8	5.0	N/A	ug/l	25.0	ND	103	65-140	2	20	
trans-1,2-Dichloroethene	27.0	2.0	N/A	ug/l	25.0	ND	108	65-135	1	20	
1,2-Dichloropropane	25.6	2.0	N/A	ug/l	25.0	ND	102	65-130	0	20	
cis-1,3-Dichloropropene	27.4	2.0	N/A	ug/l	25.0	ND	110	70-140	0	20	
trans-1,3-Dichloropropene	28.3	2.0	N/A	ug/l	25.0	ND	113	70-140	5	25	
Ethylbenzene	27.2	2.0	N/A	ug/l	25.0	ND	109	70-130	2	20	
Methylene chloride	26.4	5.0	N/A	ug/l	25.0	ND	106	60-135	2	20	
1,1,2,2-Tetrachloroethane	25.4	2.0	N/A	ug/l	25.0	ND	102	60-145	17	30	
Tetrachloroethene	27.5	2.0	N/A	ug/l	25.0	ND	110	70-130	1	20	
Toluene	25.3	2.0	N/A	ug/l	25.0	ND	101	70-120	2	20	
1,1,1-Trichloroethane	29.2	2.0	N/A	ug/l	25.0	ND	117	75-140	4	20	
1,1,2-Trichloroethane	26.0	2.0	N/A	ug/l	25.0	ND	104	60-135	7	25	
Trichloroethene	25.8	2.0	N/A	ug/l	25.0	ND	103	70-125	2	20	
Trichlorofluoromethane	30.5	5.0	N/A	ug/l	25.0	ND	122	55-145	2	25	
Vinyl chloride	24.5	0.50	N/A	ug/l	25.0	ND	98	40-135	2	30	
Surrogate: Dibromofluoromethane	24.7			ug/l	25.0		99	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13008-BLK1)</b>											
Benzene	ND	1.0	N/A	ug/l							
Bromodichloromethane	ND	2.0	N/A	ug/l							
Bromoform	ND	5.0	N/A	ug/l							
Bromomethane	ND	5.0	N/A	ug/l							
Carbon tetrachloride	ND	0.50	N/A	ug/l							
Chlorobenzene	ND	2.0	N/A	ug/l							
Chloroethane	ND	5.0	N/A	ug/l							
Chloroform	ND	2.0	N/A	ug/l							
Chloromethane	ND	5.0	N/A	ug/l							
Dibromochloromethane	ND	2.0	N/A	ug/l							
1,2-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,3-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,4-Dichlorobenzene	ND	2.0	N/A	ug/l							
1,1-Dichloroethane	ND	2.0	N/A	ug/l							
1,2-Dichloroethane	ND	0.50	N/A	ug/l							
1,1-Dichloroethene	ND	5.0	N/A	ug/l							
trans-1,2-Dichloroethene	ND	2.0	N/A	ug/l							
1,2-Dichloropropane	ND	2.0	N/A	ug/l							
cis-1,3-Dichloropropene	ND	2.0	N/A	ug/l							
trans-1,3-Dichloropropene	ND	2.0	N/A	ug/l							
Ethylbenzene	ND	2.0	N/A	ug/l							
Methylene chloride	ND	5.0	N/A	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	N/A	ug/l							
Tetrachloroethene	ND	2.0	N/A	ug/l							
Toluene	ND	2.0	N/A	ug/l							
1,1,1-Trichloroethane	ND	2.0	N/A	ug/l							
1,1,2-Trichloroethane	ND	2.0	N/A	ug/l							
Trichloroethene	ND	2.0	N/A	ug/l							
Trichlorofluoromethane	ND	5.0	N/A	ug/l							
Vinyl chloride	ND	0.50	N/A	ug/l							
Xylenes, Total	ND	4.0	N/A	ug/l							
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
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Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13008-BS1)</b>											
Benzene	22.5	1.0	N/A	ug/l	25.0		90	70-120			
Bromodichloromethane	28.7	2.0	N/A	ug/l	25.0		115	70-140			
Bromoform	26.4	5.0	N/A	ug/l	25.0		106	55-135			
Bromomethane	27.9	5.0	N/A	ug/l	25.0		112	60-140			
Carbon tetrachloride	31.6	0.50	N/A	ug/l	25.0		126	70-140			
Chlorobenzene	24.0	2.0	N/A	ug/l	25.0		96	80-125			
Chloroethane	23.2	5.0	N/A	ug/l	25.0		93	60-145			
Chloroform	26.3	2.0	N/A	ug/l	25.0		105	75-130			
Chloromethane	19.9	5.0	N/A	ug/l	25.0		80	40-145			
Dibromochloromethane	25.6	2.0	N/A	ug/l	25.0		102	65-145			
1,2-Dichlorobenzene	25.3	2.0	N/A	ug/l	25.0		101	80-120			
1,3-Dichlorobenzene	24.6	2.0	N/A	ug/l	25.0		98	80-120			
1,4-Dichlorobenzene	24.8	2.0	N/A	ug/l	25.0		99	80-120			
1,1-Dichloroethane	23.0	2.0	N/A	ug/l	25.0		92	70-135			
1,2-Dichloroethane	28.5	0.50	N/A	ug/l	25.0		114	60-150			
1,1-Dichloroethene	23.3	5.0	N/A	ug/l	25.0		93	75-135			
trans-1,2-Dichloroethene	24.2	2.0	N/A	ug/l	25.0		97	70-130			
1,2-Dichloropropane	20.9	2.0	N/A	ug/l	25.0		84	70-120			
cis-1,3-Dichloropropene	24.1	2.0	N/A	ug/l	25.0		96	75-130			
trans-1,3-Dichloropropene	26.2	2.0	N/A	ug/l	25.0		105	75-135			
Ethylbenzene	24.9	2.0	N/A	ug/l	25.0		100	80-120			
Methylene chloride	20.4	5.0	N/A	ug/l	25.0		82	60-135			
1,1,2,2-Tetrachloroethane	22.0	2.0	N/A	ug/l	25.0		88	60-135			
Tetrachloroethene	26.0	2.0	N/A	ug/l	25.0		104	75-125			
Toluene	25.3	2.0	N/A	ug/l	25.0		101	75-120			
1,1,1-Trichloroethane	29.4	2.0	N/A	ug/l	25.0		118	75-140			
1,1,2-Trichloroethane	22.3	2.0	N/A	ug/l	25.0		89	70-125			
Trichloroethene	26.1	2.0	N/A	ug/l	25.0		104	80-120			
Trichlorofluoromethane	30.0	5.0	N/A	ug/l	25.0		120	65-145			
Vinyl chloride	25.0	0.50	N/A	ug/l	25.0		100	50-130			
Surrogate: Dibromofluoromethane	25.7			ug/l	25.0		103	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
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Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>Matrix Spike Analyzed: 01/13/2005 (5A13008-MS1)</b>											
<b>Source: IOA0558-01</b>											
Benzene	24.1	1.0	N/A	ug/l	25.0	ND	96	70-120			
Bromodichloromethane	31.4	2.0	N/A	ug/l	25.0	ND	126	70-140			
Bromoform	28.1	5.0	N/A	ug/l	25.0	ND	112	55-140			
Bromomethane	28.8	5.0	N/A	ug/l	25.0	ND	115	50-145			
Carbon tetrachloride	33.3	0.50	N/A	ug/l	25.0	ND	133	70-145			
Chlorobenzene	25.8	2.0	N/A	ug/l	25.0	ND	103	80-125			
Chloroethane	25.0	5.0	N/A	ug/l	25.0	0.85	97	50-145			
Chloroform	28.8	2.0	N/A	ug/l	25.0	0.74	112	70-135			
Chloromethane	20.4	5.0	N/A	ug/l	25.0	ND	82	35-145			
Dibromochloromethane	27.3	2.0	N/A	ug/l	25.0	ND	109	65-145			
1,2-Dichlorobenzene	27.3	2.0	N/A	ug/l	25.0	ND	109	75-130			
1,3-Dichlorobenzene	26.9	2.0	N/A	ug/l	25.0	ND	108	75-130			
1,4-Dichlorobenzene	27.4	2.0	N/A	ug/l	25.0	1.2	105	80-120			
1,1-Dichloroethane	24.0	2.0	N/A	ug/l	25.0	ND	96	65-135			
1,2-Dichloroethane	30.9	0.50	N/A	ug/l	25.0	0.30	122	60-150			
1,1-Dichloroethene	23.7	5.0	N/A	ug/l	25.0	ND	95	65-140			
trans-1,2-Dichloroethene	24.9	2.0	N/A	ug/l	25.0	ND	100	65-135			
1,2-Dichloropropane	22.8	2.0	N/A	ug/l	25.0	ND	91	65-130			
cis-1,3-Dichloropropene	26.5	2.0	N/A	ug/l	25.0	ND	106	70-140			
trans-1,3-Dichloropropene	29.0	2.0	N/A	ug/l	25.0	ND	116	70-140			
Ethylbenzene	26.5	2.0	N/A	ug/l	25.0	ND	106	70-130			
Methylene chloride	23.1	5.0	N/A	ug/l	25.0	0.71	90	60-135			
1,1,2,2-Tetrachloroethane	24.2	2.0	N/A	ug/l	25.0	ND	97	60-145			
Tetrachloroethene	27.7	2.0	N/A	ug/l	25.0	ND	111	70-130			
Toluene	27.1	2.0	N/A	ug/l	25.0	ND	108	70-120			
1,1,1-Trichloroethane	30.7	2.0	N/A	ug/l	25.0	ND	123	75-140			
1,1,2-Trichloroethane	24.9	2.0	N/A	ug/l	25.0	ND	100	60-135			
Trichloroethene	27.0	2.0	N/A	ug/l	25.0	ND	108	70-125			
Trichlorofluoromethane	31.0	5.0	N/A	ug/l	25.0	ND	124	55-145			
Vinyl chloride	25.8	0.50	N/A	ug/l	25.0	ND	103	40-135			
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120			
Surrogate: Toluene-d8	25.9			ug/l	25.0		104	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13008-MSD1)</b>						<b>Source: IOA0558-01</b>					
Benzene	25.1	1.0	N/A	ug/l	25.0	ND	100	70-120	4	20	
Bromodichloromethane	32.5	2.0	N/A	ug/l	25.0	ND	130	70-140	3	20	
Bromoform	30.2	5.0	N/A	ug/l	25.0	ND	121	55-140	7	25	
Bromomethane	29.9	5.0	N/A	ug/l	25.0	ND	120	50-145	4	25	
Carbon tetrachloride	34.0	0.50	N/A	ug/l	25.0	ND	136	70-145	2	25	
Chlorobenzene	27.2	2.0	N/A	ug/l	25.0	ND	109	80-125	5	20	
Chloroethane	26.3	5.0	N/A	ug/l	25.0	0.85	102	50-145	5	25	
Chloroform	30.4	2.0	N/A	ug/l	25.0	0.74	119	70-135	5	20	
Chloromethane	21.8	5.0	N/A	ug/l	25.0	ND	87	35-145	7	25	
Dibromochloromethane	29.2	2.0	N/A	ug/l	25.0	ND	117	65-145	7	25	
1,2-Dichlorobenzene	29.4	2.0	N/A	ug/l	25.0	ND	118	75-130	7	20	
1,3-Dichlorobenzene	28.7	2.0	N/A	ug/l	25.0	ND	115	75-130	6	20	
1,4-Dichlorobenzene	29.4	2.0	N/A	ug/l	25.0	1.2	113	80-120	7	20	
1,1-Dichloroethane	25.3	2.0	N/A	ug/l	25.0	ND	101	65-135	5	20	
1,2-Dichloroethane	32.9	0.50	N/A	ug/l	25.0	0.30	130	60-150	6	20	
1,1-Dichloroethene	25.1	5.0	N/A	ug/l	25.0	ND	100	65-140	6	20	
trans-1,2-Dichloroethene	26.9	2.0	N/A	ug/l	25.0	ND	108	65-135	8	20	
1,2-Dichloropropane	24.4	2.0	N/A	ug/l	25.0	ND	98	65-130	7	20	
cis-1,3-Dichloropropene	28.0	2.0	N/A	ug/l	25.0	ND	112	70-140	6	20	
trans-1,3-Dichloropropene	30.7	2.0	N/A	ug/l	25.0	ND	123	70-140	6	25	
Ethylbenzene	27.8	2.0	N/A	ug/l	25.0	ND	111	70-130	5	20	
Methylene chloride	25.0	5.0	N/A	ug/l	25.0	0.71	97	60-135	8	20	
1,1,2,2-Tetrachloroethane	26.7	2.0	N/A	ug/l	25.0	ND	107	60-145	10	30	
Tetrachloroethene	29.1	2.0	N/A	ug/l	25.0	ND	116	70-130	5	20	
Toluene	28.5	2.0	N/A	ug/l	25.0	ND	114	70-120	5	20	
1,1,1-Trichloroethane	32.0	2.0	N/A	ug/l	25.0	ND	128	75-140	4	20	
1,1,2-Trichloroethane	27.0	2.0	N/A	ug/l	25.0	ND	108	60-135	8	25	
Trichloroethene	28.0	2.0	N/A	ug/l	25.0	ND	112	70-125	4	20	
Trichlorofluoromethane	31.9	5.0	N/A	ug/l	25.0	ND	128	55-145	3	25	
Vinyl chloride	27.3	0.50	N/A	ug/l	25.0	ND	109	40-135	6	30	
Surrogate: Dibromofluoromethane	25.4			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13008 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13008-BLK1)</b>											
Acrolein	ND	50	N/A	ug/l							
Acrylonitrile	ND	50	N/A	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	N/A	ug/l							
Surrogate: Dibromofluoromethane	24.3			ug/l	25.0		97	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96	80-120			
<b>LCS Analyzed: 01/13/2005 (5A13008-BS1)</b>											
2-Chloroethyl vinyl ether	18.0	5.0	N/A	ug/l	25.0		72	20-175			
Surrogate: Dibromofluoromethane	25.7			ug/l	25.0		103	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13008-MS1)</b>											
						<b>Source: IOA0558-01</b>					
2-Chloroethyl vinyl ether	20.5	5.0	N/A	ug/l	25.0	ND	82	20-175			
Surrogate: Dibromofluoromethane	25.2			ug/l	25.0		101	80-120			
Surrogate: Toluene-d8	25.9			ug/l	25.0		104	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13008-MSD1)</b>											
						<b>Source: IOA0558-01</b>					
2-Chloroethyl vinyl ether	21.8	5.0	N/A	ug/l	25.0	ND	87	20-175	6	25	
Surrogate: Dibromofluoromethane	25.4			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	25.4			ug/l	25.0		102	80-120			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD Limit	Data Qualifiers
		Limit	MDL Units			%REC	Limits RPD		
<b>Batch: 5A12019 Extracted: 01/12/05</b>									
<b>Blank Analyzed: 01/12/2005 (5A12019-BLK1)</b>									
Cyclohexane	ND	2.5	N/A ug/l						
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A ug/l						
<b>Batch: 5A13008 Extracted: 01/13/05</b>									
<b>Blank Analyzed: 01/13/2005 (5A13008-BLK1)</b>									
Cyclohexane	ND	2.5	N/A ug/l						
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A ug/l						

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 Michele Harper  
 Project Manager

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Project ID: Outfall 011  
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Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13038 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A13038-BLK1)</b>											
Acenaphthene	ND	0.50	N/A	ug/l							
Acenaphthylene	ND	0.50	N/A	ug/l							
Aniline	ND	10	N/A	ug/l							
Anthracene	ND	0.50	N/A	ug/l							
Benzidine	ND	5.0	N/A	ug/l							
Benzoic acid	ND	20	N/A	ug/l							
Benzo(a)anthracene	ND	5.0	N/A	ug/l							
Benzo(a)pyrene	ND	2.0	N/A	ug/l							
Benzo(b)fluoranthene	ND	2.0	N/A	ug/l							
Benzo(g,h,i)perylene	ND	5.0	N/A	ug/l							
Benzo(k)fluoranthene	ND	0.50	N/A	ug/l							
Benzyl alcohol	ND	5.0	N/A	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	N/A	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	N/A	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	N/A	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	N/A	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	N/A	ug/l							
Butyl benzyl phthalate	ND	5.0	N/A	ug/l							
4-Chloroaniline	ND	2.0	N/A	ug/l							
2-Chloronaphthalene	ND	0.50	N/A	ug/l							
4-Chloro-3-methylphenol	ND	2.0	N/A	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	N/A	ug/l							
2-Chlorophenol	ND	1.0	N/A	ug/l							
Chrysene	ND	0.50	N/A	ug/l							
Dibenz(a,h)anthracene	ND	0.50	N/A	ug/l							
Dibenzofuran	ND	0.50	N/A	ug/l							
Di-n-butyl phthalate	ND	2.0	N/A	ug/l							
1,2-Dichlorobenzene	ND	0.50	N/A	ug/l							
1,3-Dichlorobenzene	ND	0.50	N/A	ug/l							
1,4-Dichlorobenzene	ND	0.50	N/A	ug/l							
3,3-Dichlorobenzidine	ND	5.0	N/A	ug/l							
2,4-Dichlorophenol	ND	2.0	N/A	ug/l							
Diethyl phthalate	ND	1.0	N/A	ug/l							
2,4-Dimethylphenol	ND	2.0	N/A	ug/l							
Dimethyl phthalate	ND	0.50	N/A	ug/l							

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Project Manager





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Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting			Spike Level	Source Result	%REC		RPD Limit	Data Qualifiers
		Limit	MDL	Units			%REC	RPD		
<b>Batch: 5A13038 Extracted: 01/13/05</b>										
<b>Blank Analyzed: 01/17/2005 (5A13038-BLK1)</b>										
4,6-Dinitro-2-methylphenol	ND	5.0	N/A	ug/l						
2,4-Dinitrophenol	ND	5.0	N/A	ug/l						
2,4-Dinitrotoluene	ND	5.0	N/A	ug/l						
2,6-Dinitrotoluene	ND	5.0	N/A	ug/l						
Di-n-octyl phthalate	ND	5.0	N/A	ug/l						
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	N/A	ug/l						
Fluoranthene	ND	0.50	N/A	ug/l						
Fluorene	ND	0.50	N/A	ug/l						
Hexachlorobenzene	ND	1.0	N/A	ug/l						
Hexachlorobutadiene	ND	2.0	N/A	ug/l						
Hexachlorocyclopentadiene	ND	5.0	N/A	ug/l						
Hexachloroethane	ND	3.0	N/A	ug/l						
Indeno(1,2,3-cd)pyrene	ND	2.0	N/A	ug/l						
Isophorone	ND	1.0	N/A	ug/l						
2-Methylnaphthalene	ND	1.0	N/A	ug/l						
2-Methylphenol	ND	2.0	N/A	ug/l						
4-Methylphenol	ND	5.0	N/A	ug/l						
Naphthalene	ND	1.0	N/A	ug/l						
2-Nitroaniline	ND	5.0	N/A	ug/l						
3-Nitroaniline	ND	5.0	N/A	ug/l						
4-Nitroaniline	ND	5.0	N/A	ug/l						
Nitrobenzene	ND	1.0	N/A	ug/l						
2-Nitrophenol	ND	2.0	N/A	ug/l						
4-Nitrophenol	ND	5.0	N/A	ug/l						
N-Nitrosodimethylamine	ND	2.0	N/A	ug/l						
N-Nitroso-di-n-propylamine	ND	2.0	N/A	ug/l						
N-Nitrosodiphenylamine	ND	1.0	N/A	ug/l						
Pentachlorophenol	ND	2.0	N/A	ug/l						
Phenanthrene	ND	0.50	N/A	ug/l						
Phenol	ND	1.0	N/A	ug/l						
Pyrene	ND	0.50	N/A	ug/l						
1,2,4-Trichlorobenzene	ND	1.0	N/A	ug/l						
2,4,5-Trichlorophenol	ND	2.0	N/A	ug/l						
2,4,6-Trichlorophenol	ND	1.0	N/A	ug/l						
Surrogate: 2-Fluorophenol	12.7			ug/l	20.0	64	35-120			

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Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13038 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A13038-BLK1)</b>											
Surrogate: Phenol-d6	12.8			ug/l	20.0		64	45-120			
Surrogate: 2,4,6-Tribromophenol	12.1			ug/l	20.0		60	50-125			
Surrogate: Nitrobenzene-d5	6.58			ug/l	10.0		66	45-120			
Surrogate: 2-Fluorobiphenyl	7.08			ug/l	10.0		71	45-120			
Surrogate: Terphenyl-d14	7.28			ug/l	10.0		73	45-135			
<b>LCS Analyzed: 01/17/2005 (5A13038-BS1)</b>											
Acenaphthene	8.34	0.50	N/A	ug/l	10.0		83	55-120			
Acenaphthylene	8.12	0.50	N/A	ug/l	10.0		81	55-120			
Aniline	7.50	10	N/A	ug/l	10.0		75	30-120			
Anthracene	9.00	0.50	N/A	ug/l	10.0		90	60-120			
Benzdine	3.52	5.0	N/A	ug/l	10.0		35	20-180			
Benzoic acid	7.46	20	N/A	ug/l	10.0		75	30-125			
Benzo(a)anthracene	9.26	5.0	N/A	ug/l	10.0		93	65-120			
Benzo(a)pyrene	9.88	2.0	N/A	ug/l	10.0		99	55-125			
Benzo(b)fluoranthene	9.12	2.0	N/A	ug/l	10.0		91	50-125			
Benzo(g,h,i)perylene	9.74	5.0	N/A	ug/l	10.0		97	35-160			
Benzo(k)fluoranthene	9.76	0.50	N/A	ug/l	10.0		98	50-125			
Benzyl alcohol	8.32	5.0	N/A	ug/l	10.0		83	40-130			
Bis(2-chloroethoxy)methane	8.26	0.50	N/A	ug/l	10.0		83	55-120			
Bis(2-chloroethyl)ether	7.50	0.50	N/A	ug/l	10.0		75	50-120			
Bis(2-chloroisopropyl)ether	6.72	0.50	N/A	ug/l	10.0		67	50-120			
Bis(2-ethylhexyl)phthalate	10.3	5.0	N/A	ug/l	10.0		103	65-125			
4-Bromophenyl phenyl ether	8.08	1.0	N/A	ug/l	10.0		81	55-125			
Butyl benzyl phthalate	9.48	5.0	N/A	ug/l	10.0		95	60-125			
4-Chloroaniline	8.08	2.0	N/A	ug/l	10.0		81	55-120			
2-Chloronaphthalene	7.98	0.50	N/A	ug/l	10.0		80	60-120			
4-Chloro-3-methylphenol	8.28	2.0	N/A	ug/l	10.0		83	60-120			
4-Chlorophenyl phenyl ether	8.60	0.50	N/A	ug/l	10.0		86	55-120			
2-Chlorophenol	7.38	1.0	N/A	ug/l	10.0		74	45-120			
Chrysene	9.02	0.50	N/A	ug/l	10.0		90	65-120			
Dibenz(a,h)anthracene	9.76	0.50	N/A	ug/l	10.0		98	40-160			
Dibenzofuran	8.56	0.50	N/A	ug/l	10.0		86	60-120			
Di-n-butyl phthalate	10.7	2.0	N/A	ug/l	10.0		107	65-125			
1,2-Dichlorobenzene	5.26	0.50	N/A	ug/l	10.0		53	40-120			
1,3-Dichlorobenzene	4.68	0.50	N/A	ug/l	10.0		47	40-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13038 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/17/2005 (5A13038-BS1)</b>											
1,4-Dichlorobenzene	4.96	0.50	N/A	ug/l	10.0		50	40-120			
3,3-Dichlorobenzidine	8.62	5.0	N/A	ug/l	10.0		86	50-170			
2,4-Dichlorophenol	8.44	2.0	N/A	ug/l	10.0		84	55-120			
Diethyl phthalate	9.52	1.0	N/A	ug/l	10.0		95	60-120			
2,4-Dimethylphenol	5.98	2.0	N/A	ug/l	10.0		60	35-120			
Dimethyl phthalate	9.04	0.50	N/A	ug/l	10.0		90	60-120			
4,6-Dinitro-2-methylphenol	7.48	5.0	N/A	ug/l	10.0		75	55-120			
2,4-Dinitrophenol	12.6	5.0	N/A	ug/l	10.0		126	40-140			
2,4-Dinitrotoluene	8.58	5.0	N/A	ug/l	10.0		86	60-140			
2,6-Dinitrotoluene	8.76	5.0	N/A	ug/l	10.0		88	65-125			
Di-n-octyl phthalate	10.4	5.0	N/A	ug/l	10.0		104	60-130			
1,2-Diphenylhydrazine/Azobenzene	10.1	1.0	N/A	ug/l	10.0		101	60-120			
Fluoranthene	9.94	0.50	N/A	ug/l	10.0		99	55-125			
Fluorene	9.00	0.50	N/A	ug/l	10.0		90	60-120			
Hexachlorobenzene	8.30	1.0	N/A	ug/l	10.0		83	50-120			
Hexachlorobutadiene	5.36	2.0	N/A	ug/l	10.0		54	45-120			
Hexachlorocyclopentadiene	6.62	5.0	N/A	ug/l	10.0		66	10-130			
Hexachloroethane	4.20	3.0	N/A	ug/l	10.0		42	40-120			
Indeno(1,2,3-cd)pyrene	10.3	2.0	N/A	ug/l	10.0		103	35-150			
Isophorone	8.62	1.0	N/A	ug/l	10.0		86	55-120			
2-Methylnaphthalene	7.28	1.0	N/A	ug/l	10.0		73	50-120			
2-Methylphenol	7.72	2.0	N/A	ug/l	10.0		77	45-120			
4-Methylphenol	7.58	5.0	N/A	ug/l	10.0		76	45-120			
Naphthalene	6.64	1.0	N/A	ug/l	10.0		66	50-120			
2-Nitroaniline	8.46	5.0	N/A	ug/l	10.0		85	60-130			
3-Nitroaniline	8.60	5.0	N/A	ug/l	10.0		86	50-140			
4-Nitroaniline	10.2	5.0	N/A	ug/l	10.0		102	45-160			
Nitrobenzene	7.54	1.0	N/A	ug/l	10.0		75	50-120			
2-Nitrophenol	7.50	2.0	N/A	ug/l	10.0		75	55-120			
4-Nitrophenol	8.32	5.0	N/A	ug/l	10.0		83	50-135			
N-Nitrosodimethylamine	8.04	2.0	N/A	ug/l	10.0		80	40-120			
N-Nitroso-di-n-propylamine	7.98	2.0	N/A	ug/l	10.0		80	50-120			
N-Nitrosodiphenylamine	8.90	1.0	N/A	ug/l	10.0		89	60-120			
Pentachlorophenol	8.72	2.0	N/A	ug/l	10.0		87	50-125			
Phenanthrene	8.50	0.50	N/A	ug/l	10.0		85	55-120			

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Michele Harper  
Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13038 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/17/2005 (5A13038-BS1)</b>											
Phenol	7.58	1.0	N/A	ug/l	10.0		76	45-120			
Pyrene	8.70	0.50	N/A	ug/l	10.0		87	50-120			
1,2,4-Trichlorobenzene	5.92	1.0	N/A	ug/l	10.0		59	50-120			
2,4,5-Trichlorophenol	9.10	2.0	N/A	ug/l	10.0		91	60-120			
2,4,6-Trichlorophenol	8.92	1.0	N/A	ug/l	10.0		89	60-120			
Surrogate: 2-Fluorophenol	13.3			ug/l	20.0		66	35-120			
Surrogate: Phenol-d6	13.6			ug/l	20.0		68	45-120			
Surrogate: 2,4,6-Tribromophenol	14.6			ug/l	20.0		73	50-125			
Surrogate: Nitrobenzene-d5	6.68			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.64			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	7.30			ug/l	10.0		73	45-135			
<b>LCS Dup Analyzed: 01/17/2005 (5A13038-BSD1)</b>											
Acenaphthene	8.22	0.50	N/A	ug/l	10.0		82	55-120	1	20	M-NRI
Acenaphthylene	8.02	0.50	N/A	ug/l	10.0		80	55-120	1	20	
Aniline	7.74	10	N/A	ug/l	10.0		77	30-120	3	25	
Anthracene	8.74	0.50	N/A	ug/l	10.0		87	60-120	3	20	
Benzidine	3.88	5.0	N/A	ug/l	10.0		39	20-180	10	35	
Benzoic acid	7.34	20	N/A	ug/l	10.0		73	30-125	2	30	
Benzo(a)anthracene	9.14	5.0	N/A	ug/l	10.0		91	65-120	1	20	
Benzo(a)pyrene	9.66	2.0	N/A	ug/l	10.0		97	55-125	2	25	
Benzo(b)fluoranthene	8.96	2.0	N/A	ug/l	10.0		90	50-125	2	25	
Benzo(g,h,i)perylene	9.76	5.0	N/A	ug/l	10.0		98	35-160	0	25	
Benzo(k)fluoranthene	9.58	0.50	N/A	ug/l	10.0		96	50-125	2	20	
Benzyl alcohol	8.24	5.0	N/A	ug/l	10.0		82	40-130	1	20	
Bis(2-chloroethoxy)methane	8.04	0.50	N/A	ug/l	10.0		80	55-120	3	20	
Bis(2-chloroethyl)ether	7.24	0.50	N/A	ug/l	10.0		72	50-120	4	20	
Bis(2-chloroisopropyl)ether	6.68	0.50	N/A	ug/l	10.0		67	50-120	1	20	
Bis(2-ethylhexyl)phthalate	10.2	5.0	N/A	ug/l	10.0		102	65-125	1	20	
4-Bromophenyl phenyl ether	8.90	1.0	N/A	ug/l	10.0		89	55-125	10	25	
Butyl benzyl phthalate	9.56	5.0	N/A	ug/l	10.0		96	60-125	1	20	
4-Chloroaniline	8.26	2.0	N/A	ug/l	10.0		83	55-120	2	25	
2-Chloronaphthalene	8.16	0.50	N/A	ug/l	10.0		82	60-120	2	20	
4-Chloro-3-methylphenol	8.32	2.0	N/A	ug/l	10.0		83	60-120	1	25	
4-Chlorophenyl phenyl ether	8.50	0.50	N/A	ug/l	10.0		85	55-120	1	20	
2-Chlorophenol	7.30	1.0	N/A	ug/l	10.0		73	45-120	1	25	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05
Received: 01/11/05

METHOD BLANK/QC DATA

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Table with columns: Analyte, Result, Reporting Limit, MDL, Units, Spike Level, Source Result, %REC, %REC Limits, RPD, RPD Limit, Data Qualifiers. Includes sub-sections for Batch: 5A13038 and LCS Dup Analyzed: 01/17/2005 (5A13038-BSD1).

Del Mar Analytical, Irvine
Michele Harper
Project Manager



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Project ID: Outfall 011  
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Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13038 Extracted: 01/13/05</b>											
<b>LCS Dup Analyzed: 01/17/2005 (5A13038-BSD1)</b>											
4-Nitrophenol	7.94	5.0	N/A	ug/l	10.0	79	50-135	5	25		M-NR1
N-Nitrosodimethylamine	7.28	2.0	N/A	ug/l	10.0	73	40-120	10	20		
N-Nitroso-di-n-propylamine	8.06	2.0	N/A	ug/l	10.0	81	50-120	1	20		
N-Nitrosodiphenylamine	9.00	1.0	N/A	ug/l	10.0	90	60-120	1	20		
Pentachlorophenol	8.48	2.0	N/A	ug/l	10.0	85	50-125	3	25		
Phenanthrene	8.46	0.50	N/A	ug/l	10.0	85	55-120	1	20		
Phenol	7.40	1.0	N/A	ug/l	10.0	74	45-120	2	25		
Pyrene	8.94	0.50	N/A	ug/l	10.0	89	50-120	3	25		
1,2,4-Trichlorobenzene	7.00	1.0	N/A	ug/l	10.0	70	50-120	17	20		
2,4,5-Trichlorophenol	9.10	2.0	N/A	ug/l	10.0	91	60-120	0	20		
2,4,6-Trichlorophenol	8.96	1.0	N/A	ug/l	10.0	90	60-120	0	20		
Surrogate: 2-Fluorophenol	13.2			ug/l	20.0	66	35-120				
Surrogate: Phenol-d6	13.8			ug/l	20.0	69	45-120				
Surrogate: 2,4,6-Tribromophenol	14.7			ug/l	20.0	74	50-125				
Surrogate: Nitrobenzene-d5	6.86			ug/l	10.0	69	45-120				
Surrogate: 2-Fluorobiphenyl	7.66			ug/l	10.0	77	45-120				
Surrogate: Terphenyl-d14	7.54			ug/l	10.0	75	45-135				

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Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13049-BLK1)</b>											
Aldrin	ND	0.10	N/A	ug/l							
alpha-BHC	ND	0.10	N/A	ug/l							
beta-BHC	ND	0.10	N/A	ug/l							
delta-BHC	ND	0.20	N/A	ug/l							
gamma-BHC (Lindane)	ND	0.10	N/A	ug/l							
Chlordane	ND	1.0	N/A	ug/l							
4,4'-DDD	ND	0.10	N/A	ug/l							
4,4'-DDE	ND	0.10	N/A	ug/l							
4,4'-DDT	ND	0.10	N/A	ug/l							
Dieldrin	ND	0.10	N/A	ug/l							
Endosulfan I	ND	0.10	N/A	ug/l							
Endosulfan II	ND	0.10	N/A	ug/l							
Endosulfan sulfate	ND	0.20	N/A	ug/l							
Endrin	ND	0.10	N/A	ug/l							
Endrin aldehyde	ND	0.10	N/A	ug/l							
Endrin ketone	ND	0.10	N/A	ug/l							
Heptachlor	ND	0.10	N/A	ug/l							
Heptachlor epoxide	ND	0.10	N/A	ug/l							
Methoxychlor	ND	0.10	N/A	ug/l							
Toxaphene	ND	5.0	N/A	ug/l							
Surrogate: Tetrachloro- <i>m</i> -xylene	0.348			ug/l	0.500		70	35-120			
Surrogate: Decachlorobiphenyl	0.424			ug/l	0.500		85	45-120			
<b>LCS Analyzed: 01/13/2005 (5A13049-BS1)</b>											
Aldrin	0.517	0.10	N/A	ug/l	0.500		103	45-115			M-NR1
alpha-BHC	0.527	0.10	N/A	ug/l	0.500		105	45-115			
beta-BHC	0.496	0.10	N/A	ug/l	0.500		99	50-115			
delta-BHC	0.564	0.20	N/A	ug/l	0.500		113	55-120			
gamma-BHC (Lindane)	0.525	0.10	N/A	ug/l	0.500		105	45-115			
4,4'-DDD	0.537	0.10	N/A	ug/l	0.500		107	60-120			
4,4'-DDE	0.534	0.10	N/A	ug/l	0.500		107	55-120			
4,4'-DDT	0.557	0.10	N/A	ug/l	0.500		111	60-130			
Dieldrin	0.540	0.10	N/A	ug/l	0.500		108	55-120			
Endosulfan I	0.512	0.10	N/A	ug/l	0.500		102	50-115			
Endosulfan II	0.525	0.10	N/A	ug/l	0.500		105	60-125			
Endosulfan sulfate	0.528	0.20	N/A	ug/l	0.500		106	60-120			

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 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13049-BS1)</b>											
Endrin	0.578	0.10	N/A	ug/l	0.500		116	55-125			M-NRI
Endrin aldehyde	0.553	0.10	N/A	ug/l	0.500		111	55-115			
Endrin ketone	0.513	0.10	N/A	ug/l	0.500		103	60-120			
Heptachlor	0.513	0.10	N/A	ug/l	0.500		103	45-115			
Heptachlor epoxide	0.527	0.10	N/A	ug/l	0.500		105	50-120			
Methoxychlor	0.535	0.10	N/A	ug/l	0.500		107	60-135			
Surrogate: Tetrachloro-m-xylene	0.435			ug/l	0.500		87	35-120			
Surrogate: Decachlorobiphenyl	0.527			ug/l	0.500		105	45-120			
<b>LCS Dup Analyzed: 01/13/2005 (5A13049-BSD1)</b>											
Aldrin	0.512	0.10	N/A	ug/l	0.500		102	45-115	1	30	
alpha-BHC	0.534	0.10	N/A	ug/l	0.500		107	45-115	1	30	
beta-BHC	0.487	0.10	N/A	ug/l	0.500		97	50-115	2	30	
delta-BHC	0.547	0.20	N/A	ug/l	0.500		109	55-120	3	30	
gamma-BHC (Lindane)	0.525	0.10	N/A	ug/l	0.500		105	45-115	0	30	
4,4'-DDD	0.505	0.10	N/A	ug/l	0.500		101	60-120	6	30	
4,4'-DDE	0.510	0.10	N/A	ug/l	0.500		102	55-120	5	30	
4,4'-DDT	0.520	0.10	N/A	ug/l	0.500		104	60-130	7	30	
Dieldrin	0.515	0.10	N/A	ug/l	0.500		103	55-120	5	30	
Endosulfan I	0.493	0.10	N/A	ug/l	0.500		99	50-115	4	30	
Endosulfan II	0.495	0.10	N/A	ug/l	0.500		99	60-125	6	30	
Endosulfan sulfate	0.498	0.20	N/A	ug/l	0.500		100	60-120	6	30	
Endrin	0.550	0.10	N/A	ug/l	0.500		110	55-125	5	30	
Endrin aldehyde	0.511	0.10	N/A	ug/l	0.500		102	55-115	8	30	
Endrin ketone	0.490	0.10	N/A	ug/l	0.500		98	60-120	5	30	
Heptachlor	0.510	0.10	N/A	ug/l	0.500		102	45-115	1	30	
Heptachlor epoxide	0.510	0.10	N/A	ug/l	0.500		102	50-120	3	30	
Methoxychlor	0.505	0.10	N/A	ug/l	0.500		101	60-135	6	30	
Surrogate: Tetrachloro-m-xylene	0.449			ug/l	0.500		90	35-120			
Surrogate: Decachlorobiphenyl	0.494			ug/l	0.500		99	45-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5A13049 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13049-BLK1)</b>											
Aroclor 1016	ND	1.0	N/A	ug/l							
Aroclor 1221	ND	1.0	N/A	ug/l							
Aroclor 1232	ND	1.0	N/A	ug/l							
Aroclor 1242	ND	1.0	N/A	ug/l							
Aroclor 1248	ND	1.0	N/A	ug/l							
Aroclor 1254	ND	1.0	N/A	ug/l							
Aroclor 1260	ND	1.0	N/A	ug/l							
Surrogate: Decachlorobiphenyl	0.387			ug/l	0.500		77	45-120			
<b>LCS Analyzed: 01/13/2005 (5A13049-BS2)</b>											
Aroclor 1016	2.82	1.0	N/A	ug/l	4.00		70	50-115			M-NR1
Aroclor 1260	2.91	1.0	N/A	ug/l	4.00		73	60-115			
Surrogate: Decachlorobiphenyl	0.389			ug/l	0.500		78	45-120			
<b>LCS Dup Analyzed: 01/13/2005 (5A13049-BSD2)</b>											
Aroclor 1016	2.68	1.0	N/A	ug/l	4.00		67	50-115	5	30	
Aroclor 1260	2.88	1.0	N/A	ug/l	4.00		72	60-115	1	25	
Surrogate: Decachlorobiphenyl	0.379			ug/l	0.500		76	45-120			

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13042 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13042-BLK1)</b>											
Boron	ND	0.050	N/A	mg/l							
<b>LCS Analyzed: 01/13/2005 (5A13042-BS1)</b>											
Boron	0.480	0.050	N/A	mg/l	0.500		96	85-115			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13042-MS1)</b>											
						<b>Source: IOA0567-01</b>					
Boron	0.566	0.050	N/A	mg/l	0.500	0.069	99	70-130			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13042-MSD1)</b>											
						<b>Source: IOA0567-01</b>					
Boron	0.555	0.050	N/A	mg/l	0.500	0.069	97	70-130	2	20	
<b>Batch: 5A13044 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13044-BLK1)</b>											
Antimony	ND	2.0	N/A	ug/l							
Arsenic	ND	1.0	N/A	ug/l							
Barium	ND	0.0010	N/A	mg/l							
Beryllium	ND	0.50	N/A	ug/l							
Cadmium	ND	1.0	N/A	ug/l							
Chromium	ND	1.0	N/A	ug/l							
Cobalt	ND	1.0	N/A	ug/l							
Copper	ND	2.0	N/A	ug/l							
Iron	ND	0.010	N/A	mg/l							
Lead	ND	1.0	N/A	ug/l							
Manganese	ND	1.0	N/A	ug/l							
Nickel	ND	1.0	N/A	ug/l							
Selenium	ND	2.0	N/A	ug/l							
Silver	ND	1.0	N/A	ug/l							
Thallium	ND	1.0	N/A	ug/l							
Vanadium	ND	1.0	N/A	ug/l							
Zinc	ND	20	N/A	ug/l							

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Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13044 Extracted: 01/13/05</b>										
<b>LCS Analyzed: 01/13/2005 (5A13044-BS1)</b>										
Antimony	91.5	2.0	N/A	ug/l	80.0		114		85-115	
Arsenic	90.5	1.0	N/A	ug/l	80.0		113		85-115	
Barium	0.0802	0.0010	N/A	mg/l	0.0800		100		85-115	
Beryllium	77.4	0.50	N/A	ug/l	80.0		97		85-115	
Cadmium	88.4	1.0	N/A	ug/l	80.0		110		85-115	
Chromium	89.4	1.0	N/A	ug/l	80.0		112		85-115	
Cobalt	89.1	1.0	N/A	ug/l	80.0		111		85-115	
Copper	86.7	2.0	N/A	ug/l	80.0		108		85-115	
Iron	0.905	0.010	N/A	mg/l	0.800		113		85-115	
Lead	89.1	1.0	N/A	ug/l	80.0		111		85-115	
Manganese	90.1	1.0	N/A	ug/l	80.0		113		85-115	
Nickel	89.3	1.0	N/A	ug/l	80.0		112		85-115	
Selenium	86.1	2.0	N/A	ug/l	80.0		108		85-115	
Silver	87.1	1.0	N/A	ug/l	80.0		109		85-115	
Thallium	87.0	1.0	N/A	ug/l	80.0		109		85-115	
Vanadium	86.4	1.0	N/A	ug/l	80.0		108		85-115	
Zinc	87.1	20	N/A	ug/l	80.0		109		85-115	

**Matrix Spike Analyzed: 01/13/2005 (5A13044-MS1)**

**Source: IOA0567-01**

Antimony	78.3	2.0	N/A	ug/l	80.0	0.59	97		70-130	
Arsenic	77.0	1.0	N/A	ug/l	80.0	1.8	94		70-130	
Barium	0.100	0.0010	N/A	mg/l	0.0800	0.018	102		70-130	
Beryllium	78.5	0.50	N/A	ug/l	80.0	0.070	98		70-130	
Cadmium	76.1	1.0	N/A	ug/l	80.0	0.15	95		70-130	
Chromium	77.3	1.0	N/A	ug/l	80.0	2.2	94		70-130	
Cobalt	76.4	1.0	N/A	ug/l	80.0	0.38	95		70-130	
Copper	76.8	2.0	N/A	ug/l	80.0	7.2	87		70-130	
Iron	1.65	0.010	N/A	mg/l	0.800	1.0	81		70-130	
Lead	84.1	1.0	N/A	ug/l	80.0	0.90	104		70-130	
Manganese	90.7	1.0	N/A	ug/l	80.0	15	95		70-130	
Nickel	78.3	1.0	N/A	ug/l	80.0	2.4	95		70-130	
Selenium	70.4	2.0	N/A	ug/l	80.0	ND	88		70-130	
Silver	75.3	1.0	N/A	ug/l	80.0	ND	94		70-130	
Thallium	76.4	1.0	N/A	ug/l	80.0	0.11	95		70-130	
Vanadium	76.6	1.0	N/A	ug/l	80.0	2.7	92		70-130	
Zinc	88.1	20	N/A	ug/l	80.0	21	84		70-130	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13044 Extracted: 01/13/05</b>											
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13044-MSD1)</b>						<b>Source: IOA0567-01</b>					
Antimony	85.0	2.0	N/A	ug/l	80.0	0.59	106	70-130	8	20	
Arsenic	83.9	1.0	N/A	ug/l	80.0	1.8	103	70-130	9	20	
Barium	0.0995	0.0010	N/A	mg/l	0.0800	0.018	102	70-130	1	20	
Beryllium	77.8	0.50	N/A	ug/l	80.0	0.070	97	70-130	1	20	
Cadmium	82.6	1.0	N/A	ug/l	80.0	0.15	103	70-130	8	20	
Chromium	83.8	1.0	N/A	ug/l	80.0	2.2	102	70-130	8	20	
Cobalt	82.4	1.0	N/A	ug/l	80.0	0.38	103	70-130	8	20	
Copper	83.7	2.0	N/A	ug/l	80.0	7.2	96	70-130	9	20	
Iron	1.88	0.010	N/A	mg/l	0.800	1.0	110	70-130	13	20	
Lead	83.1	1.0	N/A	ug/l	80.0	0.90	103	70-130	1	20	
Manganese	98.0	1.0	N/A	ug/l	80.0	15	104	70-130	8	20	
Nickel	84.7	1.0	N/A	ug/l	80.0	2.4	103	70-130	8	20	
Selenium	77.6	2.0	N/A	ug/l	80.0	ND	97	70-130	10	20	
Silver	80.6	1.0	N/A	ug/l	80.0	ND	101	70-130	7	20	
Thallium	83.6	1.0	N/A	ug/l	80.0	0.11	104	70-130	9	20	
Vanadium	82.0	1.0	N/A	ug/l	80.0	2.7	99	70-130	7	20	
Zinc	94.4	20	N/A	ug/l	80.0	21	92	70-130	7	20	

### Batch: 5A13050 Extracted: 01/13/05

#### Blank Analyzed: 01/13/2005 (5A13050-BLK1)

Mercury	ND	0.20	N/A	ug/l
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#### LCS Analyzed: 01/13/2005 (5A13050-BS1)

Mercury	8.08	0.20	N/A	ug/l	8.00	101	85-115
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#### Matrix Spike Analyzed: 01/13/2005 (5A13050-MS1)

Mercury	8.57	0.20	N/A	ug/l	8.00	0.16	105	70-130
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Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13050 Extracted: 01/13/05</b>											
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13050-MSD1)</b>						<b>Source: IOA0567-01</b>					
Mercury	8.54	0.20	N/A	ug/l	8.00	0.16	105	70-130	0	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12034 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12034-BLK1)</b>											
Chromium VI	ND	1.0	N/A	ug/l							
<b>LCS Analyzed: 01/12/2005 (5A12034-BS1)</b>											
Chromium VI	50.3	1.0	N/A	ug/l	50.0		101	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12034-MS1)</b>											
						<b>Source: IOA0563-01</b>					
Chromium VI	49.5	1.0	N/A	ug/l	50.0	ND	99	90-110			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12034-MSD1)</b>											
						<b>Source: IOA0563-01</b>					
Chromium VI	49.5	1.0	N/A	ug/l	50.0	ND	99	90-110	0	10	
<b>Batch: 5A12036 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12036-BLK1)</b>											
Chloride	ND	0.50	N/A	mg/l							
Fluoride	ND	0.50	N/A	mg/l							
Nitrate/Nitrite-N	ND	0.26	N/A	mg/l							
Sulfate	ND	0.50	N/A	mg/l							
<b>LCS Analyzed: 01/12/2005 (5A12036-BS1)</b>											
Chloride	4.84	0.50	N/A	mg/l	5.00		97	90-110			
Fluoride	4.63	0.50	N/A	mg/l	5.00		93	90-110			
Sulfate	10.1	0.50	N/A	mg/l	10.0		101	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12036-MS1)</b>											
						<b>Source: IOA0527-01</b>					
Chloride	15.0	2.5	N/A	mg/l	5.00	11	80	80-120			
Fluoride	5.63	2.5	N/A	mg/l	5.00	1.1	91	80-120			
Sulfate	164	2.5	N/A	mg/l	10.0	150	140	80-120			M-HA

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12036 Extracted: 01/12/05</b>											
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12036-MSD1)</b>						<b>Source: IOA0527-01</b>					
Chloride	15.1	2.5	N/A	mg/l	5.00	11	82	80-120	1	20	
Fluoride	5.50	2.5	N/A	mg/l	5.00	1.1	88	80-120	2	20	
Sulfate	164	2.5	N/A	mg/l	10.0	150	140	80-120	0	20	M-HA
<b>Batch: 5A12041 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A12041-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	N/A	mg/l							
<b>LCS Analyzed: 01/17/2005 (5A12041-BS1)</b>											
Biochemical Oxygen Demand	208	100	N/A	mg/l	198		105	85-115			
<b>LCS Dup Analyzed: 01/17/2005 (5A12041-BSD1)</b>											
Biochemical Oxygen Demand	212	100	N/A	mg/l	198		107	85-115	2	20	
<b>Batch: 5A12045 Extracted: 01/12/05</b>											
<b>Duplicate Analyzed: 01/12/2005 (5A12045-DUP1)</b>						<b>Source: IOA0549-01</b>					
Residual Chlorine	ND	0.10	N/A	mg/l		ND				20	
<b>Batch: 5A12059 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A12059-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	N/A	mg/l							

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Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A12059 Extracted: 01/12/05</b>											
<b>LCS Analyzed: 01/12/2005 (5A12059-BS1)</b>											
Surfactants (MBAS)	0.248	0.10	N/A	mg/l	0.250		99	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A12059-MS1)</b>											
Surfactants (MBAS)	0.191	0.10	N/A	mg/l	0.250	0.052	56	50-125			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A12059-MSD1)</b>											
Surfactants (MBAS)	0.193	0.10	N/A	mg/l	0.250	0.052	56	50-125	1	20	
<b>Batch: 5A13051 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13051-BLK1)</b>											
Perchlorate	ND	4.0	N/A	ug/l							
<b>LCS Analyzed: 01/13/2005 (5A13051-BS1)</b>											
Perchlorate	50.0	4.0	N/A	ug/l	50.0		100	85-115			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13051-MS1)</b>											
Perchlorate	49.6	4.0	N/A	ug/l	50.0	0.93	97	80-120			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13051-MSD1)</b>											
Perchlorate	50.7	4.0	N/A	ug/l	50.0	0.93	100	80-120	2	20	
<b>Batch: 5A13053 Extracted: 01/12/05</b>											
<b>Blank Analyzed: 01/12/2005 (5A13053-BLK1)</b>											
Total Organic Carbon	ND	1.0	N/A	mg/l							

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13053 Extracted: 01/12/05</b>											
<b>LCS Analyzed: 01/12/2005 (5A13053-BS1)</b>											
Total Organic Carbon	10.4	1.0	N/A	mg/l	10.0		104	90-110			
<b>Matrix Spike Analyzed: 01/12/2005 (5A13053-MS1)</b>											
Total Organic Carbon	10.3	1.0	N/A	mg/l	5.00	5.1	104	80-120			
<b>Matrix Spike Dup Analyzed: 01/12/2005 (5A13053-MSD1)</b>											
Total Organic Carbon	10.2	1.0	N/A	mg/l	5.00	5.1	102	80-120	1	20	
<b>Batch: 5A13063 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13063-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	N/A	mg/l							
<b>LCS Analyzed: 01/13/2005 (5A13063-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	N/A	mg/l	10.0		98	80-115			
<b>Matrix Spike Analyzed: 01/13/2005 (5A13063-MS1)</b>											
Ammonia-N (Distilled)	11.5	0.50	N/A	mg/l	10.0	0.56	109	70-120			
<b>Matrix Spike Dup Analyzed: 01/13/2005 (5A13063-MSD1)</b>											
Ammonia-N (Distilled)	11.2	0.50	N/A	mg/l	10.0	0.56	106	70-120	3	15	
<b>Batch: 5A13065 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13065-BLK1)</b>											
Oil & Grease	ND	5.0	N/A	mg/l							

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A13065 Extracted: 01/13/05</b>											
<b>LCS Analyzed: 01/13/2005 (5A13065-BS1)</b>											
Oil & Grease	18.6	5.0	N/A	mg/l	20.0		93	65-120			M-NRI
<b>LCS Dup Analyzed: 01/13/2005 (5A13065-BSD1)</b>											
Oil & Grease	21.1	5.0	N/A	mg/l	20.0		106	65-120	13	20	
<b>Batch: 5A13082 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13082-BLK1)</b>											
Turbidity	ND	1.0	N/A	NTU							
<b>Duplicate Analyzed: 01/13/2005 (5A13082-DUP1)</b>											
Turbidity	2.70	1.0	N/A	NTU		Source: IOA0617-01			4	20	
<b>Batch: 5A13089 Extracted: 01/13/05</b>											
<b>Blank Analyzed: 01/13/2005 (5A13089-BLK1)</b>											
Total Dissolved Solids	ND	10	N/A	mg/l							
<b>LCS Analyzed: 01/13/2005 (5A13089-BS1)</b>											
Total Dissolved Solids	994	10	N/A	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 01/13/2005 (5A13089-DUP1)</b>											
Total Dissolved Solids	92.0	10	N/A	mg/l		Source: IOA0549-01			4	10	
<b>Batch: 5A14087 Extracted: 01/14/05</b>											
<b>Duplicate Analyzed: 01/14/2005 (5A14087-DUP1)</b>											
Specific Conductance	73.8	1.0	N/A	umhos/cm		Source: IOA0801-01			2	5	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5A17060 Extracted: 01/17/05</b>											
<b>Blank Analyzed: 01/17/2005 (5A17060-BLK1)</b>											
Total Suspended Solids	ND	10	N/A	mg/l							
<b>LCS Analyzed: 01/17/2005 (5A17060-BS1)</b>											
Total Suspended Solids	971	10	N/A	mg/l	1000		97	85-115			
<b>Duplicate Analyzed: 01/17/2005 (5A17060-DUP1)</b>											
Total Suspended Solids	ND	10	N/A	mg/l		Source: IOA0673-01 ND				10	
<b>Batch: 5A18093 Extracted: 01/18/05</b>											
<b>Blank Analyzed: 01/19/2005 (5A18093-BLK1)</b>											
Total Cyanide	ND	5.0	N/A	ug/l							
<b>LCS Analyzed: 01/19/2005 (5A18093-BS1)</b>											
Total Cyanide	188	5.0	N/A	ug/l	200		94	90-110			
<b>Matrix Spike Analyzed: 01/19/2005 (5A18093-MS1)</b>											
Total Cyanide	12.7	5.0	N/A	ug/l	200	ND	6	70-115			M2
<b>Matrix Spike Dup Analyzed: 01/19/2005 (5A18093-MSD1)</b>											
Total Cyanide	8.08	5.0	N/A	ug/l	200	ND	4	70-115	44	15	M2, R-3

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

METHOD BLANK/QC DATA

1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5A1502 Extracted: 01/15/05</b>											
<b>Blank Analyzed: 01/15/2005 (P5A1502-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.03			ug/l	1.00		103	80-125			
<b>LCS Analyzed: 01/15/2005 (P5A1502-BS1)</b>											
1,4-Dioxane	9.04	1.0	0.49	ug/l	10.0		90	70-130			
Surrogate: Dibromofluoromethane	0.950			ug/l	1.00		95	80-125			
<b>LCS Dup Analyzed: 01/15/2005 (P5A1502-BSD1)</b>											
1,4-Dioxane	9.30	1.0	0.49	ug/l	10.0		93	70-130	3	20	
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Analyzed: 01/15/2005 (P5A1502-MS1)</b>											
						<b>Source: POA0240-01</b>					
1,4-Dioxane	10.7	1.0	0.49	ug/l	10.0	ND	107	70-150			
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Dup Analyzed: 01/15/2005 (P5A1502-MSD1)</b>											
						<b>Source: POA0240-01</b>					
1,4-Dioxane	9.07	1.0	0.49	ug/l	10.0	ND	91	70-150	16	25	
Surrogate: Dibromofluoromethane	0.940			ug/l	1.00		94	80-125			

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011  
Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-HA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-2** The RPD exceeded the method control limit.
- R-3** The RPD exceeded the method control limit due to sample matrix effects.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

### Certification Summary

#### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

#### Subcontracted Laboratories

##### Aquatic Testing Laboratories-SUB *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chronic  
 Samples: IOA0567-01

Analysis Performed: Bioassay-Acute 96hr  
 Samples: IOA0567-01

##### Del Mar Analytical - Phoenix *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B

#### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
Received: 01/11/05

**Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Samples: IOA0567-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: Gross Alpha

Samples: IOA0567-01

Analysis Performed: Gross Beta

Samples: IOA0567-01

Analysis Performed: Level 3 Data Package

Samples: IOA0567-01

Analysis Performed: Radium, Combined

Samples: IOA0567-01

Analysis Performed: Strontium 90

Samples: IOA0567-01

Analysis Performed: Tritium

Samples: IOA0567-01

**Pace Analytical, MN- SUB**

1700 Elm Street, Ste 200 - Minneapolis, MN 55414

Analysis Performed: 1613-Dioxin-HR

Samples: IOA0567-01

Analysis Performed: EDD + Level 4

Samples: IOA0567-01

**Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine

Samples: IOA0567-01

Analysis Performed: Level 4 Data Package

Samples: IOA0567-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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CHAIN OF CUSTODY FORM

Client Name/Address:		Project:		ANALYSIS REQUIRED												Field Readings:									
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 - 13267 Sampling Perimeter Pond		Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Radium 226 &	8015B (GRO)	8015 (Extractable Fuel Hydrocarbons), Dioxane-8260B, -out	VOCS 624 +A+A+2CVE	Monomethylhydrazine	Bioassay-Acute, Bioassay-7 day Chronic	VOCS 624 + xylenes + Freon 113 + 1,1-DCE + Freon 123a + Cyclohexane	625 - PP List, (608)-Pest + PCB	Fluoride, Cr VI	Total Recoverable Metals: Pb, Ba, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V	418.1 (TFPH)	Residual Chlorine				
Outfall 011	W	Poly -1Gal	1	1/11/05 1100	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31415900 Flow (gpm)=1204	Temp = 57.6 pH= 6.8
Outfall 011	W	Poly -1Gal	1	1/11/05 1120	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31433400 Flow (gpm)=1279
Outfall 011	W	Poly -1Gal	1	1/11/05 1140	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31459600 Flow (gpm)=1208
Outfall 011	W	Poly -1Gal	1	1/11/05 1200	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31487400 Flow (gpm)=1122
Outfall 011	W	Poly -1Gal	1	1/11/05 1220	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=3152100 Flow (gpm)=1116
Outfall 011	W	Poly -1Gal	1	1/11/05 1240	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31529900 Flow (gpm)=1077
Outfall 011	W	Poly -1Gal	1	1/11/05 1300	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31557500 Flow (gpm)=1055
Outfall 011	W	Poly -1Gal	1	1/11/05 1320	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31572100 Flow (gpm)=1022
Outfall 011	W	Poly -1Gal	1	1/11/05 1340	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31582700 Flow (gpm)=1054
Outfall 011	W	Poly -1Gal	1	1/11/05 1400	None				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)=31644700 Flow (gpm)=970
Trip Blank	W	VOAs	9		HCL				X																
Relinquished By				Date/Time:	Received By				Date/Time:	Turn around Time: (check)															
Linda Hayes				1/11/05 1455	Amy Lynn				1-11-05 1455	24 Hours	48 Hours	72 Hours	Perchlorate Only 72 Hours	Metals Only 72 Hours	5 Days	10 Days	Normal								
Relinquished By				Date/Time:	Received By				Date/Time:	Sample Integrity: (Check)															
Amy Lynn				1-11-05 1450	[Signature]				1-11-05 1850	Intact	On Ice					X									
Relinquished By				Date/Time:	Received By				Date/Time:	Metals Only 72 Hours															
[Signature]					[Signature]					Sample Integrity: (Check)															
										Intact															
										On Ice															

DRP

11265

Note: Composite and analyze according to 13267 Sampling protocol. \* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA > 15pCi/L



**F A X**



300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 03/01/05

To: Michele Harper / Del Mar Analytical  
Krissi McIvenna / MWH

Fax No: 949-260-3297  
925-975-3412

From: Bronwyn K. Kelly

sign:

Subject: Chain-of-Custody Form Analytical Request Change

No. of Pages: 1  
(including cover)

**Per Request:**

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOA0567	Outfall 011 -- Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.
IOA0549	Outfall 011 -- Grab	01/11/05		608 Pest/PCB-PP list, 625-PP list, Sb, As, Ba, Be, B, Cd, Cr, Co, F, Fe, Mn, Ni, Se, Ag, Tl, V, Zn, 1,4-Dioxane, 624-Freon 113, Freon 123a, Cyclohexane
IOB1004	Outfall 011 -- Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.

The reason for these changes:

- Incorrectly marked on COC form* \_\_\_\_\_
- Lack of sample volume* \_\_\_\_\_
- MWH office personnel require this change* \_\_\_\_\_ X \_\_\_\_\_
- Other: Containers mislabeled* \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

March 9, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)  
 Outfall 011 Composite  
 Sampled: 1/12/05  
 Del Mar Analytical Number: IOA0567

Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96hr Percent Survival Bioassay by EPA Method 2000.0 and Ceriodaphnia Survival and Reproduction Test by EPA Method 1002, Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), and Strontium-90 (Sr-90, EPA 905.0), Pace Analytical performed the TCDD analysis by USEPA Method 1613B, and Truesdail Laboratories performed the Hydrazines by EPA 8315B for the project referenced above. Please use the following cross-reference table when reviewing your results.

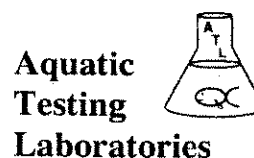
MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	PACE ID	TRUESDAIL ID
Outfall 011-Composite	IOA0567-01	A-05011310-001/002	R501121/8174-001	106135001	938627-1

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager

# LABORATORY REPORT



"dedicated to providing quality aquatic toxicity testing"

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** January 20, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05011310-001/002  
**Sample I.D.:** IOA0567-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 01/12/05  
Date Received: 01/13/05  
Date Tested: 01/13/05 to 01/19/05

**Sample Analysis:** The following analyses were performed on your sample:  
Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TUa</b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TUc</b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

## FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05011310-001  
 Client/ID: Del Mar IOA0567-01

Start Date: 01/13/2005

### TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 14 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050104.

### TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.2	9.4	8.0	0	0	Rv 1330
	100%	19.7	11.8	6.6	0	0	
24 Hr	Control	19.5	7.9	7.7	0	0	Rv 1200
	100%	19.5	8.0	7.3	0	0	
48 Hr	Control	19.3	8.0	7.7	0	0	Rv 1100
	100%	19.4	8.2	7.5	0	0	
Renewal	Control	19.2	8.8	8.0	0	0	Rv 1100
	100%	19.5	11.5	6.9	0	0	
72 Hr	Control	19.3	7.2	7.7	0	0	Rv 1300
	100%	19.2	7.9	7.8	0	0	
96 Hr	Control	19.9	7.7	7.7	0	0	Rv 1330
	100%	19.7	8.2	8.1	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 6.6; Conductivity: 88 umho; Temp: 4°C;  
 DO: 11.8 mg/l; Alkalinity: 24 mg/l; Hardness: 34 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No.  
 Control: Alkalinity: 60 mg/l; Hardness: 98 mg/l; Conductivity: 305 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes / No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

### RESULTS

Percent Survival In: Control: 100 %      100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05011310  
Client/ID: Del Mar IOA0567-01

Date Tested: 01/13/05 to 01/19/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050104.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	21.4
6.25%	100%	21.6
12.5%	100%	23.1
25%	100%	27.2
50%	100%	26.5
100%	100%	26.2

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (21.4 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 22.4%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

**SUBCONTRACT ORDER - PROJECT # IOA0567**

<p><b>SENDING LABORATORY:</b>          Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Harper</p>	<p><b>RECEIVING LABORATORY:</b>          Aquatic Testing Laboratories-SUB          4350 Transport Street, Unit 107          Ventura, CA 93003          Phone: (805) 650-0546          Fax: (805) 650-0756</p>
--	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOA0567-01 Water	Sampled: 01/12/05 13:00	Instant Notification
Bioassay-7 dy Chronic	01/14/05 01:00	ceriodaphnia, 13267
Bioassay-Acute 96hr	01/14/05 01:00	fathead minnow, 13267

**Containers Supplied:**  
 1 gal Poly (IOA0567-01AP)  
 1 gal Poly (IOA0567-01AQ)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On loc:  Yes  No  
 Samples Received at (temp): \_\_\_\_\_

Released By: [Signature] Date: 1/13/05 Time: 0700 Received By: [Signature] Date: 1/13/05 Time: 0700  
 Released By: [Signature] Date: 1/13/05 Time: 12:25 Received By: [Signature] Date: 1-13-05 Time: 1230



February 28, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOA0567  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R501121-8174

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on January 14, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MC/M/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8174</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501121-01</u>	Contract <u>PROJECT# IOA0567</u>
Received Date <u>01/14/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOA0567-01	8174-001	01/12/05	01/31/05	GrossAlpha	0.294 ± 1.0	pCi/L	1.75
			01/31/05	Gross Beta	2.50 ± 1.2	pCi/L	1.78
			02/16/05	H3	-71.9 ± 140	pCi/L	252
			01/27/05	Sr90	-0.023 ± 0.24	pCi/L	0.431

Certified by <u><i>[Signature]</i></u>
Report Date <u>02/02/05</u>
Page 1



Eberline Services

QC RESULTS

SDG <u>8174</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501121-01</u>	Contract <u>PROJECT# IOA0567</u>
Received Date <u>01/14/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
LCS	8174-002	GrossAlpha	10.8 ± 1.3	pCi/Smpl	11.2	0.643	96% recovery
		Gross Beta	12.0 ± 0.83	pCi/Smpl	12.1	0.571	99% recovery
		H3	246 ± 23	pCi/Smpl	260	24.4	95% recovery
		Sr90	12.4 ± 0.44	pCi/Smpl	11.1	0.156	112% recovery
BLANK	8174-003	GrossAlpha	0.293 ± 0.33	pCi/Smpl	NA	0.511	<MDA
		Gross Beta	-0.071 ± 0.35	pCi/Smpl	NA	0.601	<MDA
		H3	1.76 ± 14	pCi/Smpl	NA	24.7	<MDA
		Sr90	-0.053 ± 0.13	pCi/Smpl	NA	0.240	<MDA

DUPLICATES			
Sample ID	Nuclide	Results ± 2σ	MDA
8174-004	GrossAlpha	1.73 ± 1.1	1.18
	Gross Beta	1.98 ± 1.1	1.76
	H3	-28.3 ± 140	248
	Sr90	-0.048 ± 0.27	0.558

ORIGINALS						
Sample ID	Results ± 2σ	MDA	RPD	(Tct)	Eval	3σ
8174-001	0.294 ± 1.0	1.75	142	226	satis.	
	2.50 ± 1.2	1.78	23	114	satis.	
	-71.9 ± 140	252	-	0	satis.	
	-0.023 ± 0.24	0.431	-	0	satis.	

SPIKED SAMPLE			
Sample ID	Nuclide	Results ± 2σ	MDA
8174-005	GrossAlpha	84.6 ± 5.2	0.772
	Gross Beta	80.0 ± 3.6	1.75
	H3	8830 ± 380	249

ORIGINAL SAMPLE						
Sample ID	Results ± 2σ	MDA	Added	%Recv		
8174-001	0.294 ± 1.0	1.75	76.6	110		
	2.50 ± 1.2	1.78	74.0	105		
	-71.9 ± 140	252	9490	94		

Certified by [Signature]  
 Report Date 02/24/05  
 Page 2



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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOA0567**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOA0567-01 Water</b>	<b>Sampled: 01/12/05 13:00</b>	<b>Instant Notification</b>
Gross Alpha-O	01/12/06 13:00	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	01/12/06 13:00	900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Level 3 Data Package - Out	02/09/05 13:00	**LEVEL IV QC, ACCESS 7 EDD**
Radium, Combined-O	01/12/06 13:00	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	01/12/06 13:00	905.0
Tritium-O	01/12/06 13:00	906

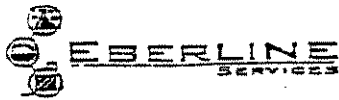
Containers Supplied:  
1 gal Poly (IOA0567-01AC)

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: [Signature] Date: 1-13-05 Time: 1700 Received By: [Signature] Eberline Date: 1-14-05 Time: 70:00

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar City Irvine State CA  
Date/Time received 1/14/05/10:00 CoC No. IOA 4567

Container I.D. No. cooler Requested TAT (Days) 14 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [ ] N/A [  ]
2. Custody seals on shipping container dated & signed? Yes [ ] No [ ] N/A [  ]
3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [  ]
4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [  ]
5. Packing material is: Wet [  ] Dry [ ]
6. Number of samples in shipping container: 1 Sample Matrix Water
7. Number of containers per sample: 1 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes [  ] No [ ]
9. Paperwork agrees with samples? Yes [  ] No [  ] 4100
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [  ]
11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [  ] pH 7 Preservative \_\_\_\_\_
13. Describe any anomalies: None
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
15. Inspected by JLdp Date: 1/14/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_



### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0567-01				
Lab Sample ID	106135001				
Filename	F50129B_15				
Injected By	BAL				
Total Amount Extracted	995 mL			Matrix	Water
% Moisture	NA			Dilution	NA
Dry Weight Extracted	NA			Collected	01/12/2005
ICAL Date	11/29/2004			Received	01/13/2005
CCal Filename(s)	F50129B_02			Extracted	01/28/2005
Method Blank ID	BLANK-6220			Analyzed	01/30/2005 07:18

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	0.83	2,3,7,8-TCDF-13C	2.00	65
Total TCDF	1.2	----	0.83 J	2,3,7,8-TCDD-13C	2.00	78
				1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	73
Total TCDD	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	85
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	----	1.40	1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	ND	----	1.20	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	----	1.30	1,2,3,7,8,9-HxCDF-13C	2.00	73
				1,2,3,4,7,8-HxCDD-13C	2.00	64
1,2,3,7,8-PeCDD	ND	----	1.10	1,2,3,6,7,8-HxCDD-13C	2.00	89
Total PeCDD	ND	----	1.10	1,2,3,4,6,7,8-HpCDF-13C	2.00	76
				1,2,3,4,7,8,9-HpCDF-13C	2.00	64
1,2,3,4,7,8-HxCDF	ND	----	0.97	1,2,3,4,6,7,8-HpCDD-13C	2.00	82
1,2,3,6,7,8-HxCDF	ND	----	0.93	OCDD-13C	4.00	72
2,3,4,6,7,8-HxCDF	ND	----	0.77			
1,2,3,7,8,9-HxCDF	ND	----	1.10	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	0.95	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.20	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,6,7,8-HxCDD	ND	----	0.97			
1,2,3,7,8,9-HxCDD	ND	----	0.93			
Total HxCDD	ND	----	1.00			
1,2,3,4,6,7,8-HpCDF	2.2	----	1.10 J			
1,2,3,4,7,8,9-HpCDF	ND	----	2.10			
Total HpCDF	2.2	----	1.60 BJ			
1,2,3,4,6,7,8-HpCDD	7.4	----	1.40 BJ			
Total HpCDD	18.0	----	1.40 BJ			
OCDF	8.4	----	2.10 BJ			
OCDD	66.0	----	2.30 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106135

## REPORT OF LABORATORY ANALYSIS

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**Method 1613B Blank Analysis Results**

Client - Del Mar Analytical

Lab Sample ID	BLANK-6220	Matrix	Water
Filename	F50129B_06	Dilution	NA
Total Amount Extracted	1020 mL	Extracted	01/28/2005
ICAL Date	11/29/2004	Analyzed	01/29/2005 23:49
CCal Filename(s)	F50129B_02	Injected By	BAL

Native isomers	Conc pg/L	EMPC pg/L	PRL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	1.20	2,3,7,8-TCDF-13C	2.00	58
Total TCDF	ND	-----	-----	2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	ND	-----	1.20	2,3,4,7,8-PeCDF-13C	2.00	67
Total TCDD	ND	-----	-----	1,2,3,7,8-PeCDD-13C	2.00	80
				1,2,3,4,7,8-HxCDF-13C	2.00	70
1,2,3,7,8-PeCDF	ND	-----	1.50	1,2,3,6,7,8-HxCDF-13C	2.00	82
2,3,4,7,8-PeCDF	ND	-----	1.20	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	-----	1,2,3,7,8,9-HxCDF-13C	2.00	72
				1,2,3,4,7,8-HxCDD-13C	2.00	66
1,2,3,7,8-PeCDD	ND	-----	1.60	1,2,3,6,7,8-HxCDD-13C	2.00	88
Total PeCDD	ND	-----	-----	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	63
1,2,3,4,7,8-HxCDF	ND	-----	0.75	1,2,3,4,6,7,8-HpCDD-13C	2.00	80
1,2,3,6,7,8-HxCDF	ND	-----	0.86	OCDD-13C	4.00	68
2,3,4,6,7,8-HxCDF	ND	-----	1.10			
1,2,3,7,8,9-HxCDF	ND	-----	1.20	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	-----	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	1.10	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,6,7,8-HxCDD	ND	-----	0.99			
1,2,3,7,8,9-HxCDD	ND	-----	1.00			
Total HxCDD	ND	-----	-----			
1,2,3,4,6,7,8-HpCDF	ND	-----	2.10			
1,2,3,4,7,8,9-HpCDF	ND	-----	1.90			
Total HpCDF	2.2	-----	----- J			
1,2,3,4,6,7,8-HpCDD	2.4	-----	1.40 J			
Total HpCDD	2.4	-----	----- J			
OCDF	5.2	-----	1.80 J			
OCDD	5.6	-----	2.90 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 PRL = Pace Analytical Reporting Limit  
 A = Limit of Detection based on signal to noise  
 P = Recovery outside of method 1613 control limits  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 J = Value below calibration range  
 \* = See Discussion

Report No.....106124

**REPORT OF LABORATORY ANALYSIS**

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCS-6221		
Filename	F50129B_03	Matrix	Water
Total Amount Extracted	1040 mL	Dilution	NA
ICAL Date	11/29/2004	Extracted	01/28/2005
CCal Filename	F50129B_02	Analyzed	01/29/2005 21:22
Method Blank ID	BLANK-6220	Injected By	BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.9	7.5	15.8	99
2,3,7,8-TCDD	10	8.6	6.7	15.8	86
1,2,3,7,8-PeCDF	50	50.5	40.0	67.0	101
2,3,4,7,8-PeCDF	50	48.2	34.0	80.0	96
1,2,3,7,8-PeCDD	50	43.3	35.0	71.0	87
1,2,3,4,7,8-HxCDF	50	45.6	36.0	67.0	91
1,2,3,6,7,8-HxCDF	50	48.7	42.0	65.0	97
2,3,4,6,7,8-HxCDF	50	49.1	35.0	78.0	98
1,2,3,7,8,9-HxCDF	50	46.5	39.0	65.0	93
1,2,3,4,7,8-HxCDD	50	49.9	35.0	82.0	100
1,2,3,6,7,8-HxCDD	50	51.3	38.0	67.0	103
1,2,3,7,8,9-HxCDD	50	50.1	32.0	81.0	100
1,2,3,4,6,7,8-HpCDF	50	50.3	41.0	61.0	101
1,2,3,4,7,8,9-HpCDF	50	53.3	39.0	69.0	107
1,2,3,4,6,7,8-HpCDD	50	45.4	35.0	70.0	91
OCDF	100	95.6	63.0	170.0	96
OCDD	100	97.1	78.0	144.0	97
2,3,7,8-TCDD-37Cl4	10	6.9	3.1	19.1	69
2,3,7,8-TCDF-13C	100	51.5	22.0	152.0	52
2,3,7,8-TCDD-13C	100	67.8	20.0	175.0	68
1,2,3,7,8-PeCDF-13C	100	61.4	21.0	192.0	61
2,3,4,7,8-PeCDF-13C	100	65.9	13.0	328.0	66
1,2,3,7,8-PeCDD-13C	100	77.8	21.0	227.0	78
1,2,3,4,7,8-HxCDF-13C	100	70.2	19.0	202.0	70
1,2,3,6,7,8-HxCDF-13C	100	78.0	21.0	159.0	78
2,3,4,6,7,8-HxCDF-13C	100	74.1	22.0	176.0	74
1,2,3,7,8,9-HxCDF-13C	100	70.4	17.0	205.0	70
1,2,3,4,7,8-HxCDD-13C	100	69.0	21.0	193.0	69
1,2,3,6,7,8-HxCDD-13C	100	82.8	25.0	163.0	83
1,2,3,4,6,7,8-HpCDF-13C	100	72.1	21.0	158.0	72
1,2,3,4,7,8,9-HpCDF-13C	100	62.4	20.0	186.0	62
1,2,3,4,6,7,8-HpCDD-13C	100	80.1	26.0	166.0	80
OCDD-13C	200	135.6	26.0	397.0	68

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....106124

## REPORT OF LABORATORY ANALYSIS

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### Method 1613B Laboratory Control Spike Results

Client - Del Mar Analytical

Lab Sample ID	LCSD-6222	Matrix	Water
Filename	F50129B_04	Dilution	NA
Total Amount Extracted	1040 mL	Extracted	01/28/2005
ICAL Date	11/29/2004	Analyzed	01/29/2005 22:09
CCal Filename	F50129B_02	Injected By	BAL
Method Blank ID	BLANK-6220		

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	10.6	7.5	15.8	106
2,3,7,8-TCDD	10	9.4	6.7	15.8	94
1,2,3,7,8-PeCDF	50	53.2	40.0	67.0	106
2,3,4,7,8-PeCDF	50	50.7	34.0	80.0	101
1,2,3,7,8-PeCDD	50	46.0	35.0	71.0	92
1,2,3,4,7,8-HxCDF	50	47.6	36.0	67.0	95
1,2,3,6,7,8-HxCDF	50	50.9	42.0	65.0	102
2,3,4,6,7,8-HxCDF	50	50.9	35.0	78.0	102
1,2,3,7,8,9-HxCDF	50	49.0	39.0	65.0	98
1,2,3,4,7,8-HxCDD	50	52.4	35.0	82.0	105
1,2,3,6,7,8-HxCDD	50	54.2	38.0	67.0	108
1,2,3,7,8,9-HxCDD	50	52.5	32.0	81.0	105
1,2,3,4,6,7,8-HpCDF	50	55.0	41.0	61.0	110
1,2,3,4,7,8,9-HpCDF	50	55.7	39.0	69.0	111
1,2,3,4,6,7,8-HpCDD	50	48.0	35.0	70.0	96
OCDF	100	100.6	63.0	170.0	101
OCDD	100	101.9	78.0	144.0	102
2,3,7,8-TCDD-37Cl4	10	8.7	3.1	19.1	87
2,3,7,8-TCDF-13C	100	70.4	22.0	152.0	70
2,3,7,8-TCDD-13C	100	88.6	20.0	175.0	89
1,2,3,7,8-PeCDF-13C	100	73.6	21.0	192.0	74
2,3,4,7,8-PeCDF-13C	100	79.0	13.0	328.0	79
1,2,3,7,8-PeCDD-13C	100	95.5	21.0	227.0	96
1,2,3,4,7,8-HxCDF-13C	100	84.8	19.0	202.0	85
1,2,3,6,7,8-HxCDF-13C	100	89.5	21.0	159.0	90
2,3,4,6,7,8-HxCDF-13C	100	87.2	22.0	176.0	87
1,2,3,7,8,9-HxCDF-13C	100	82.1	17.0	205.0	82
1,2,3,4,7,8-HxCDD-13C	100	80.1	21.0	193.0	80
1,2,3,6,7,8-HxCDD-13C	100	97.0	25.0	163.0	97
1,2,3,4,6,7,8-HpCDF-13C	100	84.4	21.0	158.0	84
1,2,3,4,7,8,9-HpCDF-13C	100	71.7	20.0	186.0	72
1,2,3,4,6,7,8-HpCDD-13C	100	92.4	26.0	166.0	92
OCDD-13C	200	159.2	26.0	397.0	80

Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
X = Background subtracted value  
P = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
\* = See Discussion

Report No.....106124

## REPORT OF LABORATORY ANALYSIS

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SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client..... Del Mar Analytical

SPIKE 1 ID..... LCS-6221  
 SPIKE 1 Filename..... F50129B\_03  
 SPIKE 2 ID..... LCSD-6222  
 SPIKE 2 Filename..... F50129B\_04

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	99	106	6.8
2378-TCDD	86	94	8.9
12378-PeCDF	101	106	4.8
23478-PeCDF	96	101	5.1
12378-PeCDD	87	92	5.6
123478-HxCDF	91	95	4.3
123678-HxCDF	97	102	5.0
234678-HxCDF	98	102	4.0
123789-HxCDF	93	98	5.2
123478-HxCDD	100	105	4.9
123678-HxCDD	103	108	4.7
123789-HxCDD	100	105	4.9
1234678-HpCDF	101	110	8.5
1234789-HpCDF	107	111	3.7
1234678-HpCDD	91	96	5.3
OCDF	96	101	5.1
OCDD	97	102	5.0

REC = Percent Recovered

RPD = The difference between the two values divided by the average.

NA = Not Applicable

Report No..... 106124, 106125, 106126  
 106127, 106128, 106130  
 106131, 106132, 106135

**REPORT OF LABORATORY ANALYSIS**

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**TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans**

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

\*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0651  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOA0567 106135**

<p><b>SENDING LABORATORY:</b>          Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Harper</p>	<p><b>RECEIVING LABORATORY:</b>          Pace Analytical, MN- SUB          1700 Elm Street, Ste 200          Minneapolis, MN 55414          Phone : (612) 607-1700          Fax: (612) 607-6444</p>
--	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOA0567-01 Water</b> 1613-Dioxin-HR EDD + Level 4	<b>Sampled: 01/12/05 13:00</b> 01/19/05 13:00 02/09/05 13:00	<b>Instant Notification</b> J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b> 1 L Amber (IOA0567-01G) 1 L Amber (IOA0567-01H)		

106135001

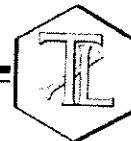
**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): 23°C

Released By: *[Signature]* Date: 1/12/05 Time: \_\_\_\_\_  
 Received By: *[Signature]* Date: 1/13/05 Time: 9:45

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INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

January 18, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

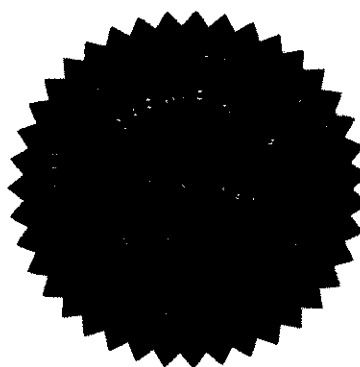
**Attention:** Michele Harper

**Project Name:** IOA0567  
**Date Received:** 01/13/05

**Truesdail Project:** 938627

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
938627-1	IOA0567-01	Water	01/12/05	1300	Hydrazines by EPA 8315M



Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

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**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOA0567  
**Date Received:** 01/13/05

**Truesdail Project:** 938627

## Case Narrative

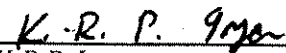
**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

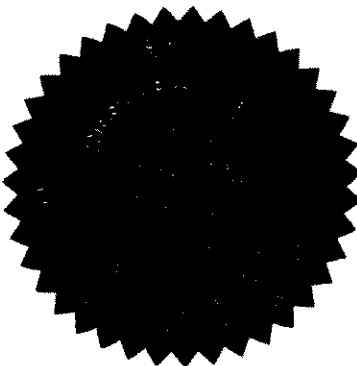
**Analysis** The analysis was performed as requested on the chain-of-custody.

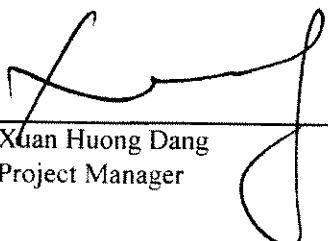
**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer



  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

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## REPORT

**Client:** Del Mar Analytical - Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOA0567  
**P.O. Number:** IOA0567  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938627  
**Report Date:** January 17, 2005  
**Sampling Date:** January 12, 2005  
**Receiving Date:** January 13, 2005  
**Extraction Date:** January 13, 2005  
**Analysis Date:** January 14, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** RC

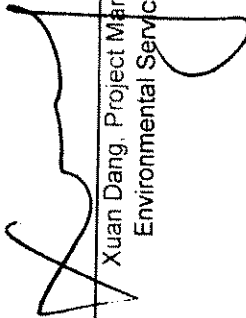
### Analytical Results

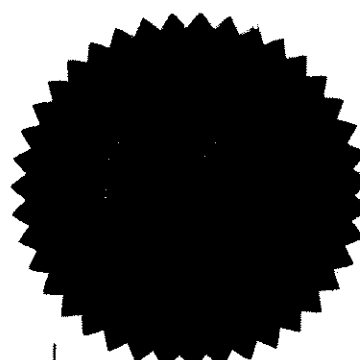
Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
704662-MB	Method Blank	ND	ND	ND	ND	ND
938627	IOA0567-01	ND	ND	ND	ND	ND
PQL		5.0	5.0	5.0	5.0	1.0
Sample Report Limits		5.0	5.0	5.0	5.0	1.0

Page 1 of 1

PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services



This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

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**Client:** Del Mar Analytical- Alt.  
 17461 Derian Ave.  
 Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOA0567  
**P.O. Number:** IOA0567  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2916, Analysis: 354  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704662  
**Project Lab. No.:** 938627  
**Spiked Sample ID:** 938627  
**Report Date:** January 17, 2005  
**Sampling Date:** January 12, 2005  
**Receiving Date:** January 13, 2005  
**Extraction Date:** January 13, 2005  
**Analysis Date:** January 14, 2005  
**Units:** µg/L  
**Reported By:** RC

### Quality Control/Quality Assurance Calibration Report

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits		Flag
				Value	Rec.	
Monomethyl Hydrazine	25.0	26.6	106	85-115		PASS
u-Dimethyl Hydrazine	25.0	23.2	92.7	85-115		PASS
Hydrazine	5.0	4.85	96.9	85-115		PASS

### QCS

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits		Flag
				Value	Rec.	
Monomethyl Hydrazine	50.0	48.4	96.9	85-115		PASS
u-Dimethyl Hydrazine	50.0	47.2	94.4	85-115		PASS
Hydrazine	10.0	10.6	106	85-115		PASS

### Quality Control/Quality Assurance Spikes Report MS/MSD

Parameter	Spiked Conc. ug/L	Recovered Concentration LCS	MB	Percent Recovery (%)		LCS/LCSD %D	Control Limits	Flag
				LCS	LCSD			
Monomethyl Hydrazine	50.0	46.7	48.7	0.0	93.3	97.4	4.31%	PASS
u-Dimethyl Hydrazine	50.0	46.1	47.3	0.0	92.2	94.6	2.54%	PASS
Hydrazine	10.0	11.5	11.0	0.0	115	110	4.8%	PASS

Parameter	Spiked Conc. ug/L	Recovered Concentration MS	Sample MSD	Percent Recovery (%)		MS/MSD %D	Control Limits	Flag
				MS	MSD			
Monomethyl Hydrazine	50.0	37.3	37.6	0.0	74.6	75.2	0.70%	PASS
u-Dimethyl Hydrazine	50.0	45.2	45.1	0.0	90.4	90.3	0.13%	PASS
Hydrazine	10.0	9.94	10.6	0.0	99.4	106	6.64%	PASS

ICV: Initial Calibration Verification  
 CCV: Continued Calibration Verification  
 LCS: Laboratory Control Spike  
 MS: Matrix Spike  
 %D: Percent Difference  
 Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

Juan Dang, Project Manager  
 Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



Del Mar Analytical

938627

SUBCONTRACT ORDER - PROJECT # IOA0567

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228

1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046

9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689

9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851

2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3821

SENDING LABORATORY:

Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 261-1228
Project Manager: Michele Harper

RECEIVING LABORATORY:

Truesdail Laboratories-SUB
14201 Franklin Avenue
Tustin, CA 92680
Phone : (714) 730-6239
Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: Initials:

Table with columns: Analysis, Expiration, Comments. Row 1: Sample ID: IOA0567-01 Water, Hydrazine-OUT, Level 4 Data Package, Expiration: 01/15/05 13:00, 02/09/05 13:00, Comments: Instant Notification, Sub Truesdail for Monomethylhydrazine, 13267

Containers Supplied:
1 L Amber (IOA0567-01AK)
1 L Amber (IOA0567-01AL)

ALERT !!
Level IVQC

Rec'd 01/12/05
sl6a 938627

For Sample Conditions
See Form Attached

SAMPLE INTEGRITY:

Form with checkboxes for: All containers intact, Custody Seals Present, Sample labels/COC agree, Samples Preserved Properly, Samples Received On Ice, Samples Received at (temp).

Handwritten signatures and dates for Released By and Received By with corresponding dates and times.



# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 938627

Date Delivered: 1/13/05 Time: 9:00 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  Yes  No  N/A  
Temperature (if yes)? 4°C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  Yes  No  N/A  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = NA  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  Yes  No  N/A  
If not, notify the Project Manager.
14. Have Project due dates been checked and accepted?  Yes  No  N/A  
Turn Around Time (TAT):  RUSH  Std
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: J Brown

**ALERT**  
**Level IV**  
**QC**



## **APPENDIX A**

### **Section 38**

Outfall 011, January 11, 2005

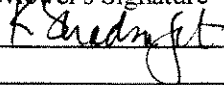
MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF22  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 9

Laboratory Pace  
 Reviewer K. Shadowlight  
 Analysis/Method Dioxins

Date: February 18, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	  
2. <b>Out of Scope Analyses</b>	  
3. <b>Analyses Not Conducted</b>	  
4. <b>Missing Hardcopy Deliverables</b>	  
5. <b>Incorrect Hardcopy Deliverables</b>	  
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were assigned for the following:
Holding Times	* Method blank contamination
GC/MS Tune/Inst. Performance	* EMPCs
Calibration	* Detects below the lower method calibration level
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 9  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: February 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
Outfall 001	IOA0551-01	106124001	water	1613
Outfall 002	IOA0550-01	106130001	water	1613
Outfall 007	IOA0556-01	106128001	water	1613
Outfall 008	IOA0553-01	106126001	water	1613
Outfall 009	IOA0554-01	106131001	water	1613
Outfall 010	IOA0555-01	106127001	water	1613
Outfall 011	IOA0549-01	106132001	water	1613
Outfall 011	IOA0567-01	106135001	water	1613
Outfall 018	IOA0552-01	106125001	water	1613



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were subcontracted to Pace Analytical for the dioxin/furan analyses. The samples in these SDGs were received at Pace Analytical Services within the temperature limits of 4°C ±2°C. The samples were received in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were signed by the appropriate field and laboratory personnel. The samples and analyses were accounted for on both the original COCs and transfer COCs. As the samples were couriered directly to the laboratory (Del Mar Analytical), custody seals were not required. There was no information regarding custody seals upon receipt at Pace. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A column performance standard was combined with the daily calibration verification and analyzed at the beginning of each analytical sequence. The GC column performance was acceptable with the chromatographic separation of 2,3,7,8-TCDD and other TCDD isomers resolved with a valley of ≤25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance could not be evaluated as the laboratory did not provide selected ion current profiles for the lock-mass ions. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 11/29/04 on Instrument 10MSHR05. The calibration consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the 2 native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in the Table 6 of the EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

One method blank (Blank-6220) was extracted and analyzed with the samples in these SDGs. Target compounds total HpCDF, 1,2,3,4,6,7,8-HpCDF, total HpCDF, OCDF, and OCDD were reported in the method blank. Any detects for the aforementioned target compounds reported at concentrations  $< 5\times$  the concentrations reported in the method blank were qualified as estimated nondetects "UJ," at the levels of interference in the samples of these SDGs. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One LCS/LCSD pair (LCS-6221/LCSD-6222) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. There are no method QC limits established for RPDs. The reported RPDs were within  $\pm 20\%$ . No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy and precision was based on the LCS/LCSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration limit (MCL) were qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

**Method 1613B Analysis Results**

Client - Del Mar Analytical

Client's Sample ID	IOA0551-01	<i>out full out</i>
Lab Sample ID	106124001	
Filename	F50129B_07	
Injected By	BAL	
Total Amount Extracted	1050 mL	Matrix Water
% Moisture	NA	Dilution NA
Dry Weight Extracted	NA	Collected 01/11/2005
ICAL Date	11/29/2004	Received 01/13/2005
CCal Filename(s)	F50129B_02	Extracted 01/28/2005
Method Blank ID	BLANK-6220	Analyzed 01/30/2005 00:39

*Handwritten notes:*  
 2,3,7,8-TCDF  
 2,3,7,8-TCDD  
 1,2,3,7,8-PeCDF  
 2,3,4,7,8-PeCDF  
 Total PeCDF  
 1,2,3,7,8-PeCDD  
 Total PeCDD  
 1,2,3,4,7,8-HxCDF  
 1,2,3,6,7,8-HxCDF  
 2,3,4,6,7,8-HxCDF  
 1,2,3,7,8,9-HxCDF  
 Total HxCDF  
 1,2,3,4,7,8-HxCDD  
 1,2,3,6,7,8-HxCDD  
 1,2,3,7,8,9-HxCDD  
 Total HxCDD  
 1,2,3,4,6,7,8-HpCDF  
 1,2,3,4,7,8,9-HpCDF  
 Total HpCDF  
 1,2,3,4,6,7,8-HpCDD  
 Total HpCDD  
 OCDF  
 OCDD

Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	1.30	2,3,7,8-TCDF-13C	2.00	63
Total TCDF	ND	----	1.30	2,3,7,8-TCDD-13C	2.00	79
				1,2,3,7,8-PeCDF-13C	2.00	67
2,3,7,8-TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	84
				1,2,3,4,7,8-HxCDF-13C	2.00	72
1,2,3,7,8-PeCDF	ND	----	1.60	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	ND	----	0.86	2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	----	1.20	1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	67
1,2,3,7,8-PeCDD	ND	----	0.73	1,2,3,6,7,8-HxCDD-13C	2.00	89
Total PeCDD	ND	----	0.73	1,2,3,4,6,7,8-HpCDF-13C	2.00	78
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	----	1.00	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	----	1.40	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	ND	----	0.87			
1,2,3,7,8,9-HxCDF	ND	----	0.75	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	1.00	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	1.10	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,6,7,8-HxCDD	ND	----	0.87			
1,2,3,7,8,9-HxCDD	ND	----	1.10			
Total HxCDD	ND	----	1.00			
1,2,3,4,6,7,8-HpCDF	ND	----	1.10			
1,2,3,4,7,8,9-HpCDF	ND	----	1.70			
Total HpCDF	ND	----	1.40			
1,2,3,4,6,7,8-HpCDD	5.8	----	1.20	BJ		
Total HpCDD	12.0	----	1.20	BJ		
OCDF	7.1	----	1.70	BJ		
OCDD	56.0	----	1.90	J		

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106124

**AMEC VALIDATED REPORT OF LABORATORY ANALYSIS**

**LEVEL IV**

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

### Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0550-01	<i>out fall 002</i>
Lab Sample ID	106130001	
Filename	F50129B_12	
Injected By	BAL	
Total Amount Extracted	1040 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/11/2005
CCal Filename(s)	F50129B_02	Received 01/13/2005
Method Blank ID	BLANK-6220	Extracted 01/28/2005
		Analyzed 01/30/2005 04:48

<i>Peak</i>	<i>Just</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>U</i>		2,3,7,8-TCDF	ND	----	0.63	2,3,7,8-TCDF-13C	2.00	60
<i>S</i>	<i>only</i>	Total TCDF	2.1	----	0.63 J	2,3,7,8-TCDD-13C	2.00	75
						1,2,3,7,8-PeCDF-13C	2.00	67
<i>M</i>		2,3,7,8-TCDD	ND	----	0.78	2,3,4,7,8-PeCDF-13C	2.00	69
<i>U</i>		Total TCDD	ND	----	0.78	1,2,3,7,8-PeCDD-13C	2.00	83
						1,2,3,4,7,8-HxCDF-13C	2.00	68
<i>U</i>		1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,6,7,8-HxCDF-13C	2.00	82
<i>V</i>		2,3,4,7,8-PeCDF	ND	----	0.62	2,3,4,6,7,8-HxCDF-13C	2.00	74
		Total PeCDF	ND	----	0.90	1,2,3,7,8,9-HxCDF-13C	2.00	71
						1,2,3,4,7,8-HxCDD-13C	2.00	61
<i>U</i>		1,2,3,7,8-PeCDD	ND	----	0.74	1,2,3,6,7,8-HxCDD-13C	2.00	88
<i>U</i>		Total PeCDD	ND	----	0.74	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
						1,2,3,4,7,8,9-HpCDF-13C	2.00	63
<i>U</i>		1,2,3,4,7,8-HxCDF	ND	----	0.48	1,2,3,4,6,7,8-HpCDD-13C	2.00	81
<i>U</i>		1,2,3,6,7,8-HxCDF	ND	----	0.61	OCDD-13C	4.00	70
<i>U</i>		2,3,4,6,7,8-HxCDF	ND	----	0.55			
<i>U</i>		1,2,3,7,8,9-HxCDF	ND	----	0.63	1,2,3,4-TCDD-13C	2.00	NA
<i>U</i>		Total HxCDF	ND	----	0.57	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>U</i>		1,2,3,4,7,8-HxCDD	ND	----	0.91	2,3,7,8-TCDD-37Cl4	0.20	72
<i>U</i>		1,2,3,6,7,8-HxCDD	ND	----	0.57			
<i>U</i>		1,2,3,7,8,9-HxCDD	ND	----	0.49			
<i>S</i>	<i>only</i>	Total HxCDD	1.5	----	0.66 J			
<i>U</i>	<i>NO</i>	1,2,3,4,6,7,8-HpCDF	----	1.4	0.92 I			
<i>U</i>		1,2,3,4,7,8,9-HpCDF	ND	----	1.00			
<i>U</i>		Total HpCDF	ND	----	0.97			
<i>U</i>	<i>O</i>	1,2,3,4,6,7,8-HpCDD	8.0	----	0.95 BJ			
<i>S</i>	<i>only</i>	Total HpCDD	16.0	----	0.95 BJ			
<i>U</i>	<i>B</i>	OCDF	7.6	----	1.50 BJ			
<i>S</i>	<i>only</i>	OCDD	71.0	----	5.40 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106130

## AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

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LEVEL IV

## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0556-01	<i>outfall 001</i>		
Lab Sample ID	106128001			
Filename	F50129B_11			
Injected By	BAL			
Total Amount Extracted	1040 mL		Matrix	Water
% Moisture	NA		Dilution	NA
Dry Weight Extracted	NA		Collected	01/11/2005
ICAL Date	11/29/2004		Received	01/13/2005
CCal Filename(s)	F50129B_02		Extracted	01/28/2005
Method Blank ID	BLANK-6220		Analyzed	01/30/2005 03:58

Rev	Qual	Sample	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U	J	DNQ	2,3,7,8-TCDF	ND	-----	1.00	2,3,7,8-TCDF-13C	2.00	64
			Total TCDF	1.4	-----	1.00	2,3,7,8-TCDD-13C	2.00	81
							1,2,3,7,8-PeCDF-13C	2.00	73
U	U		2,3,7,8-TCDD	ND	-----	1.10	2,3,4,7,8-PeCDF-13C	2.00	75
			Total TCDD	ND	-----	1.10	1,2,3,7,8-PeCDD-13C	2.00	89
							1,2,3,4,7,8-HxCDF-13C	2.00	74
U	U		1,2,3,7,8-PeCDF	ND	-----	1.30	1,2,3,6,7,8-HxCDF-13C	2.00	86
			2,3,4,7,8-PeCDF	ND	-----	0.70	2,3,4,6,7,8-HxCDF-13C	2.00	79
			Total PeCDF	ND	-----	0.98	1,2,3,7,8,9-HxCDF-13C	2.00	76
							1,2,3,4,7,8-HxCDD-13C	2.00	68
U	U		1,2,3,7,8-PeCDD	ND	-----	0.81	1,2,3,6,7,8-HxCDD-13C	2.00	91
			Total PeCDD	ND	-----	0.81	1,2,3,4,6,7,8-HpCDF-13C	2.00	79
							1,2,3,4,7,8,9-HpCDF-13C	2.00	68
U	U		1,2,3,4,7,8-HxCDF	ND	-----	0.84	1,2,3,4,6,7,8-HpCDD-13C	2.00	88
			1,2,3,6,7,8-HxCDF	ND	-----	0.83	OCDD-13C	4.00	74
			2,3,4,6,7,8-HxCDF	ND	-----	0.89			
			1,2,3,7,8,9-HxCDF	ND	-----	0.91	1,2,3,4-TCDD-13C	2.00	NA
			Total HxCDF	ND	-----	0.87	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U	U		1,2,3,4,7,8-HxCDD	ND	-----	0.76	2,3,7,8-TCDD-37Cl4	0.20	81
			1,2,3,6,7,8-HxCDD	ND	-----	0.57			
			1,2,3,7,8,9-HxCDD	ND	-----	0.67			
			Total HxCDD	1.2	-----	0.67			
J	J	DNQ	1,2,3,4,6,7,8-HpCDF	2.1	-----	1.40			
U	U	DNQ	1,2,3,4,7,8,9-HpCDF	ND	-----	1.80			
			Total HpCDF	14.0	-----	1.60			
U	U	B	1,2,3,4,6,7,8-HpCDD	4.3	-----	0.94			
			Total HpCDD	7.6	-----	0.94			
U	U	B	OCDF	13.0	-----	2.00			
			OCDD	23.0	-----	3.30			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106128

AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

LEVEL IV

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0553-01	<i>out full box</i>		
Lab Sample ID	106126001			
Filename	F50129B_09			
Injected By	BAL			
Total Amount Extracted	1010 mL		Matrix	Water
% Moisture	NA		Dilution	NA
Dry Weight Extracted	NA		Collected	01/11/2005
ICAL Date	11/29/2004		Received	01/13/2005
CCal Filename(s)	F50129B_02		Extracted	01/28/2005
Method Blank ID	BLANK-6220		Analyzed	01/30/2005 02:18

Rev Anal	Just Cal	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----	0.98	2,3,7,8-TCDF-13C	2.00	68
u	<i>only</i>	Total TCDF	1.30	----	0.98 J	2,3,7,8-TCDD-13C	2.00	85
u		2,3,7,8-TCDD	ND	----	0.96	1,2,3,7,8-PeCDF-13C	2.00	75
u		Total TCDD	ND	----	0.96	2,3,4,7,8-PeCDF-13C	2.00	79
u						1,2,3,7,8-PeCDD-13C	2.00	95
u		1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,4,7,8-HxCDF-13C	2.00	76
u		2,3,4,7,8-PeCDF	ND	----	0.86	1,2,3,6,7,8-HxCDF-13C	2.00	95
u		Total PeCDF	ND	----	1.10	2,3,4,6,7,8-HxCDF-13C	2.00	86
u						1,2,3,7,8,9-HxCDF-13C	2.00	79
u		1,2,3,7,8-PeCDD	ND	----	0.78	1,2,3,4,7,8-HxCDD-13C	2.00	75
u		Total PeCDD	ND	----	0.78	1,2,3,6,7,8-HxCDD-13C	2.00	95
u						1,2,3,4,6,7,8-HpCDF-13C	2.00	84
u		1,2,3,4,7,8-HxCDF	ND	----	0.80	1,2,3,4,7,8,9-HpCDF-13C	2.00	72
u		1,2,3,6,7,8-HxCDF	ND	----	0.74	1,2,3,4,6,7,8-HpCDD-13C	2.00	93
u		2,3,4,6,7,8-HxCDF	ND	----	0.81	OCDD-13C	4.00	80
u		1,2,3,7,8,9-HxCDF	ND	----	1.00			
u	<i>only</i>	Total HxCDF	0.95	----	0.84 J	1,2,3,4-TCDD-13C	2.00	NA
u						1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	----	0.79	2,3,7,8-TCDD-37Cl4	0.20	84
u		1,2,3,6,7,8-HxCDD	ND	----	0.94			
u		1,2,3,7,8,9-HxCDD	ND	----	0.93			
u		Total HxCDD	ND	----	0.89			
u		1,2,3,4,6,7,8-HpCDF	ND	----	1.30			
u		1,2,3,4,7,8,9-HpCDF	ND	----	1.20			
u		Total HpCDF	ND	----	1.20			
u		1,2,3,4,6,7,8-HpCDD	2.20	----	1.30 BJ			
u		Total HpCDD	4.40	----	1.30 BJ			
u		OCDF	5.20	----	1.50 BJ			
u		OCDD	18.00	----	2.50 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106126

### AMEC VALIDATED REPORT OF LABORATORY ANALYSIS

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0554-01		
Lab Sample ID	106131001		
Filename	F50129B_13		
Injected By	BAL		
Total Amount Extracted	1040 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	01/11/2005
ICAL Date	11/29/2004	Received	01/13/2005
CCal Filename(s)	F50129B_02	Extracted	01/28/2005
Method Blank ID	BLANK-6220	Analyzed	01/30/2005 05:38

Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U	2,3,7,8-TCDF	ND	-----	0.85	2,3,7,8-TCDF-13C	2.00	71
U	Total TCDF	1.2	-----	0.85 J	2,3,7,8-TCDD-13C	2.00	88
U	2,3,7,8-TCDD	ND	-----	1.30	1,2,3,7,8-PeCDF-13C	2.00	78
U	Total TCDD	ND	-----	1.30	2,3,4,7,8-PeCDF-13C	2.00	80
U	1,2,3,7,8-PeCDF	ND	-----	1.20	1,2,3,7,8-PeCDD-13C	2.00	95
U	2,3,4,7,8-PeCDF	ND	-----	0.73	1,2,3,4,7,8-HxCDF-13C	2.00	80
U	Total PeCDF	ND	-----	0.94	1,2,3,6,7,8-HxCDF-13C	2.00	91
U	1,2,3,7,8-PeCDD	ND	-----	0.83	2,3,4,6,7,8-HxCDF-13C	2.00	85
U	Total PeCDD	ND	-----	0.83	1,2,3,7,8,9-HxCDF-13C	2.00	81
U	1,2,3,4,7,8-HxCDF	ND	-----	0.82	1,2,3,4,7,8-HxCDD-13C	2.00	74
U	1,2,3,6,7,8-HxCDF	ND	-----	0.68	1,2,3,6,7,8-HxCDD-13C	2.00	95
U	2,3,4,6,7,8-HxCDF	ND	-----	0.86	1,2,3,4,6,7,8-HpCDF-13C	2.00	83
U	1,2,3,7,8,9-HxCDF	ND	-----	0.72	1,2,3,4,7,8,9-HpCDF-13C	2.00	72
U	Total HxCDF	ND	-----	0.77	1,2,3,4,6,7,8-HpCDD-13C	2.00	92
U	1,2,3,4,7,8-HxCDD	ND	-----	0.83	OCDD-13C	4.00	81
U	1,2,3,6,7,8-HxCDD	ND	-----	0.74	1,2,3,4-TCDD-13C	2.00	NA
U	1,2,3,7,8,9-HxCDD	ND	-----	0.62	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U	Total HxCDD	ND	-----	0.73	2,3,7,8-TCDD-37Cl4	0.20	86
U	1,2,3,4,6,7,8-HpCDF	-----	1.1	0.94 I			
U	1,2,3,4,7,8,9-HpCDF	ND	-----	1.40			
U	Total HpCDF	5.4	-----	1.10 BJ			
U	1,2,3,4,6,7,8-HpCDD	3.0	-----	1.20 BJ			
U	Total HpCDD	7.4	-----	1.20 BJ			
U	OCDF	7.7	-----	1.30 BJ			
U	OCDD	26.0	-----	1.50 BJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
 EMPC = Estimated Maximum Possible Concentration  
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
 D = Result obtained from analysis of diluted sample  
 B = Less than 10 times higher than method blank level  
 P = Recovery outside of method 1613 control limits  
 J = Concentration detected is below the calibration range  
 Nn = Value obtained from additional analysis

I = Interference  
 E = PCDE Interference  
 ND = Not Detected  
 NA = Not Applicable  
 NC = Not Calculated  
 \* = See Discussion

Report No.....106131

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### REPORT OF LABORATORY ANALYSIS

LEVEL III

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0555-01		
Lab Sample ID	106127001	outfull 010	
Filename	F50129B_10		
Injected By	BAL		
Total Amount Extracted	1010 mL		
% Moisture	NA	Matrix	Water
Dry Weight Extracted	NA	Dilution	NA
ICAL Date	11/29/2004	Collected	01/11/2005
CCal Filename(s)	F50129B_02	Received	01/13/2005
Method Blank ID	BLANK-6220	Extracted	01/28/2005
		Analyzed	01/30/2005 03:08

Conc	EMPC	LOD	Internal Standards	ng's Added	Percent Recovery
ND	-----	0.75	2,3,7,8-TCDF-13C	2.00	61
2.3	-----	0.75 J	2,3,7,8-TCDD-13C	2.00	76
ND	-----	1.00	1,2,3,7,8-PeCDF-13C	2.00	63
ND	-----	1.00	2,3,4,7,8-PeCDF-13C	2.00	69
ND	-----	1.50	1,2,3,7,8-PeCDD-13C	2.00	82
ND	-----	1.00	1,2,3,4,7,8-HxCDF-13C	2.00	71
ND	-----	1.00	1,2,3,6,7,8-HxCDF-13C	2.00	74
ND	-----	1.30	2,3,4,6,7,8-HxCDF-13C	2.00	69
ND	-----	1.90	1,2,3,7,8,9-HxCDF-13C	2.00	70
ND	-----	1.90	1,2,3,4,7,8-HxCDD-13C	2.00	66
ND	-----	1.90	1,2,3,6,7,8-HxCDD-13C	2.00	82
ND	-----	0.67	1,2,3,4,6,7,8-HpCDF-13C	2.00	71
ND	-----	0.87	1,2,3,4,7,8,9-HpCDF-13C	2.00	62
ND	-----	0.96	1,2,3,4,6,7,8-HpCDD-13C	2.00	79
ND	-----	1.10	OCDD-13C	4.00	69
ND	-----	0.89	1,2,3,4-TCDD-13C	2.00	NA
ND	-----	1.80	1,2,3,7,8,9-HxCDD-13C	2.00	NA
ND	-----	1.40	2,3,7,8-TCDD-37Cl4	0.20	78
ND	-----	1.40			
ND	-----	1.60			
7.9	-----	1.10 J			
ND	-----	1.60			
7.9	-----	1.30 BJ			
35.0	-----	1.90 J			
66.0	-----	1.90			
69.0	-----	1.70 J			
320.0	-----	2.80			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106127

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### REPORT OF LABORATORY ANALYSIS

LEVEL IV

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0549-01	<i>Outfall oil</i>
Lab Sample ID	106132001	
Filename	F50129B_14	
Injected By	BAL	
Total Amount Extracted	1030 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/11/2005
CCal Filename(s)	F50129B_02	Received 01/13/2005
Method Blank ID	BLANK-6220	Extracted 01/28/2005
		Analyzed 01/30/2005 06:28

Raw Spec!	Final Conc	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
		2,3,7,8-TCDF	ND	----	0.79	2,3,7,8-TCDF-13C	2.00	67
		Total TCDF	ND	----	0.79	2,3,7,8-TCDD-13C	2.00	84
		2,3,7,8-TCDD	ND	----	0.70	1,2,3,7,8-PeCDF-13C	2.00	73
		Total TCDD	ND	----	0.70	2,3,4,7,8-PeCDF-13C	2.00	76
						1,2,3,7,8-PeCDD-13C	2.00	91
		1,2,3,7,8-PeCDF	ND	----	0.80	1,2,3,4,7,8-HxCDF-13C	2.00	77
		2,3,4,7,8-PeCDF	ND	----	0.53	1,2,3,6,7,8-HxCDF-13C	2.00	86
		Total PeCDF	ND	----	0.66	2,3,4,6,7,8-HxCDF-13C	2.00	81
						1,2,3,7,8,9-HxCDF-13C	2.00	78
		1,2,3,7,8-PeCDD	ND	----	0.72	1,2,3,4,7,8-HxCDD-13C	2.00	72
		Total PeCDD	ND	----	0.72	1,2,3,6,7,8-HxCDD-13C	2.00	91
						1,2,3,4,6,7,8-HpCDF-13C	2.00	80
		1,2,3,4,7,8-HxCDF	ND	----	0.44	1,2,3,4,7,8,9-HpCDF-13C	2.00	68
		1,2,3,6,7,8-HxCDF	ND	----	0.46	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
		2,3,4,6,7,8-HxCDF	ND	----	0.55	OCDD-13C	4.00	76
		1,2,3,7,8,9-HxCDF	ND	----	0.66			
		Total HxCDF	ND	----	0.53	1,2,3,4-TCDD-13C	2.00	NA
						1,2,3,7,8,9-HxCDD-13C	2.00	NA
		1,2,3,4,7,8-HxCDD	ND	----	0.51			
		1,2,3,6,7,8-HxCDD	ND	----	0.50	2,3,7,8-TCDD-37Cl4	0.20	81
		1,2,3,7,8,9-HxCDD	ND	----	0.75			
		Total HxCDD	2.0	----	0.59 J			
		1,2,3,4,6,7,8-HpCDF	2.4	----	0.77 J			
		1,2,3,4,7,8,9-HpCDF	ND	----	1.10			
		Total HpCDF	9.4	----	0.95 BJ			
		1,2,3,4,6,7,8-HpCDD	7.7	----	0.97 BJ			
		Total HpCDD	18.0	----	0.97 BJ			
		OCDF	9.1	----	1.30 BJ			
		OCDD	81.0	----	1.70 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106132

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## REPORT OF LABORATORY ANALYSIS

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0567-01	Oil (Auto Oil)
Lab Sample ID	106135001	
Filename	F50129B_15	
Injected By	BAL	
Total Amount Extracted	995 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/12/2005
CCal Filename(s)	F50129B_02	Received 01/13/2005
Method Blank ID	BLANK-6220	Extracted 01/28/2005
		Analyzed 01/30/2005 07:18

Rev	Qual	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
U	DNQ	2,3,7,8-TCDF	ND	----	0.83	2,3,7,8-TCDF-13C	2.00	65
U		Total TCDF	1.2	----	0.83 J	2,3,7,8-TCDD-13C	2.00	78
U		2,3,7,8-TCDD	ND	----	1.20	1,2,3,7,8-PeCDF-13C	2.00	71
U		Total TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	73
U		1,2,3,7,8-PeCDF	ND	----	1.40	1,2,3,7,8-PeCDD-13C	2.00	85
U		2,3,4,7,8-PeCDF	ND	----	1.20	1,2,3,4,7,8-HxCDF-13C	2.00	70
U		Total PeCDF	ND	----	1.30	1,2,3,6,7,8-HxCDF-13C	2.00	85
U		1,2,3,7,8-PeCDD	ND	----	1.10	2,3,4,6,7,8-HxCDF-13C	2.00	77
U		Total PeCDD	ND	----	1.10	1,2,3,7,8,9-HxCDF-13C	2.00	73
U		1,2,3,4,7,8-HxCDF	ND	----	0.97	1,2,3,4,7,8-HxCDD-13C	2.00	64
U		1,2,3,6,7,8-HxCDF	ND	----	0.93	1,2,3,6,7,8-HxCDD-13C	2.00	89
U		2,3,4,6,7,8-HxCDF	ND	----	0.77	1,2,3,4,6,7,8-HpCDF-13C	2.00	76
U		1,2,3,7,8,9-HxCDF	ND	----	1.10	1,2,3,4,7,8,9-HpCDF-13C	2.00	64
U		Total HxCDF	ND	----	0.95	1,2,3,4,6,7,8-HpCDD-13C	4.00	82
U		1,2,3,4,7,8-HxCDD	ND	----	1.20	OCDD-13C	2.00	72
U		1,2,3,6,7,8-HxCDD	ND	----	0.97	1,2,3,4-TCDD-13C	2.00	NA
U		1,2,3,7,8,9-HxCDD	ND	----	0.93	1,2,3,7,8,9-HxCDD-13C	2.00	NA
U		Total HxCDD	ND	----	1.00	2,3,7,8-TCDD-37Cl4	0.20	80
U	DNQ	1,2,3,4,6,7,8-HpCDF	2.2	----	1.10 J			
U		1,2,3,4,7,8,9-HpCDF	ND	----	2.10			
U	DNQ	Total HpCDF	2.2	----	1.60 BJ			
US	B	1,2,3,4,6,7,8-HpCDD	7.4	----	1.40 BJ			
U	DNQ	Total HpCDD	18.0	----	1.40 BJ			
US	B	OCDF	8.4	----	2.10 BJ			
U	DNQ	OCDD	66.0	----	2.30 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106135

## REPORT OF LABORATORY ANALYSIS

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## Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOA0552-01	<i>out fall 017</i>
Lab Sample ID	106125001	
Filename	F50129B_08	
Injected By	BAL	
Total Amount Extracted	1040 mL	
% Moisture	NA	Matrix Water
Dry Weight Extracted	NA	Dilution NA
ICAL Date	11/29/2004	Collected 01/11/2005
CCal Filename(s)	F50129B_02	Received 01/13/2005
Method Blank ID	BLANK-6220	Extracted 01/28/2005
		Analyzed 01/30/2005 01:29

<i>Rev</i>	<i>Run</i>	<i>Unit</i>	Native Isomers	Conc pg/L	EMPC pg/L	LOD pg/L	Internal Standards	ng's Added	Percent Recovery
<i>u</i>			2,3,7,8-TCDF	ND	----	1.30	2,3,7,8-TCDF-13C	2.00	65
<i>u</i>			Total TCDF	ND	----	1.30	2,3,7,8-TCDD-13C	2.00	81
<i>u</i>			2,3,7,8-TCDD	ND	----	1.20	1,2,3,7,8-PeCDF-13C	2.00	72
<i>u</i>			Total TCDD	ND	----	1.20	2,3,4,7,8-PeCDF-13C	2.00	74
<i>u</i>			1,2,3,7,8-PeCDF	ND	----	1.20	1,2,3,7,8-PeCDD-13C	2.00	88
<i>u</i>			2,3,4,7,8-PeCDF	ND	----	0.81	1,2,3,4,7,8-HxCDF-13C	2.00	73
<i>u</i>			Total PeCDF	ND	----	0.99	2,3,4,6,7,8-HxCDF-13C	2.00	87
<i>u</i>			1,2,3,7,8-PeCDD	ND	----	0.89	1,2,3,7,8,9-HxCDF-13C	2.00	81
<i>u</i>			Total PeCDD	ND	----	0.89	1,2,3,4,7,8-HxCDD-13C	2.00	76
<i>u</i>			1,2,3,4,7,8-HxCDF	ND	----	0.81	1,2,3,4,7,8-HxCDD-13C	2.00	73
<i>u</i>			1,2,3,6,7,8-HxCDF	ND	----	0.85	1,2,3,6,7,8-HxCDD-13C	2.00	89
<i>u</i>			2,3,4,6,7,8-HxCDF	ND	----	0.59	1,2,3,4,6,7,8-HpCDF-13C	2.00	80
<i>u</i>			1,2,3,7,8,9-HxCDF	ND	----	0.89	1,2,3,4,7,8,9-HpCDF-13C	2.00	67
<i>u</i>			Total HxCDF	ND	----	0.79	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
<i>u</i>			1,2,3,4,7,8-HxCDD	ND	----	0.91	OCDD-13C	4.00	74
<i>u</i>			1,2,3,6,7,8-HxCDD	ND	----	1.10	1,2,3,4-TCDD-13C	2.00	NA
<i>u</i>			1,2,3,7,8,9-HxCDD	ND	----	0.81	1,2,3,7,8,9-HxCDD-13C	2.00	NA
<i>u</i>			Total HxCDD	1.2	----	0.95	2,3,7,8-TCDD-37Cl4	0.20	79
<i>u</i>			1,2,3,4,6,7,8-HpCDF	----	2.2	0.84			
<i>u</i>			1,2,3,4,7,8,9-HpCDF	ND	----	0.80			
<i>u</i>			Total HpCDF	ND	----	0.82			
<i>u</i>			1,2,3,4,6,7,8-HpCDD	12.0	----	1.90			
<i>u</i>			Total HpCDD	26.0	----	1.90			
<i>u</i>			OCDF	10.0	----	1.70			
<i>u</i>			OCDD	140.0	----	3.00			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
LOD = Limit of Detection. Totals are averages of individual isomer LODs.  
D = Result obtained from analysis of diluted sample  
B = Less than 10 times higher than method blank level  
P = Recovery outside of method 1613 control limits  
J = Concentration detected is below the calibration range  
Nn = Value obtained from additional analysis

I = Interference  
E = PCDE Interference  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
\* = See Discussion

Report No.....106125

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## REPORT OF LABORATORY ANALYSIS

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ3  
 Task Order 313150010  
 SDG No. IOA0567  
 No. of Analyses 1

Laboratory Truesdail  
 Reviewer P. Meeks  
 Analysis/Method Hydrazines

Date: 03/02/05  
 Reviewer's Signature  
P. Meeks

ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not	
Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from	
Analysis Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst.	
Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard	
Performance	
Compound Identification	
and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0576  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: March 01, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011	IOA0567-01	938627-1	water	Hydrazines by 8315



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for this SDG noted that the sample was received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar was signed and dated by field and laboratory personnel, and the transfer COC from Del Mar to Truesdail Laboratories was signed and dated by personnel from both laboratories. Both the original COC and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the sample was transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 ID on the Form I; therefore, the reviewer hand-corrected the Form I to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met and the sample was analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 01/13/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. The validator could not exactly reproduce the laboratory's value for the CCV for monomethyl hydrazine and unsymmetrical dimethyl hydrazine; however, as both values were acceptable and as the %D between the two values was  $< 2\%$ , no qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with this SDG. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with this SDG. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . The validator could not exactly reproduce the laboratory's values for the LCS or LCSD for monomethyl hydrazine and unsymmetrical dimethyl hydrazine; however, as all values were acceptable and as the %D between the two values was  $< 2\%$ , no qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on the Outfall 011. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . The validator could not exactly reproduce the laboratory's values for the MS or MSD for monomethyl hydrazine and unsymmetrical dimethyl hydrazine; however, as all values were acceptable and as the %D between the two values was  $< 2\%$ , no qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The sample was analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## **2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified from the raw data, at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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## REPORT

**Client:** Del Mar Analytical - Alt.  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOA0567

**P.O. Number:** IOA0567

**Method Number:** 8315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 938627

**Report Date:** January 17, 2005

**Sampling Date:** January 12, 2005

**Receiving Date:** January 13, 2005

**Extraction Date:** January 13, 2005

**Analysis Date:** January 14, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** RC

### Analytical Results

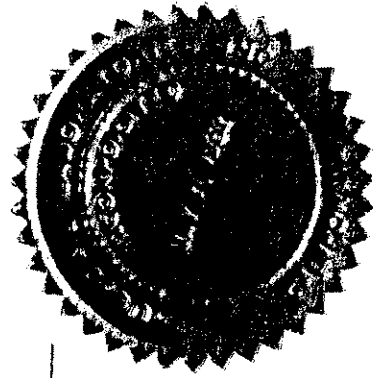
Sample ID	Sample Description	Monomethyl Hydrazine	Dimethyl Hydrazine	Unsymmetrical Dimethyl Hydrazine	Hydrazine	Qual Code
704662-MB	Method Blank	ND	ND	ND	ND	*
938627	IOA0567-01	ND	ND	ND	ND	*
PQL		5.0	5.0	5.0	1.0	

*\* Analysis not validated*

PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

*Xuan Dang*  
Xuan Dang, Project Manager  
Environmental Services



## AMEC VALIDATED

This report applies only to the sample, or samples, investigated and is not necessarily a condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711MT34

Task Order 313150010

SDG No. IOA0567

No. of Analyses 1

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method Metals

Date: 03/09/05

Reviewer's Signature  
P. Meeks

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>  Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	<b>Qualifications were applied for:</b> 1. Detects in the associated blanks 2. Reporting limit standard recovery outliers 3. Analytes detected below the reporting limit
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 08, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0567-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analytes. The remaining analytes were requested in a memo from MWH personnel dated 03/01/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS and ICP metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. The laboratory performed the required tune solution analyses but did not report %RSDs. The laboratory SOP states that to be acceptable, the %RSD must be less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS and 80-120% for mercury. The beryllium, cobalt, and lead reporting limit check standard recoveries were above the control limit; therefore, barium, beryllium, cobalt, copper, and lead detected in Outfall 011 were qualified as estimated, "J." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

There were detects and negative results reported for the method blanks and bracketing ICBs/CCBs associated with the sample in this SDG. Antimony and thallium were detected in a bracketing CCB at 0.390 and 0.101  $\mu\text{g/L}$ , respectively, and boron was detected in a bracketing CCB at 0.0176 mg/L; therefore, antimony, boron, and thallium detected in Outfall 011 were qualified as estimated, "UJ." Cadmium and chromium were reported in the method blank (5A13044-BLK1) at 0.321 and 0.611  $\mu\text{g/L}$ , respectively; therefore, cadmium and chromium detected in Outfall 011 were qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

No ICPMS interference check samples were analyzed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

ICSA and ICSAB analyses were included in the raw data for the ICP boron analysis. The recoveries for boron and the interferents were within the control limits of 80-120%. A negative result was reported for boron in the ICSA. The validator reviewed the raw data for the site sample ICP analysis for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the concentration of interferents was not high enough to cause matrix affects. No sample qualifications were required due to the ICP ICS analysis.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5A13044-BS1, the ICP LCS sample was identified as 5A13042-BS1, and the Hg LCS sample was identified as 5A13050-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP/MS, ICP, and Hg control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

MS/MSD analyses were performed on Outfall 011. The RPDs were less than the control limit of 20% and no qualifications were required.

## 2.8 MATRIX SPIKE

MS/MSD analyses were performed on Outfall 011. The recoveries were within the AMEC control limits of 75-125% and no qualifications were required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP and ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site sample.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qualifiers	
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05					Raw	Qual
Reporting Units: ug/l										Qual	Code
Antimony	EPA 200.8	5A13044	0.18	2.0	0.59	1	01/13/05	01/13/05	U J J	B	
Arsenic	EPA 200.8	5A13044	0.49	1.0	1.8	1	01/13/05	01/13/05			
Barium	EPA 200.8	5A13044	0.14	1.0	18	1	01/13/05	01/13/05			
Beryllium	EPA 200.8	5A13044	0.037	0.50	0.070	1	01/13/05	01/13/05	J J	*3, D	
Cadmium	EPA 200.8	5A13044	0.015	1.0	0.15	1	01/13/05	01/13/05	U J B, J	B	
Chromium	EPA 200.8	5A13044	0.26	1.0	2.2	1	01/13/05	01/13/05	U J B	B	
Cobalt	EPA 200.8	5A13044	0.10	1.0	0.38	1	01/13/05	01/13/05	J J	*3, D	
Copper	EPA 200.8	5A13044	0.49	2.0	7.2	1	01/13/05	01/13/05			
Lead	EPA 200.8	5A13044	0.13	1.0	0.90	1	01/13/05	01/13/05	J J	*3, D	
Manganese	EPA 200.8	5A13044	0.44	1.0	15	1	01/13/05	01/13/05			
Mercury	EPA 245.1	5A13050	0.063	0.20	0.16	1	01/13/05	01/13/05	J J	DNR	
Nickel	EPA 200.8	5A13044	0.15	1.0	2.4	1	01/13/05	01/13/05			
Selenium	EPA 200.8	5A13044	0.36	2.0	ND	1	01/13/05	01/13/05	U		
Silver	EPA 200.8	5A13044	0.089	1.0	ND	1	01/13/05	01/13/05	U		
Thallium	EPA 200.8	5A13044	0.075	1.0	0.11	1	01/13/05	01/13/05	U J J	B	
Vanadium	EPA 200.8	5A13044	0.86	1.0	2.7	1	01/13/05	01/13/05			
Zinc	EPA 200.8	5A13044	3.1	20	21	1	01/13/05	01/13/05			

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DRAFT REPORT  
 DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.									
Reporting Units: mg/l									
Boron	EPA 200.7	5A13042	0.0074	0.050	0.069	1	01/13/05	01/13/05	Rev Qual
Iron	EPA 200.8	5A13044	0.0032	0.010	1.0	1	01/13/05	01/13/05	Qual Code

Rev Qual	Qual Code
UJ	B

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 LEVEL IV**

DRAFT REPORT  
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP12  
 Task Order 313150010  
 SDG No. IOA0567

No. of Analyses 1

Laboratory Del Mar Analytical.

Date: February 28, 2005

Reviewer L. Calvin

Reviewer's Signature *L. Calvin*

Analysis/Method Pesticides/PCBs by Method 608

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	Qualification was assigned for a continuing calibration %D >15%.
<b>COMMENTS<sup>b</sup></b>	
<p><sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p><sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p>	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: February 28, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , at  $2^{\circ}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narrative noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 12/29/04 associated with pesticide analysis of sample Outfall 011, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  on both analytical columns. There was one initial calibration dated 01/03/05 associated with the PCB analysis of the sample, consisting of five points for Arochlor 1016 and Arochlor 1260. Single point calibrations for Arochlor 1242, Arochlor 1248, and Arochlor 1254 were analyzed but were not provided in the data package. The average %RSDs for the individual peaks of Arochlor 1016 and Arochlor 1260 were  $\leq 10\%$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The pesticide sample analysis of this SDG was bracketed by four continuing calibrations. In one of the bracketing calibrations following the sample analysis, the %D exceeded 15% on channel A for beta-bhc. As all results in this SDG were reported from channel A, the nondetect result for beta-bhc was qualified as estimated, "UJ," in sample Outfall 011. The %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. The PCB analysis of this sample was bracketed by two CCVs and the %Ds for Arochlor 1016 and Arochlor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of the analytical sequence. Cross-contamination was not evident in the sample. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5A13049-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5A13049-BS1/BSD1) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for this SDG were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water sample. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG; however, as there were no detects reported in this SDG, quantitation was verified by recalculating a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL study. No qualifications were required.







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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5A13049	0.067	1.0	ND	1	01/13/05	01/14/05	<i>rel qual</i> <i>qual code</i> u ↓
Aroclor 1221	EPA 608	5A13049	0.057	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1232	EPA 608	5A13049	0.13	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1242	EPA 608	5A13049	0.12	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1248	EPA 608	5A13049	0.21	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1254	EPA 608	5A13049	0.16	1.0	ND	1	01/13/05	01/14/05	
Aroclor 1260	EPA 608	5A13049	0.17	1.0	ND	1	01/13/05	01/14/05	
Surrogate: Decachlorobiphenyl (45-120%)					64 %				

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOA0549 & IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0549, IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 09, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID <sup>a</sup>	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab	IOA0549-01	8175-001	water	900.0, 905.0, 906.0
Outfall 011	IOA0567-01	8174-001	water	900.0, 905.0, 906.0



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

According to the Eberline login sheet, none of the samples were received preserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. Neither sample in this SDG was filtered prior to analysis.

Additionally, according to the 01/12/05 LARWQCB guidance letter, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As neither of the tritium samples were submitted in glass containers, both nondetect tritium results were qualified as estimated, "UJ." No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COC for Outfall 011 was signed by personnel from both laboratories. The transfer COC for Outfall 011 (IOA0567) was not signed as received by Eberline. The original and transfer COCs accounted for the samples and analyses presented in this data package. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium and strontium samples were analyzed within 180 days of collection. The gross alpha and gross beta samples were analyzed beyond the five day holding time for unpreserved samples; therefore, the gross alpha and gross beta results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the nondetected alpha results were qualified as estimated, "UJ."

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable.

### Gross Beta and Strontium-90

The initial calibrations were performed in June 1997. All tritium detector efficiencies were at least 20% and were considered acceptable. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One blank spike (8174-002) was analyzed in association with the samples in these SDGs. The gross alpha, gross beta, and tritium recoveries were within the 3-sigma limits. The strontium recovery was outside of the 3-sigma limit, but was considered acceptable at 112%. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed a duplicate analysis on Outfall 011. The RPDs for tritium and strontium were  $\leq 20\%$ . The RPDs for gross alpha and gross beta were  $>20\%$ ; however, as the results were within the 3-sigma limit, no qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 for gross alpha, gross beta, and tritium. The recoveries were within both 3-sigma limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8174</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501121-01</u>	Contract <u>PROJECT# IOA0567</u>
Received Date <u>01/14/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>outfall 011</u>								
IOA0567-01	8174-001	01/12/05	01/31/05	GrossAlpha	0.294 ± 1.0	pCi/L	1.75	UT	H <sub>3</sub> R	
			01/31/05	Gross Beta	2.50 ± 1.2	pCi/L	1.78	J	H	
			02/16/05	H3	-71.9 ± 140	pCi/L	252	UT	*1	
			01/27/05	Sr90	-0.023 ± 0.24	pCi/L	0.431			

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>03/03/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8175</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501122-01</u>	Contract <u>PROJECT# IOA0549</u>
Received Date <u>01/14/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall Oil Grab</u>								
IOA0549-01	8175-001		01/11/05	01/31/05	GrossAlpha	0.850 ± 0.70	pCi/L	0.930	UJ	H,R
				01/31/05	Gross Beta	2.40 ± 1.2	pCi/L	1.86	J	H
				02/16/05	H3	17.8 ± 150	pCi/L	249	UJ	*1
				01/27/05	Sr90	-0.173 ± 0.29	pCi/L	0.607		

**AMEC VALIDATED  
LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>03/03/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV27  
 Task Order 313150010  
 SDG No. IOA0567

No. of Analyses 1

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

Date: March 2, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative</b>	
<b>Deficiencies</b>	
2. <b>Out of Scope</b>	
<b>Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy</b>	
<b>Deliverables</b>	
5. <b>Incorrect Hardcopy</b>	
<b>Deliverables</b>	
6. <b>Deviations from Analysis</b>	Qualifications required for calibration and LCS RPD outliers.
<b>Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: March 2, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of 4°C ±2°C, at 2°C. The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 01/12/05. The average RRFs for were ≥0.05 and the %RSDs were ≤35% or  $r^2 \geq 0.995$  for all target compounds. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 01/17/05. The RRFs for all target compounds were ≥0.05, and the %Ds were ≤20%, except for the %D for 2,4-dinitrophenol. 2,4-Dinitrophenol was qualified as an estimated nondetect, "UJ," in the sample of this SDG. A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

### 2.4 BLANKS

One method blank (5A13038-BLK1) was extracted and analyzed with this SDG. Naphthalene and 2-methylnaphthalene were reported in the method blank; however, the associated sample had the aforementioned compounds reported at more than five times the level found in the method blank and no qualifications were required. Review of the raw data indicated no reportable false negatives or false positives.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5A13038-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples. All percent recoveries and RPDs were within the laboratory QC limits except for the RPD for hexachloroethane. The sample of this SDG had hexachloroethane qualified as an estimated nondetect, "UJ." A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial and the method detection limit study. Detects below the reporting limit were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water)										Sampled: 01/12/05	
Reporting Units: ug/l										REV QUAL	QUAL CODE
Acenaphthene	EPA 625	5A13038	0.10	0.50	11	1	01/13/05	01/18/05			
Acenaphthylene	EPA 625	5A13038	0.10	0.50	0.12	1	01/13/05	01/18/05	J J		DNQ
Aniline	EPA 625	5A13038	2.9	10	ND	1	01/13/05	01/18/05	U		
Anthracene	EPA 625	5A13038	0.083	0.50	0.14	1	01/13/05	01/18/05	J J		DNQ
Benzdine	EPA 625	5A13038	2.4	5.0	ND	1	01/13/05	01/18/05	U		
Benzoic acid	EPA 625	5A13038	3.7	20	ND	1	01/13/05	01/18/05			
Benzo(a)anthracene	EPA 625	5A13038	0.038	5.0	ND	1	01/13/05	01/18/05			
Benzo(a)pyrene	EPA 625	5A13038	0.14	2.0	ND	1	01/13/05	01/18/05			
Benzo(b)fluoranthene	EPA 625	5A13038	0.050	2.0	ND	1	01/13/05	01/18/05			
Benzo(g,h,i)perylene	EPA 625	5A13038	0.059	5.0	ND	1	01/13/05	01/18/05			
Benzo(k)fluoranthene	EPA 625	5A13038	0.053	0.50	ND	1	01/13/05	01/18/05			
Benzyl alcohol	EPA 625	5A13038	0.21	5.0	ND	1	01/13/05	01/18/05			
Bis(2-chloroethoxy)methane	EPA 625	5A13038	0.072	0.50	ND	1	01/13/05	01/18/05			
Bis(2-chloroethyl)ether	EPA 625	5A13038	0.084	0.50	ND	1	01/13/05	01/18/05			
Bis(2-chloroisopropyl)ether	EPA 625	5A13038	0.11	0.50	ND	1	01/13/05	01/18/05			
Bis(2-ethylhexyl)phthalate	EPA 625	5A13038	1.1	5.0	ND	1	01/13/05	01/18/05			
4-Bromophenyl phenyl ether	EPA 625	5A13038	0.12	1.0	ND	1	01/13/05	01/18/05			
Butyl benzyl phthalate	EPA 625	5A13038	0.34	5.0	ND	1	01/13/05	01/18/05			
4-Chloroaniline	EPA 625	5A13038	0.20	2.0	ND	1	01/13/05	01/18/05			
2-Chloronaphthalene	EPA 625	5A13038	0.059	0.50	ND	1	01/13/05	01/18/05			
4-Chloro-3-methylphenol	EPA 625	5A13038	0.34	2.0	ND	1	01/13/05	01/18/05			
4-Chlorophenyl phenyl ether	EPA 625	5A13038	0.056	0.50	ND	1	01/13/05	01/18/05			
2-Chlorophenol	EPA 625	5A13038	0.12	1.0	ND	1	01/13/05	01/18/05			
Chrysene	EPA 625	5A13038	0.072	0.50	ND	1	01/13/05	01/18/05			
Dibenz(a,h)anthracene	EPA 625	5A13038	0.083	0.50	ND	1	01/13/05	01/18/05			
Dibenzofuran	EPA 625	5A13038	0.075	0.50	ND	1	01/13/05	01/18/05			
Di-n-butyl phthalate	EPA 625	5A13038	0.26	2.0	ND	1	01/13/05	01/18/05			
1,2-Dichlorobenzene	EPA 625	5A13038	0.11	0.50	ND	1	01/13/05	01/18/05			
1,3-Dichlorobenzene	EPA 625	5A13038	0.13	0.50	ND	1	01/13/05	01/18/05			
1,4-Dichlorobenzene	EPA 625	5A13038	0.050	0.50	ND	1	01/13/05	01/18/05			
3,3-Dichlorobenzidine	EPA 625	5A13038	0.93	5.0	ND	1	01/13/05	01/18/05			
2,4-Dichlorophenol	EPA 625	5A13038	0.21	2.0	ND	1	01/13/05	01/18/05			
Diethyl phthalate	EPA 625	5A13038	0.12	1.0	ND	1	01/13/05	01/18/05			
2,4-Dimethylphenol	EPA 625	5A13038	0.31	2.0	ND	1	01/13/05	01/18/05			
Dimethyl phthalate	EPA 625	5A13038	0.081	0.50	ND	1	01/13/05	01/18/05			
4,6-Dinitro-2-methylphenol	EPA 625	5A13038	0.38	5.0	ND	1	01/13/05	01/18/05			
2,4-Dinitrophenol	EPA 625	5A13038	2.7	5.0	ND	1	01/13/05	01/18/05			
2,4-Dinitrotoluene	EPA 625	5A13038	0.23	5.0	ND	1	01/13/05	01/18/05			
2,6-Dinitrotoluene	EPA 625	5A13038	0.24	5.0	ND	1	01/13/05	01/18/05			
Di-n-octyl phthalate	EPA 625	5A13038	0.17	5.0	ND	1	01/13/05	01/18/05			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5A13038	0.087	1.0	ND	1	01/13/05	01/18/05			

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

**AMEC VALIDATED**

LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									REV QUAL
Fluoranthene	EPA 625	5A13038	0.089	0.50	ND	1	01/13/05	01/18/05	U
Fluorene	EPA 625	5A13038	0.075	0.50	4.7	1	01/13/05	01/18/05	U
Hexachlorobenzene	EPA 625	5A13038	0.13	1.0	ND	1	01/13/05	01/18/05	U
Hexachlorobutadiene	EPA 625	5A13038	0.38	2.0	ND	1	01/13/05	01/18/05	U
Hexachlorocyclopentadiene	EPA 625	5A13038	1.8	5.0	ND	1	01/13/05	01/18/05	U
Hexachloroethane	EPA 625	5A13038	0.51	3.0	ND	1	01/13/05	01/18/05	U
Indeno(1,2,3-cd)pyrene	EPA 625	5A13038	0.19	2.0	ND	1	01/13/05	01/18/05	U
Isophorone	EPA 625	5A13038	0.059	1.0	ND	1	01/13/05	01/18/05	U
2-Methylnaphthalene	EPA 625	5A13038	0.13	1.0	9.5	1	01/13/05	01/18/05	U
2-Methylphenol	EPA 625	5A13038	0.28	2.0	ND	1	01/13/05	01/18/05	U
4-Methylphenol	EPA 625	5A13038	0.20	5.0	ND	1	01/13/05	01/18/05	U
Naphthalene	EPA 625	5A13038	0.13	1.0	8.3	1	01/13/05	01/18/05	U
2-Nitroaniline	EPA 625	5A13038	0.18	5.0	ND	1	01/13/05	01/18/05	U
3-Nitroaniline	EPA 625	5A13038	0.35	5.0	ND	1	01/13/05	01/18/05	U
4-Nitroaniline	EPA 625	5A13038	0.49	5.0	ND	1	01/13/05	01/18/05	U
Nitrobenzene	EPA 625	5A13038	0.10	1.0	ND	1	01/13/05	01/18/05	U
2-Nitrophenol	EPA 625	5A13038	0.23	2.0	ND	1	01/13/05	01/18/05	U
4-Nitrophenol	EPA 625	5A13038	0.73	5.0	ND	1	01/13/05	01/18/05	U
N-Nitrosodimethylamine	EPA 625	5A13038	0.22	2.0	ND	1	01/13/05	01/18/05	U
N-Nitroso-di-n-propylamine	EPA 625	5A13038	0.18	2.0	ND	1	01/13/05	01/18/05	U
N-Nitrosodiphenylamine	EPA 625	5A13038	0.077	1.0	ND	1	01/13/05	01/18/05	U
Pentachlorophenol	EPA 625	5A13038	0.78	2.0	ND	1	01/13/05	01/18/05	U
Phenanthrene	EPA 625	5A13038	0.071	0.50	0.98	1	01/13/05	01/18/05	U
Phenol	EPA 625	5A13038	0.14	1.0	ND	1	01/13/05	01/18/05	U
Pyrene	EPA 625	5A13038	0.059	0.50	ND	1	01/13/05	01/18/05	U
1,2,4-Trichlorobenzene	EPA 625	5A13038	0.10	1.0	ND	1	01/13/05	01/18/05	U
2,4,5-Trichlorophenol	EPA 625	5A13038	0.075	2.0	ND	1	01/13/05	01/18/05	U
2,4,6-Trichlorophenol	EPA 625	5A13038	0.10	1.0	ND	1	01/13/05	01/18/05	U
Surrogate: 2-Fluorophenol (35-120%)					66 %				
Surrogate: Phenol-d6 (45-120%)					69 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					78 %				
Surrogate: Nitrobenzene-d5 (45-120%)					69 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					74 %				
Surrogate: Terphenyl-d14 (45-135%)					74 %				

REV QUAL  
 QUAL CODE  
 J \*5

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 DATA SUBJECT TO CHANGE

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LEVEL TV

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF36  
 Task Order 313150010  
 SDG No. IOA0567

No. of Analyses 2  
 Date March 4, 2005  
 Reviewer's Signature  
*K. Shadowlight*

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Extractable

<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative</b>	
<b>Deficiencies</b>	_____
<b>2. Out of Scope</b>	
<b>Analyses</b>	_____ _____ _____
<b>3. Analyses Not Conducted</b>	_____ _____
<b>4. Missing Hardcopy</b>	
<b>Deliverables</b>	_____ _____
<b>5. Incorrect Hardcopy</b>	
<b>Deliverables</b>	_____
<b>6. Deviations from Analysis</b>	
<b>Protocol, e.g.,</b>	
Holding Times	_____
GC/MS Tune/Inst. Perform	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and	_____
Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	
Acceptable as reviewed.	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UU	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: March 4, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 11/11/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One method blank (5A13035-BLK1) was extracted and analyzed with the sample in this SDG. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike (5A13035-BS1) was extracted and analyzed with the sample in this SDG. The recovery of alkane range C13-C40 from spiked diesel was within the laboratory-established QC limits of 40-120%. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The sample was fortified with the surrogate compound n-octacosane. The sample surrogate recovery was within the laboratory-established QC of 40-125%. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the sample of this SDG. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site sample in this SDG. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples associated with the samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for this SDG. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factor on the sample result summary reflected the sample amount extracted. No qualifications were required.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
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**DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5A13035	0.082	0.50	ND	0.99	01/13/05	01/13/05	ll
Surrogate: n-Octacosane (40-125%)									

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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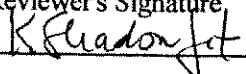
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF37  
 Task Order 313150010  
 SDG No. IOA0567

No. of Analyses 1

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Purgeable

Date March 4, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
<b>1. Case Narrative</b>	
<b>Deficiencies</b>	_____
<b>2. Out of Scope</b>	
<b>Analyses</b>	_____ _____ _____
<b>3. Analyses Not Conducted</b>	_____ _____
<b>4. Missing Hardcopy Deliverables</b>	_____ _____ _____
<b>5. Incorrect Hardcopy Deliverables</b>	_____
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	_____
GC/MS Tune/Inst. Perform	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
COMMENTS <sup>b</sup>	
Acceptable as reviewed.	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/PURGEABLE

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: March 4, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	8015M/GRO
Trip Blank	Trip Blank	IOA0567-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved, without headspace in the VOA vials. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/20/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One water method blank (5A13005-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5A13005-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.



## 2.5 SURROGATE RECOVERY

The samples were fortified with the surrogate compound bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140% for both samples. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the samples in this SDG; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. There were no field blank or equipment rinsate samples associated with this SDG. No qualifications were necessary.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in this SDG. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibrations and by the laboratory MDL. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
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## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont. Reporting Units: mg/l					Sampled: 01/12/05					
GRO (C4 - C12) Surrogate: 4-BFB (FID) (65-140%)	EPA 8015 Mod.	5A13005	0.050	0.10	ND 93 %	1	01/13/05	01/13/05	ll	
Sample ID: IOA0567-02 (DRAFT: Trip Blank - Water) Reporting Units: mg/l					Sampled: 01/11/05					
GRO (C4 - C12) Surrogate: 4-BFB (FID) (65-140%)	EPA 8015 Mod.	5A13005	0.050	0.10	ND 94 %	1	01/13/05	01/13/05	ll	

### ANEC VALIDATED

### LEVEL IV

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
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 Lakewood, CO 80226

Package ID T711VO50  
 Task Order 313150010  
 SDG No. IOA0567  
 No. of Analyses 1

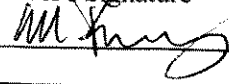
Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles (1,4-dioxane)

Date: March 2, 2005

Reviewer's Signature



<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative Deficiencies</b>	
<b>2. Out of Scope Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy Deliverables</b>	
<b>5. Incorrect Hardcopy Deliverables</b>	
<b>6. Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: March 2, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason were denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The sample was properly preserved. The COC noted that the sample was received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel. The COC accounted for the analysis presented in this SDG. According to the sample login sheet, custody seals were not present on the cooler. No qualifications were required.

#### 2.1.3 Holding Times

The sample was analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the sample was analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 01/07/05, was associated with this SDG. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the %RSD was  $\leq 15\%$ . One continuing calibration, dated 01/07/05 was associated with this SDG. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The %RSD and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

### 2.4 BLANKS

One water method blank (P5A1502-BLK1) was associated with this SDG. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5A1502-BS1/BS1D) with this SDG. The recoveries and RPD for 1,4-dioxane were within the laboratory QC limits. A representative recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recovery for this sample was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The samples in this SDG had no associated trip blank. No qualifications were required.

### 2.8.1 Field Blanks and Equipment Rinsates

The site sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.



## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
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## DRAFT: 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				REV QUAL
Reporting Units: ug/l									CODE
1,4-Dioxane	EPA 8260B	P5A1502	0.49	1.0	ND	1	01/15/05	01/15/05	U
Surrogate: Dibromofluoromethane (80-125%)						105 %			

### AMEC VALIDATED

LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE


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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

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Package ID T711VO51  
 Task Order 313150010  
 SDG No. IOA0567  
 No. of Analyses 2

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Volatiles

Date: March 4, 2005  
 Reviewer's Signature  


ACTION ITEMS*	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were required for calibration outliers.
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: March 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011	Outfall 011	IOA0567-01	water	624
Trip Blank	Trip Blank	IOA0567-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . According to the COC, the samples were received intact, without headspace, and in good condition. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed by field and laboratory personnel and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals are not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation report were consistent with those specified in the EPA Method 624 and 8260 (Freon 113). All ion abundances were within the established windows and were therefore acceptable. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations, dated 11/10/04 and 01/10/05, were associated with this SDG. The average RRFs were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  ( $\leq 15\%$  for Freon 113) for the target compounds listed on the sample summary forms. One continuing calibration, dated 01/13/05, was associated with this SDG. The RRFs for all target compounds were  $\geq 0.05$  and the %Ds were  $\leq 20\%$  except for the %Ds for chloromethane, methylene chloride, carbon tetrachloride, 2-chloroethylvinylether, and bromoform. The site sample of this SDG had the aforementioned compounds qualified as estimated, "UJ," for nondetects and "J," for detects. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blanks (5A12019-BLK1 and 5A13008-BLK1) were associated with this SDG. There were no detects for the target compounds listed on the summary forms except for methylene chloride in 5A12019-BLK1; however, methylene chloride was not reported in the associated sample. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5A12019-BS1 and 5A13008-BS1) were associated with this SDG. All spike recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were within the QC limits of 80-120%. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

An MS/MSD analyses was not performed with this SDG. Evaluation of method accuracy was based on the LCS results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOA0567-02) was the trip blank associated with the site sample of this SDG. No target compounds were detected in the trip blank. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no other field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG.



## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for a subset of volatile target compounds by EPA Method 624 and Freon 113 by EPA Method 8260. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted.

The laboratory analyzed for 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane as TICs for this SDG. 1,2-dichloro-1,1,2-trifluoroethane was present in the calibration standards. Neither compound was reported either as a TIC or as a target compound in the samples of this SDG and were reported as estimated nondetects, "UJ."

No further qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Compound quantitation was verified by recalculating any sample detect, and/or a representative number of blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory searched for 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane as TICs for this SDG. Neither compound was detected as a TIC in the samples of this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water)					Sampled: 01/12/05						
Reporting Units: ug/l											
Benzene	EPA 624	5A13008	0.28	1.0	ND	1	01/13/05	01/13/05	U		
Bromodichloromethane	EPA 624	5A13008	0.30	2.0	ND	1	01/13/05	01/13/05	U		
Bromoform	EPA 624	5A13008	0.32	5.0	ND	1	01/13/05	01/13/05	U		
Bromomethane	EPA 624	5A13008	0.34	5.0	ND	1	01/13/05	01/13/05	U		C
Carbon tetrachloride	EPA 624	5A13008	0.28	0.50	ND	1	01/13/05	01/13/05	U		
Chlorobenzene	EPA 624	5A13008	0.36	2.0	ND	1	01/13/05	01/13/05	U		C
Chloroethane	EPA 624	5A13008	0.33	5.0	ND	1	01/13/05	01/13/05	U		
Chloroform	EPA 624	5A13008	0.33	2.0	ND	1	01/13/05	01/13/05	U		
Chloromethane	EPA 624	5A13008	0.30	5.0	ND	1	01/13/05	01/13/05	U		
Dibromochloromethane	EPA 624	5A13008	0.28	2.0	ND	1	01/13/05	01/13/05	U		C
1,2-Dichlorobenzene	EPA 624	5A13008	0.32	2.0	ND	1	01/13/05	01/13/05	U		
1,3-Dichlorobenzene	EPA 624	5A13008	0.35	2.0	ND	1	01/13/05	01/13/05	U		
1,4-Dichlorobenzene	EPA 624	5A13008	0.37	2.0	ND	1	01/13/05	01/13/05	U		
1,1-Dichloroethane	EPA 624	5A13008	0.27	2.0	ND	1	01/13/05	01/13/05	U		
1,2-Dichloroethane	EPA 624	5A13008	0.28	0.50	ND	1	01/13/05	01/13/05	U		
1,1-Dichloroethene	EPA 624	5A13008	0.32	5.0	ND	1	01/13/05	01/13/05	U		
trans-1,2-Dichloroethene	EPA 624	5A13008	0.27	2.0	ND	1	01/13/05	01/13/05	U		
1,2-Dichloropropane	EPA 624	5A13008	0.35	2.0	ND	1	01/13/05	01/13/05	U		
cis-1,3-Dichloropropene	EPA 624	5A13008	0.22	2.0	ND	1	01/13/05	01/13/05	U		
trans-1,3-Dichloropropene	EPA 624	5A13008	0.24	2.0	ND	1	01/13/05	01/13/05	U		
Ethylbenzene	EPA 624	5A13008	0.25	2.0	ND	1	01/13/05	01/13/05	U		
Methylene chloride	EPA 624	5A13008	0.48	5.0	0.97	1	01/13/05	01/13/05	J	J	DNQ
1,1,2,2-Tetrachloroethane	EPA 624	5A13008	0.24	2.0	ND	1	01/13/05	01/13/05	U		
Tetrachloroethene	EPA 624	5A13008	0.32	2.0	ND	1	01/13/05	01/13/05	U		
Toluene	EPA 624	5A13008	0.36	2.0	ND	1	01/13/05	01/13/05	U		
1,1,1-Trichloroethane	EPA 624	5A13008	0.30	2.0	ND	1	01/13/05	01/13/05	U		
1,1,2-Trichloroethane	EPA 624	5A13008	0.30	2.0	ND	1	01/13/05	01/13/05	U		
Trichloroethene	EPA 624	5A13008	0.26	2.0	ND	1	01/13/05	01/13/05	U		
Trichlorofluoromethane	EPA 624	5A13008	0.34	5.0	ND	1	01/13/05	01/13/05	U		
Vinyl chloride	EPA 624	5A13008	0.26	0.50	ND	1	01/13/05	01/13/05	U		
Xylenes, Total	EPA 624	5A13008	0.52	4.0	ND	1	01/13/05	01/13/05	U		
Surrogate: Dibromofluoromethane (80-120%)											102 %
Surrogate: Toluene-d8 (80-120%)											101 %
Surrogate: 4-Bromofluorobenzene (80-120%)											96 %

**AMEC VALIDATED**

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water)</b>									
Reporting Units: ug/l									
Sampled: 01/12/05									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A13008	1.2	5.0	ND	1	01/13/05	01/13/05	U
Surrogate: Dibromofluoromethane (80-120%)					102 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				
<b>Sample ID: IOA0567-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Sampled: 01/11/05									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5A12019	1.2	5.0	ND	1	01/12/05	01/12/05	U
Surrogate: Dibromofluoromethane (80-120%)					98 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									QUAL	CODE
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water)					Sampled: 01/12/05				REV	QUAL
Reporting Units: ug/l									QUAL	CODE
Acrolein	EPA 624	5A13008	4.6	50	ND	1	01/13/05	01/13/05	U	
Acrylonitrile	EPA 624	5A13008	5.1	50	ND	1	01/13/05	01/13/05	U	
2-Chloroethyl vinyl ether	EPA 624	5A13008	1.3	5.0	ND	1	01/13/05	01/13/05	U	C
Surrogate: Dibromofluoromethane (80-120%)					102 %					
Surrogate: Toluene-d8 (80-120%)					101 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %					

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 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-02 (DRAFT: Trip Blank - Water)					Sampled: 01/11/05				
Reporting Units: ug/l					REV Qual				
Benzene	EPA 624	5A12019	0.28	1.0	ND	1	01/12/05	01/12/05	L
Bromodichloromethane	EPA 624	5A12019	0.30	2.0	ND	1	01/12/05	01/12/05	
Bromoform	EPA 624	5A12019	0.32	5.0	ND	1	01/12/05	01/12/05	
Bromomethane	EPA 624	5A12019	0.34	5.0	ND	1	01/12/05	01/12/05	
Carbon tetrachloride	EPA 624	5A12019	0.28	0.50	ND	1	01/12/05	01/12/05	
Chlorobenzene	EPA 624	5A12019	0.36	2.0	ND	1	01/12/05	01/12/05	
Chloroethane	EPA 624	5A12019	0.33	5.0	ND	1	01/12/05	01/12/05	
Chloroform	EPA 624	5A12019	0.33	2.0	ND	1	01/12/05	01/12/05	
Chloromethane	EPA 624	5A12019	0.30	5.0	ND	1	01/12/05	01/12/05	
Dibromochloromethane	EPA 624	5A12019	0.28	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichlorobenzene	EPA 624	5A12019	0.32	2.0	ND	1	01/12/05	01/12/05	
1,3-Dichlorobenzene	EPA 624	5A12019	0.35	2.0	ND	1	01/12/05	01/12/05	
1,4-Dichlorobenzene	EPA 624	5A12019	0.37	2.0	ND	1	01/12/05	01/12/05	
1,1-Dichloroethane	EPA 624	5A12019	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloroethane	EPA 624	5A12019	0.28	0.50	ND	1	01/12/05	01/12/05	
1,1-Dichloroethene	EPA 624	5A12019	0.32	5.0	ND	1	01/12/05	01/12/05	
trans-1,2-Dichloroethene	EPA 624	5A12019	0.27	2.0	ND	1	01/12/05	01/12/05	
1,2-Dichloropropane	EPA 624	5A12019	0.35	2.0	ND	1	01/12/05	01/12/05	
cis-1,3-Dichloropropene	EPA 624	5A12019	0.22	2.0	ND	1	01/12/05	01/12/05	
trans-1,3-Dichloropropene	EPA 624	5A12019	0.24	2.0	ND	1	01/12/05	01/12/05	
Ethylbenzene	EPA 624	5A12019	0.25	2.0	ND	1	01/12/05	01/12/05	
Methylene chloride	EPA 624	5A12019	0.48	5.0	ND	1	01/12/05	01/12/05	
1,1,2,2-Tetrachloroethane	EPA 624	5A12019	0.24	2.0	ND	1	01/12/05	01/12/05	
Tetrachloroethene	EPA 624	5A12019	0.32	2.0	ND	1	01/12/05	01/12/05	
Toluene	EPA 624	5A12019	0.36	2.0	ND	1	01/12/05	01/12/05	
1,1,1-Trichloroethane	EPA 624	5A12019	0.30	2.0	ND	1	01/12/05	01/12/05	
1,1,2-Trichloroethane	EPA 624	5A12019	0.30	2.0	ND	1	01/12/05	01/12/05	
Trichloroethene	EPA 624	5A12019	0.26	2.0	ND	1	01/12/05	01/12/05	
Trichlorofluoromethane	EPA 624	5A12019	0.34	5.0	ND	1	01/12/05	01/12/05	
Vinyl chloride	EPA 624	5A12019	0.26	0.50	ND	1	01/12/05	01/12/05	
Xylenes, Total	EPA 624	5A12019	0.52	4.0	ND	1	01/12/05	01/12/05	
Surrogate: Dibromofluoromethane (80-120%)									98 %
Surrogate: Toluene-d8 (80-120%)									100 %
Surrogate: 4-Bromofluorobenzene (80-120%)									98 %

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Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.								Reported: 01/12/05	REV QUAL
Reporting Units: ug/l									QUAL CODE
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A13008	N/A	2.5	ND	1	01/13/05	01/13/05	NJ #10
Cyclohexane	EPA 624 (MOD.)	5A13008	N/A	2.5	ND	1	01/13/05	01/13/05	NJ #10
Sample ID: IOA0567-02 (DRAFT: Trip Blank - Water)								Reported: 01/11/05	
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5A12019	N/A	2.5	ND	1	01/12/05	01/12/05	NJ #10
Cyclohexane	EPA 624 (MOD.)	5A12019	N/A	2.5	ND	1	01/12/05	01/12/05	NJ #10

AMEC VALIDATED

DRAFT REPORT  
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LEVEL IV



## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
*#	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.	Unusual problems found with the data that have been described in Section 1, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: L. Jarusewic  
Date of Review: February 24, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2*, USEPA *Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0567-01	water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel; however, the COC did not account for the sample and analysis presented in this SDG. A memo dated 02/28/05 from MWH personnel requested the perchlorate analysis for the sample in this SDG. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in this SDG.

## **2.6 LABORATORY DUPLICATES**

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion. No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion. No qualifications were required.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample result reported on the Form I was verified against the raw data. No transcription errors or calculations errors were noted. No qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this package.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.										
Reporting Units: ug/l										
Chromium VI	EPA 218.6	5A12034	0.041	1.0	ND	1	01/12/05	01/12/05		*
Total Cyanide	EPA 335.2	5A18093	2.2	5.0	ND	1	01/18/05	01/19/05		↓ M2
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05		u

**AMEC VALIDATED**

**LEVEL IV**

**Analysis Not Validated**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC68  
 Task Order 313150010  
 SDG No. IOA0567

No. of Analyses 1

Laboratory Del Mar

Reviewer P. Meeks

Analysis/Method General Minerals

Date: <u>02/28/05</u>
Reviewer's Signature <u>P. Meeks</u>

**ACTION ITEMS<sup>a</sup>**

1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	<u>Cyanide was rejected due to MS/MSD recovery outliers.</u>
Holding Times	<u>Fluoride was qualified as estimated due to a detect in a bracketing CCB and</u>
GC/MS Tune/Inst. Performance	<u>analytes detected between the RL and MDL were qualified as estimated.</u>
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUP: IOA0567

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOA0567  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: February 28, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 425.1, 218.6, 120.1, 160.2, 160.5, 180.1, 150.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011	Outfall 011	IOA0567-01	water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. The COC requested only a few of the presented analyses. The remaining analyses were requested in a memo from MWH personnel dated 03/01/05. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for biological oxygen demand, surfactants, turbidity, nitrate/nitrite, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . All ICV and continuing calibration information was acceptable with %Rs within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine or total settleable solids.

The total cyanide 2xRL check standard was recovered at 54%, below the control limits of 70-130%. As the total cyanide result was subsequently rejected (see section 2.7), no qualifications were required for this result. No qualifications were required.

### 2.3 BLANKS

Fluoride was detected in a bracketing CCB at 0.1461 mg/L; therefore, fluoride detected in Outfall 011 was qualified as estimated, "UJ." Oil and grease and hexavalent chromium were detected in the associated

method blanks; however, hexavalent chromium was not detected in Outfall 011 and the oil and grease method blank result was insufficient to qualify the Outfall 011 result. The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. No further qualifications were required.

#### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

#### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in this SDG.

#### **2.6 LABORATORY DUPLICATES**

MS/MSD analyses were performed on Outfall 011 for cyanide. The RPD was above the control limit of 20% at 44%; however, as the cyanide result was subsequently rejected (see section 2.7), no qualification was required.

#### **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on Outfall 011 for cyanide. The recoveries were 6% and 4%, respectively; therefore, nondetected cyanide in Outfall 011 was rejected, "R." No further qualifications were required.

#### **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

#### **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The sample in this SDG had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with this SDG.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers						
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water)					Sampled: 01/12/05										
Reporting Units: mg/l															
Total Recoverable Hydrocarbons	EPA 418.1	5A12075	0.31	1.0	ND	1	01/12/05	01/12/05	<table border="1"> <tr> <td>Rev</td> <td>Qual</td> </tr> <tr> <td></td> <td>Code</td> </tr> <tr> <td>U</td> <td></td> </tr> </table>	Rev	Qual		Code	U	
Rev	Qual														
	Code														
U															

**AMEC VALIDATED**  
**LEVEL IV**

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
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**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05					
Reporting Units: mg/l									Rev Qual	Qual Code
Ammonia-N (Distilled)	EPA 350.2	5A13063	0.30	0.50	ND	1	01/13/05	01/13/05	U	
Biochemical Oxygen Demand	EPA 405.1	5A12041	0.59	2.0	0.96	1	01/12/05	01/17/05	J J	DNQ
Chloride	EPA 300.0	5A12036	0.26	0.50	3.6	1	01/12/05	01/12/05		
Fluoride	EPA 300.0	5A12036	0.074	0.50	0.29	1	01/12/05	01/12/05	U J	B
Nitrate/Nitrite-N	EPA 300.0	5A12036	0.072	0.26	0.92	1	01/12/05	01/12/05		
Oil & Grease	EPA 413.1	5A13065	0.94	5.0	43	1	01/13/05	01/13/05		
Residual Chlorine	EPA 330.5	5A12045	0.10	0.10	ND	1	01/12/05	01/12/05	U	
Sulfate	EPA 300.0	5A12036	0.18	0.50	4.7	1	01/12/05	01/12/05		
Surfactants (MBAS)	SM5540-C	5A12059	0.044	0.10	ND	1	01/12/05	01/12/05	U	
Total Dissolved Solids	SM2540C	5A13089	10	10	99	1	01/13/05	01/13/05		
Total Organic Carbon	EPA 415.1	5A13053	0.56	1.0	9.2	1	01/12/05	01/12/05		
Total Suspended Solids	EPA 160.2	5A17060	10	10	ND	1	01/17/05	01/17/05	U	

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
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**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				Rev Qual
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5A12043	0.10	0.10	ND	1	01/12/05	01/12/05	U
									Qual Code

**AMEC VALIDATED  
LEVEL IV**

**DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05					Rev Qual
Reporting Units: NTU										
Turbidity	EPA 180.1	5A13082	0.040	1.0	18	1	01/13/05	01/13/05	Qual Code	

**AMEC VALIDATED  
 LEVEL IV**

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MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly	Project ID: 13267 (Study 1) Outfall 011 Report Number: IOA0567	Sampled: 01/11/05-01/12/05 Received: 01/11/05
--	--	--

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05				
Reporting Units: ug/l									Rev Qual   Qual Code
Chromium VI	EPA 218.6	5A12034	0.041	1.0	ND	1	01/12/05	01/12/05	U
Total Cyanide	EPA 335.2	5A18093	2.2	5.0	ND	1	01/18/05	01/19/05	R M2 Q
Perchlorate	EPA 314.0	5A13051	0.80	4.0	ND	1	01/13/05	01/13/05	*

\* Analysis not validated

**AMEC VALIDATED  
LEVEL IV**

DRAFT REPORT  
DRAFT REPORT  
DATA SUBJECT TO CHANGE



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOA0567

Sampled: 01/11/05-01/12/05  
 Received: 01/11/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers				
Sample ID: IOA0567-01 (DRAFT: Outfall 011 - Water) - cont.					Sampled: 01/12/05								
Reporting Units: umhos/cm													
Specific Conductance	EPA 120.1	5A14087	1.0	1.0	94	1	01/14/05	01/14/05	<table border="1"> <tr> <td>Rev Qual</td> <td>Qual Code</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Rev Qual	Qual Code		
Rev Qual	Qual Code												

**AMEC VALIDATED**  
**LEVEL IV**

**DRAFT REPORT**  
**DRAFT REPORT**  
**DATA SUBJECT TO CHANGE**

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# **APPENDIX A**

## **Section 39**

Outfall 011, February 11, 2005

Del Mar Analytical Laboratory Report



# Del Mar Analytical

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## LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project: Outfall 011

Sampled: 02/11/05  
 Received: 02/11/05  
 Issued: 04/05/05 12:14

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report. This entire report was reviewed and approved for release.*

## SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOB1004-01	Outfall 011-composite	Water
IOB1004-02	Trip Blank	Water

Reviewed By:

**Del Mar Analytical, Irvine**  
 Wendy Kirkeeng For Michele Harper  
 Project Manager





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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
Received: 02/11/05

## CORRECTIVE ACTION REPORT

Department: Extractions

Date: 02/22/2005

Method: EPA 625

Matrix: Water

QC Batch: 5B14010

### Identification and Definition of Problem:

The percent recovery for benzidine in the BSD was below method acceptance limits.

### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

### Corrective Action Taken:

The percent recovery in the BS was within the acceptance limits. All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

Rima Angkasa

Date: 02/24/2005 10:17 AM

**Del Mar Analytical, Irvine**  
Wendy Kirkeeng For Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
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Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## CORRECTIVE ACTION REPORT

Department: Extractions

Date: 02/22/2005

Method: EPA 625

Matrix: Water

QC Batch: 5B14010

### Identification and Definition of Problem:

The Method Blank result for 2-Methylnaphthalene was above the reporting limit (8.7ppb).

### Determination of the Cause of the Problem:

A definitive cause for the QC failure has not been determined.

### Corrective Action Taken:

There was insufficient sample volume for re-analysis. Samples had J-flag hits and were flagged with 'B' qualifier.

Quality Assurance Approval:

Rima Angkasa

Date: 02/24/2005 11:49 AM

Del Mar Analytical, Irvine  
Wendy Kirkeeng For Michele Harper  
Project Manager

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IOB1004 <Page 3 of 58>



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5B15078	0.31	1.0	ND	1	02/15/05	02/15/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5B12001	0.082	0.50	ND	0.99	02/12/05	02/14/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					55 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B20029	0.050	0.10	ND	1	02/20/05	02/21/05	
Surrogate: 4-BFB (FID) (65-140%)					88 %				
<b>Sample ID: IOB1004-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5B20029	0.050	0.10	ND	1	02/20/05	02/20/05	
Surrogate: 4-BFB (FID) (65-140%)					85 %				

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				
<b>Sample ID: IOB1004-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	
Surrogate: Dibromofluoromethane (80-120%)					95 %				
Surrogate: Toluene-d8 (80-120%)					104 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					99 %				
<b>Sample ID: IOB1004-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05	
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05	
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05	
Surrogate: Dibromofluoromethane (80-120%)					104 %				
Surrogate: Toluene-d8 (80-120%)					106 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					103 %				

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

Del Mar Analytical, Irvine  
 Wendy Kirkeeng For Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
<b>Sample ID: IOB1004-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	

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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005 (5B17014-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120		
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120		
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120		

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>LCS Analyzed: 02/17/2005 (5B17014-BS1)</b>											
Benzene	24.9	1.0	0.28	ug/l	25.0		100	70-120			
Bromodichloromethane	25.7	2.0	0.30	ug/l	25.0		103	70-140			
Bromoform	24.2	5.0	0.32	ug/l	25.0		97	55-135			
Bromomethane	29.1	5.0	0.34	ug/l	25.0		116	60-140			
Carbon tetrachloride	26.2	0.50	0.28	ug/l	25.0		105	70-140			
Chlorobenzene	23.4	2.0	0.36	ug/l	25.0		94	80-125			
Chloroethane	27.4	5.0	0.33	ug/l	25.0		110	60-145			
Chloroform	26.2	2.0	0.33	ug/l	25.0		105	75-130			
Chloromethane	25.8	5.0	0.30	ug/l	25.0		103	40-145			
Dibromochloromethane	24.7	2.0	0.28	ug/l	25.0		99	65-145			
1,2-Dichlorobenzene	23.3	2.0	0.32	ug/l	25.0		93	80-120			
1,3-Dichlorobenzene	23.6	2.0	0.35	ug/l	25.0		94	80-120			
1,4-Dichlorobenzene	23.0	2.0	0.37	ug/l	25.0		92	80-120			
1,1-Dichloroethane	25.5	2.0	0.27	ug/l	25.0		102	70-135			
1,2-Dichloroethane	25.9	0.50	0.28	ug/l	25.0		104	60-150			
1,1-Dichloroethene	24.6	5.0	0.32	ug/l	25.0		98	75-135			
trans-1,2-Dichloroethene	25.4	2.0	0.27	ug/l	25.0		102	70-130			
1,2-Dichloropropane	24.8	2.0	0.35	ug/l	25.0		99	70-120			
cis-1,3-Dichloropropene	25.6	2.0	0.22	ug/l	25.0		102	75-130			
trans-1,3-Dichloropropene	25.7	2.0	0.24	ug/l	25.0		103	75-135			
Ethylbenzene	26.4	2.0	0.25	ug/l	25.0		106	80-120			
Methylene chloride	25.4	5.0	0.48	ug/l	25.0		102	60-135			
1,1,2,2-Tetrachloroethane	23.2	2.0	0.24	ug/l	25.0		93	60-135			
Tetrachloroethene	23.2	2.0	0.32	ug/l	25.0		93	75-125			
Toluene	24.6	2.0	0.36	ug/l	25.0		98	75-120			
1,1,1-Trichloroethane	27.1	2.0	0.30	ug/l	25.0		108	75-140			
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0		100	70-125			
Trichloroethene	23.4	2.0	0.26	ug/l	25.0		94	80-120			
Trichlorofluoromethane	28.0	5.0	0.34	ug/l	25.0		112	65-145			
Vinyl chloride	27.7	0.50	0.26	ug/l	25.0		111	50-130			
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	26.9			ug/l	25.0		108	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>Matrix Spike Analyzed: 02/17/2005 (5B17014-MS1)</b>						<b>Source: IOB1001-01</b>					
Benzene	25.2	1.0	0.28	ug/l	25.0	ND	101	70-120			
Bromodichloromethane	26.3	2.0	0.30	ug/l	25.0	ND	105	70-140			
Bromoform	23.7	5.0	0.32	ug/l	25.0	ND	95	55-140			
Bromomethane	28.7	5.0	0.34	ug/l	25.0	ND	115	50-145			
Carbon tetrachloride	26.8	0.50	0.28	ug/l	25.0	ND	107	70-145			
Chlorobenzene	23.0	2.0	0.36	ug/l	25.0	ND	92	80-125			
Chloroethane	26.4	5.0	0.33	ug/l	25.0	ND	106	50-145			
Chloroform	26.9	2.0	0.33	ug/l	25.0	ND	108	70-135			
Chloromethane	24.7	5.0	0.30	ug/l	25.0	ND	99	35-145			
Dibromochloromethane	24.8	2.0	0.28	ug/l	25.0	ND	99	65-145			
1,2-Dichlorobenzene	23.4	2.0	0.32	ug/l	25.0	ND	94	75-130			
1,3-Dichlorobenzene	23.4	2.0	0.35	ug/l	25.0	ND	94	75-130			
1,4-Dichlorobenzene	23.0	2.0	0.37	ug/l	25.0	ND	92	80-120			
1,1-Dichloroethane	26.4	2.0	0.27	ug/l	25.0	ND	106	65-135			
1,2-Dichloroethane	27.2	0.50	0.28	ug/l	25.0	ND	109	60-150			
1,1-Dichloroethene	25.2	5.0	0.32	ug/l	25.0	ND	101	65-140			
trans-1,2-Dichloroethene	25.9	2.0	0.27	ug/l	25.0	ND	104	65-135			
1,2-Dichloropropane	24.9	2.0	0.35	ug/l	25.0	ND	100	65-130			
cis-1,3-Dichloropropene	26.0	2.0	0.22	ug/l	25.0	ND	104	70-140			
trans-1,3-Dichloropropene	26.3	2.0	0.24	ug/l	25.0	ND	105	70-140			
Ethylbenzene	26.1	2.0	0.25	ug/l	25.0	ND	104	70-130			
Methylene chloride	26.0	5.0	0.48	ug/l	25.0	ND	104	60-135			
1,1,2,2-Tetrachloroethane	23.1	2.0	0.24	ug/l	25.0	ND	92	60-145			
Tetrachloroethene	22.7	2.0	0.32	ug/l	25.0	ND	91	70-130			
Toluene	25.2	2.0	0.36	ug/l	25.0	ND	101	70-120			
1,1,1-Trichloroethane	28.0	2.0	0.30	ug/l	25.0	ND	112	75-140			
1,1,2-Trichloroethane	25.1	2.0	0.30	ug/l	25.0	ND	100	60-135			
Trichloroethene	23.5	2.0	0.26	ug/l	25.0	ND	94	70-125			
Trichlorofluoromethane	28.7	5.0	0.34	ug/l	25.0	ND	115	55-145			
Vinyl chloride	26.3	0.50	0.26	ug/l	25.0	ND	105	40-135			
Surrogate: Dibromofluoromethane	27.5			ug/l	25.0		110	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	26.5			ug/l	25.0		106	80-120			

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>Matrix Spike Dup Analyzed: 02/17/2005 (5B17014-MSD1)</b>						<b>Source: IOB1001-01</b>					
Benzene	25.1	1.0	0.28	ug/l	25.0	ND	100	70-120	0	20	
Bromodichloromethane	25.4	2.0	0.30	ug/l	25.0	ND	102	70-140	3	20	
Bromoform	21.6	5.0	0.32	ug/l	25.0	ND	86	55-140	9	25	
Bromomethane	31.0	5.0	0.34	ug/l	25.0	ND	124	50-145	8	25	
Carbon tetrachloride	26.5	0.50	0.28	ug/l	25.0	ND	106	70-145	1	25	
Chlorobenzene	23.9	2.0	0.36	ug/l	25.0	ND	96	80-125	4	20	
Chloroethane	29.6	5.0	0.33	ug/l	25.0	ND	118	50-145	11	25	
Chloroform	26.4	2.0	0.33	ug/l	25.0	ND	106	70-135	2	20	
Chloromethane	28.0	5.0	0.30	ug/l	25.0	ND	112	35-145	13	25	
Dibromochloromethane	23.4	2.0	0.28	ug/l	25.0	ND	94	65-145	6	25	
1,2-Dichlorobenzene	23.4	2.0	0.32	ug/l	25.0	ND	94	75-130	0	20	
1,3-Dichlorobenzene	24.0	2.0	0.35	ug/l	25.0	ND	96	75-130	3	20	
1,4-Dichlorobenzene	23.6	2.0	0.37	ug/l	25.0	ND	94	80-120	3	20	
1,1-Dichloroethane	26.1	2.0	0.27	ug/l	25.0	ND	104	65-135	1	20	
1,2-Dichloroethane	24.5	0.50	0.28	ug/l	25.0	ND	98	60-150	10	20	
1,1-Dichloroethene	24.9	5.0	0.32	ug/l	25.0	ND	100	65-140	1	20	
trans-1,2-Dichloroethene	25.9	2.0	0.27	ug/l	25.0	ND	104	65-135	0	20	
1,2-Dichloropropane	24.3	2.0	0.35	ug/l	25.0	ND	97	65-130	2	20	
cis-1,3-Dichloropropene	25.2	2.0	0.22	ug/l	25.0	ND	101	70-140	3	20	
trans-1,3-Dichloropropene	24.4	2.0	0.24	ug/l	25.0	ND	98	70-140	7	25	
Ethylbenzene	27.0	2.0	0.25	ug/l	25.0	ND	108	70-130	3	20	
Methylene chloride	25.4	5.0	0.48	ug/l	25.0	ND	102	60-135	2	20	
1,1,2,2-Tetrachloroethane	20.8	2.0	0.24	ug/l	25.0	ND	83	60-145	10	30	
Tetrachloroethene	23.9	2.0	0.32	ug/l	25.0	ND	96	70-130	5	20	
Toluene	24.9	2.0	0.36	ug/l	25.0	ND	100	70-120	1	20	
1,1,1-Trichloroethane	27.8	2.0	0.30	ug/l	25.0	ND	111	75-140	1	20	
1,1,2-Trichloroethane	22.8	2.0	0.30	ug/l	25.0	ND	91	60-135	10	25	
Trichloroethene	23.5	2.0	0.26	ug/l	25.0	ND	94	70-125	0	20	
Trichlorofluoromethane	28.5	5.0	0.34	ug/l	25.0	ND	114	55-145	1	25	
Vinyl chloride	30.0	0.50	0.26	ug/l	25.0	ND	120	40-135	13	30	
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	26.4			ug/l	25.0		106	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005 (5B17014-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>										
<b>Blank Analyzed: 02/18/2005 (5B14010-BLK1)</b>										
Acenaphthene	ND	0.50	0.10	ug/l						
Acenaphthylene	ND	0.50	0.10	ug/l						
Aniline	ND	10	2.9	ug/l						
Anthracene	ND	0.50	0.083	ug/l						
Benzidine	ND	5.0	2.4	ug/l						
Benzoic acid	ND	20	3.7	ug/l						
Benzo(a)anthracene	ND	5.0	0.038	ug/l						
Benzo(a)pyrene	ND	2.0	0.14	ug/l						
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l						
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l						
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l						
Benzyl alcohol	ND	5.0	0.21	ug/l						
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l						
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l						
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l						
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l						
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l						
Butyl benzyl phthalate	ND	5.0	0.34	ug/l						
4-Chloroaniline	ND	2.0	0.20	ug/l						
2-Chloronaphthalene	ND	0.50	0.059	ug/l						
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l						
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l						
2-Chlorophenol	ND	1.0	0.12	ug/l						
Chrysene	ND	0.50	0.072	ug/l						
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l						
Dibenzofuran	ND	0.50	0.075	ug/l						
Di-n-butyl phthalate	ND	2.0	0.26	ug/l						
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l						
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l						
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l						
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l						
2,4-Dichlorophenol	ND	2.0	0.21	ug/l						
Diethyl phthalate	0.200	1.0	0.12	ug/l						
2,4-Dimethylphenol	ND	2.0	0.31	ug/l						J
Dimethyl phthalate	ND	0.50	0.081	ug/l						

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Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B14010-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	0.200	0.50	0.075	ug/l							J
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	8.70	1.0	0.13	ug/l							B
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	0.300	1.0	0.13	ug/l							J
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	0.120	0.50	0.071	ug/l							J
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	15.9			ug/l	20.0		80	35-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>											
<b>Blank Analyzed: 02/18/2005 (5B14010-BLK1)</b>											
Surrogate: Phenol-d6	15.5			ug/l	20.0		78	45-120			
Surrogate: 2,4,6-Tribromophenol	14.0			ug/l	20.0		70	50-125			
Surrogate: Nitrobenzene-d5	7.44			ug/l	10.0		74	45-120			
Surrogate: 2-Fluorobiphenyl	7.50			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81	45-135			
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>											
Acenaphthene	7.94	0.50	0.10	ug/l	10.0		79	55-120			M-NRI
Acenaphthylene	8.16	0.50	0.10	ug/l	10.0		82	55-120			
Aniline	8.24	10	2.9	ug/l	10.0		82	30-120			J
Anthracene	8.12	0.50	0.083	ug/l	10.0		81	60-120			
Benzidine	4.50	5.0	2.4	ug/l	10.0		45	20-180			J
Benzoic acid	4.86	20	3.7	ug/l	10.0		49	30-125			J
Benzo(a)anthracene	8.28	5.0	0.038	ug/l	10.0		83	65-120			
Benzo(a)pyrene	9.18	2.0	0.14	ug/l	10.0		92	55-125			
Benzo(b)fluoranthene	8.00	2.0	0.050	ug/l	10.0		80	50-125			
Benzo(g,h,i)perylene	8.04	5.0	0.059	ug/l	10.0		80	35-160			
Benzo(k)fluoranthene	8.44	0.50	0.053	ug/l	10.0		84	50-125			
Benzyl alcohol	7.34	5.0	0.21	ug/l	10.0		73	40-130			
Bis(2-chloroethoxy)methane	7.30	0.50	0.072	ug/l	10.0		73	55-120			
Bis(2-chloroethyl)ether	6.84	0.50	0.084	ug/l	10.0		68	50-120			
Bis(2-chloroisopropyl)ether	7.40	0.50	0.11	ug/l	10.0		74	50-120			
Bis(2-ethylhexyl)phthalate	7.70	5.0	1.1	ug/l	10.0		77	65-125			
4-Bromophenyl phenyl ether	7.56	1.0	0.12	ug/l	10.0		76	55-125			
Butyl benzyl phthalate	7.22	5.0	0.34	ug/l	10.0		72	60-125			
4-Chloroaniline	7.90	2.0	0.20	ug/l	10.0		79	55-120			
2-Chloronaphthalene	7.86	0.50	0.059	ug/l	10.0		79	60-120			
4-Chloro-3-methylphenol	7.90	2.0	0.34	ug/l	10.0		79	60-120			
4-Chlorophenyl phenyl ether	8.28	0.50	0.056	ug/l	10.0		83	55-120			
2-Chlorophenol	7.16	1.0	0.12	ug/l	10.0		72	45-120			
Chrysene	8.20	0.50	0.072	ug/l	10.0		82	65-120			
Dibenz(a,h)anthracene	7.62	0.50	0.083	ug/l	10.0		76	40-160			
Dibenzofuran	8.14	0.50	0.075	ug/l	10.0		81	60-120			
Di-n-butyl phthalate	7.96	2.0	0.26	ug/l	10.0		80	65-125			
1,2-Dichlorobenzene	6.54	0.50	0.11	ug/l	10.0		65	40-120			
1,3-Dichlorobenzene	6.38	0.50	0.13	ug/l	10.0		64	40-120			

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>										
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>										
1,4-Dichlorobenzene	6.22	0.50	0.050	ug/l	10.0		62 40-120			M-NR1
3,3-Dichlorobenzidine	7.52	5.0	0.93	ug/l	10.0		75 50-170			
2,4-Dichlorophenol	7.64	2.0	0.21	ug/l	10.0		76 55-120			
Diethyl phthalate	7.58	1.0	0.12	ug/l	10.0		76 60-120			
2,4-Dimethylphenol	5.34	2.0	0.31	ug/l	10.0		53 35-120			
Dimethyl phthalate	7.42	0.50	0.081	ug/l	10.0		74 60-120			
4,6-Dinitro-2-methylphenol	6.64	5.0	0.38	ug/l	10.0		66 55-120			
2,4-Dinitrophenol	6.02	5.0	2.7	ug/l	10.0		60 40-140			
2,4-Dinitrotoluene	6.68	5.0	0.23	ug/l	10.0		67 60-140			
2,6-Dinitrotoluene	7.44	5.0	0.24	ug/l	10.0		74 65-125			
Di-n-octyl phthalate	6.72	5.0	0.17	ug/l	10.0		67 60-130			
1,2-Diphenylhydrazine/Azobenzene	8.52	1.0	0.087	ug/l	10.0		85 60-120			
Fluoranthene	9.34	0.50	0.089	ug/l	10.0		93 55-125			
Fluorene	8.32	0.50	0.075	ug/l	10.0		83 60-120			
Hexachlorobenzene	7.70	1.0	0.13	ug/l	10.0		77 50-120			
Hexachlorobutadiene	6.44	2.0	0.38	ug/l	10.0		64 45-120			
Hexachlorocyclopentadiene	7.70	5.0	1.8	ug/l	10.0		77 10-130			
Hexachloroethane	6.90	3.0	0.51	ug/l	10.0		69 40-120			
Indeno(1,2,3-cd)pyrene	7.40	2.0	0.19	ug/l	10.0		74 35-150			
Isophorone	6.42	1.0	0.059	ug/l	10.0		64 55-120			
2-Methylnaphthalene	8.02	1.0	0.13	ug/l	10.0		80 50-120			
2-Methylphenol	7.06	2.0	0.28	ug/l	10.0		71 45-120			
4-Methylphenol	7.38	5.0	0.20	ug/l	10.0		74 45-120			
Naphthalene	7.88	1.0	0.13	ug/l	10.0		79 50-120			
2-Nitroaniline	7.54	5.0	0.18	ug/l	10.0		75 60-130			
3-Nitroaniline	7.72	5.0	0.35	ug/l	10.0		77 50-140			
4-Nitroaniline	7.48	5.0	0.49	ug/l	10.0		75 45-160			
Nitrobenzene	7.26	1.0	0.10	ug/l	10.0		73 50-120			
2-Nitrophenol	8.06	2.0	0.23	ug/l	10.0		81 55-120			
4-Nitrophenol	6.82	5.0	0.73	ug/l	10.0		68 50-135			
N-Nitrosodimethylamine	5.44	2.0	0.22	ug/l	10.0		54 40-120			
N-Nitroso-di-n-propylamine	6.94	2.0	0.18	ug/l	10.0		69 50-120			
N-Nitrosodiphenylamine	7.04	1.0	0.077	ug/l	10.0		70 60-120			
Pentachlorophenol	7.14	2.0	0.78	ug/l	10.0		71 50-125			
Phenanthrene	7.92	0.50	0.071	ug/l	10.0		79 55-120			

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>										
<b>LCS Analyzed: 02/18/2005 (5B14010-BS1)</b>										
Phenol	7.54	1.0	0.14	ug/l	10.0		75 45-120			M-NRI
Pyrene	7.86	0.50	0.059	ug/l	10.0		79 50-120			
1,2,4-Trichlorobenzene	6.84	1.0	0.10	ug/l	10.0		68 50-120			
2,4,5-Trichlorophenol	8.44	2.0	0.075	ug/l	10.0		84 60-120			
2,4,6-Trichlorophenol	7.90	1.0	0.10	ug/l	10.0		79 60-120			
Surrogate: 2-Fluorophenol	13.9			ug/l	20.0		70 35-120			
Surrogate: Phenol-d6	14.3			ug/l	20.0		72 45-120			
Surrogate: 2,4,6-Tribromophenol	14.7			ug/l	20.0		74 50-125			
Surrogate: Nitrobenzene-d5	7.24			ug/l	10.0		72 45-120			
Surrogate: 2-Fluorobiphenyl	7.38			ug/l	10.0		74 45-120			
Surrogate: Terphenyl-d14	6.90			ug/l	10.0		69 45-135			
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>										
Acenaphthene	7.88	0.50	0.10	ug/l	10.0		79 55-120	1	20	
Acenaphthylene	8.12	0.50	0.10	ug/l	10.0		81 55-120	1	20	
Aniline	8.62	10	2.9	ug/l	10.0		86 30-120	5	25	J
Anthracene	8.18	0.50	0.083	ug/l	10.0		82 60-120	1	20	
Benzidine	ND	5.0	2.4	ug/l	10.0		20-180		35	L2
Benzoic acid	4.38	20	3.7	ug/l	10.0		44 30-125	10	30	J
Benzo(a)anthracene	8.50	5.0	0.038	ug/l	10.0		85 65-120	3	20	
Benzo(a)pyrene	9.16	2.0	0.14	ug/l	10.0		92 55-125	0	25	
Benzo(b)fluoranthene	8.60	2.0	0.050	ug/l	10.0		86 50-125	7	25	
Benzo(g,h,i)perylene	7.20	5.0	0.059	ug/l	10.0		72 35-160	11	25	
Benzo(k)fluoranthene	8.40	0.50	0.053	ug/l	10.0		84 50-125	1	20	
Benzyl alcohol	8.70	5.0	0.21	ug/l	10.0		87 40-130	17	20	
Bis(2-chloroethoxy)methane	7.60	0.50	0.072	ug/l	10.0		76 55-120	4	20	
Bis(2-chloroethyl)ether	7.02	0.50	0.084	ug/l	10.0		70 50-120	3	20	
Bis(2-chloroisopropyl)ether	7.66	0.50	0.11	ug/l	10.0		77 50-120	3	20	
Bis(2-ethylhexyl)phthalate	7.78	5.0	1.1	ug/l	10.0		78 65-125	1	20	
4-Bromophenyl phenyl ether	7.50	1.0	0.12	ug/l	10.0		75 55-125	1	25	
Butyl benzyl phthalate	7.26	5.0	0.34	ug/l	10.0		73 60-125	1	20	
4-Chloroaniline	8.46	2.0	0.20	ug/l	10.0		85 55-120	7	25	
2-Chloronaphthalene	7.72	0.50	0.059	ug/l	10.0		77 60-120	2	20	
4-Chloro-3-methylphenol	8.48	2.0	0.34	ug/l	10.0		85 60-120	7	25	
4-Chlorophenyl phenyl ether	7.90	0.50	0.056	ug/l	10.0		79 55-120	5	20	
2-Chlorophenol	7.54	1.0	0.12	ug/l	10.0		75 45-120	5	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>										
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>										
Chrysene	8.04	0.50	0.072	ug/l	10.0	80	65-120	2	20	
Dibenz(a,h)anthracene	7.18	0.50	0.083	ug/l	10.0	72	40-160	6	25	
Dibenzofuran	8.06	0.50	0.075	ug/l	10.0	81	60-120	1	20	
Di-n-butyl phthalate	8.06	2.0	0.26	ug/l	10.0	81	65-125	1	20	
1,2-Dichlorobenzene	6.78	0.50	0.11	ug/l	10.0	68	40-120	4	25	
1,3-Dichlorobenzene	6.54	0.50	0.13	ug/l	10.0	65	40-120	2	25	
1,4-Dichlorobenzene	6.60	0.50	0.050	ug/l	10.0	66	40-120	6	25	
3,3-Dichlorobenzidine	7.96	5.0	0.93	ug/l	10.0	80	50-170	6	25	
2,4-Dichlorophenol	8.34	2.0	0.21	ug/l	10.0	83	55-120	9	20	
Diethyl phthalate	7.90	1.0	0.12	ug/l	10.0	79	60-120	4	20	
2,4-Dimethylphenol	6.10	2.0	0.31	ug/l	10.0	61	35-120	13	25	
Dimethyl phthalate	7.50	0.50	0.081	ug/l	10.0	75	60-120	1	20	
4,6-Dinitro-2-methylphenol	7.64	5.0	0.38	ug/l	10.0	76	55-120	14	25	
2,4-Dinitrophenol	6.88	5.0	2.7	ug/l	10.0	69	40-140	13	25	
2,4-Dinitrotoluene	7.20	5.0	0.23	ug/l	10.0	72	60-140	7	20	
2,6-Dinitrotoluene	7.78	5.0	0.24	ug/l	10.0	78	65-125	4	20	
Di-n-octyl phthalate	7.08	5.0	0.17	ug/l	10.0	71	60-130	5	20	
1,2-Diphenylhydrazine/Azobenzene	8.36	1.0	0.087	ug/l	10.0	84	60-120	2	25	
Fluoranthene	9.12	0.50	0.089	ug/l	10.0	91	55-125	2	20	
Fluorene	8.50	0.50	0.075	ug/l	10.0	85	60-120	2	20	
Hexachlorobenzene	7.62	1.0	0.13	ug/l	10.0	76	50-120	1	20	
Hexachlorobutadiene	6.72	2.0	0.38	ug/l	10.0	67	45-120	4	25	
Hexachlorocyclopentadiene	7.88	5.0	1.8	ug/l	10.0	79	10-130	2	30	
Hexachloroethane	6.98	3.0	0.51	ug/l	10.0	70	40-120	1	25	
Indeno(1,2,3-cd)pyrene	7.64	2.0	0.19	ug/l	10.0	76	35-150	3	25	
Isophorone	7.28	1.0	0.059	ug/l	10.0	73	55-120	13	20	
2-Methylnaphthalene	8.84	1.0	0.13	ug/l	10.0	88	50-120	10	20	
2-Methylphenol	8.02	2.0	0.28	ug/l	10.0	80	45-120	13	20	
4-Methylphenol	8.32	5.0	0.20	ug/l	10.0	83	45-120	12	20	
Naphthalene	7.78	1.0	0.13	ug/l	10.0	78	50-120	1	20	
2-Nitroaniline	7.58	5.0	0.18	ug/l	10.0	76	60-130	1	20	
3-Nitroaniline	7.74	5.0	0.35	ug/l	10.0	77	50-140	0	25	
4-Nitroaniline	8.56	5.0	0.49	ug/l	10.0	86	45-160	13	20	
Nitrobenzene	7.48	1.0	0.10	ug/l	10.0	75	50-120	3	25	
2-Nitrophenol	8.62	2.0	0.23	ug/l	10.0	86	55-120	7	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B14010 Extracted: 02/14/05</b>										
<b>LCS Dup Analyzed: 02/18/2005 (5B14010-BSD1)</b>										
4-Nitrophenol	7.58	5.0	0.73	ug/l	10.0		76 50-135	11	25	
N-Nitrosodimethylamine	8.36	2.0	0.22	ug/l	10.0		84 40-120	42	20	R-7
N-Nitroso-di-n-propylamine	7.70	2.0	0.18	ug/l	10.0		77 50-120	10	20	
N-Nitrosodiphenylamine	7.34	1.0	0.077	ug/l	10.0		73 60-120	4	20	
Pentachlorophenol	7.76	2.0	0.78	ug/l	10.0		78 50-125	8	25	
Phenanthrene	8.06	0.50	0.071	ug/l	10.0		81 55-120	2	20	
Phenol	7.90	1.0	0.14	ug/l	10.0		79 45-120	5	25	
Pyrene	8.10	0.50	0.059	ug/l	10.0		81 50-120	3	25	
1,2,4-Trichlorobenzene	6.66	1.0	0.10	ug/l	10.0		67 50-120	3	20	
2,4,5-Trichlorophenol	8.32	2.0	0.075	ug/l	10.0		83 60-120	1	20	
2,4,6-Trichlorophenol	8.22	1.0	0.10	ug/l	10.0		82 60-120	4	20	
Surrogate: 2-Fluorophenol	14.0			ug/l	20.0		70 35-120			
Surrogate: Phenol-d6	15.1			ug/l	20.0		76 45-120			
Surrogate: 2,4,6-Tribromophenol	15.1			ug/l	20.0		76 50-125			
Surrogate: Nitrobenzene-d5	7.54			ug/l	10.0		75 45-120			
Surrogate: 2-Fluorobiphenyl	7.30			ug/l	10.0		73 45-120			
Surrogate: Terphenyl-d14	7.24			ug/l	10.0		72 45-135			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
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**Batch: 5B17042 Extracted: 02/17/05**

**Blank Analyzed: 02/17/2005-02/18/2005 (5B17042-BLK1)**

Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.015	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.015	ug/l						
4,4'-DDE	ND	0.10	0.020	ug/l						
4,4'-DDT	ND	0.10	0.030	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.015	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.264			ug/l	0.500		53		35-120	
Surrogate: Decachlorobiphenyl	0.339			ug/l	0.500		68		45-120	

**LCS Analyzed: 02/18/2005 (5B17042-BS1)**

Aldrin	0.364	0.10	0.030	ug/l	0.500		73		45-115	M-NR1
alpha-BHC	0.374	0.10	0.015	ug/l	0.500		75		45-115	
beta-BHC	0.373	0.10	0.015	ug/l	0.500		75		50-115	
delta-BHC	0.391	0.20	0.020	ug/l	0.500		78		55-120	
gamma-BHC (Lindane)	0.385	0.10	0.015	ug/l	0.500		77		45-115	
4,4'-DDD	0.415	0.10	0.015	ug/l	0.500		83		60-120	
4,4'-DDE	0.412	0.10	0.020	ug/l	0.500		82		55-120	
4,4'-DDT	0.424	0.10	0.030	ug/l	0.500		85		60-130	
Dieldrin	0.403	0.10	0.015	ug/l	0.500		81		55-120	
Endosulfan I	0.384	0.10	0.015	ug/l	0.500		77		50-115	
Endosulfan II	0.397	0.10	0.040	ug/l	0.500		79		60-125	
Endosulfan sulfate	0.425	0.20	0.015	ug/l	0.500		85		60-120	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17042 Extracted: 02/17/05</b>										
<b>LCS Analyzed: 02/18/2005 (5B17042-BS1)</b>										
Endrin	0.446	0.10	0.015	ug/l	0.500		89 55-125			M-NR1
Endrin aldehyde	0.374	0.10	0.045	ug/l	0.500		75 55-115			
Endrin ketone	0.423	0.10	0.020	ug/l	0.500		85 60-120			
Heptachlor	0.404	0.10	0.030	ug/l	0.500		81 45-115			
Heptachlor epoxide	0.383	0.10	0.020	ug/l	0.500		77 50-120			
Methoxychlor	0.486	0.10	0.035	ug/l	0.500		97 60-135			
Surrogate: Tetrachloro-m-xylene	0.304			ug/l	0.500		61 35-120			
Surrogate: Decachlorobiphenyl	0.398			ug/l	0.500		80 45-120			
<b>LCS Dup Analyzed: 02/18/2005 (5B17042-BSD1)</b>										
Aldrin	0.354	0.10	0.030	ug/l	0.500		71 45-115	3	30	
alpha-BHC	0.353	0.10	0.015	ug/l	0.500		71 45-115	6	30	
beta-BHC	0.372	0.10	0.015	ug/l	0.500		74 50-115	0	30	
delta-BHC	0.380	0.20	0.020	ug/l	0.500		76 55-120	3	30	
gamma-BHC (Lindane)	0.371	0.10	0.015	ug/l	0.500		74 45-115	4	30	
4,4'-DDD	0.402	0.10	0.015	ug/l	0.500		80 60-120	3	30	
4,4'-DDE	0.407	0.10	0.020	ug/l	0.500		81 55-120	1	30	
4,4'-DDT	0.409	0.10	0.030	ug/l	0.500		82 60-130	4	30	
Dieldrin	0.396	0.10	0.015	ug/l	0.500		79 55-120	2	30	
Endosulfan I	0.379	0.10	0.015	ug/l	0.500		76 50-115	1	30	
Endosulfan II	0.386	0.10	0.040	ug/l	0.500		77 60-125	3	30	
Endosulfan sulfate	0.398	0.20	0.015	ug/l	0.500		80 60-120	7	30	
Endrin	0.433	0.10	0.015	ug/l	0.500		87 55-125	3	30	
Endrin aldehyde	0.366	0.10	0.045	ug/l	0.500		73 55-115	2	30	
Endrin ketone	0.392	0.10	0.020	ug/l	0.500		78 60-120	8	30	
Heptachlor	0.382	0.10	0.030	ug/l	0.500		76 45-115	6	30	
Heptachlor epoxide	0.378	0.10	0.020	ug/l	0.500		76 50-120	1	30	
Methoxychlor	0.446	0.10	0.035	ug/l	0.500		89 60-135	9	30	
Surrogate: Tetrachloro-m-xylene	0.277			ug/l	0.500		55 35-120			
Surrogate: Decachlorobiphenyl	0.364			ug/l	0.500		73 45-120			

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17042 Extracted: 02/17/05</b>										
<b>Blank Analyzed: 02/17/2005-02/18/2005 (5B17042-BLK1)</b>										
Aroclor 1016	ND	1.0	0.20	ug/l						
Aroclor 1221	ND	1.0	0.10	ug/l						
Aroclor 1232	ND	1.0	0.15	ug/l						
Aroclor 1242	ND	1.0	0.15	ug/l						
Aroclor 1248	ND	1.0	0.25	ug/l						
Aroclor 1254	ND	1.0	0.25	ug/l						
Aroclor 1260	ND	1.0	0.40	ug/l						
Surrogate: Decachlorobiphenyl	0.451			ug/l	0.500		90 45-120			
<b>LCS Analyzed: 02/18/2005 (5B17042-BS2)</b>										
Aroclor 1016	2.54	1.0	0.20	ug/l	4.00		64 50-115			M-NRI
Aroclor 1260	2.69	1.0	0.40	ug/l	4.00		67 60-115			
Surrogate: Decachlorobiphenyl	0.378			ug/l	0.500		76 45-120			
<b>LCS Dup Analyzed: 02/18/2005 (5B17042-BSD2)</b>										
Aroclor 1016	3.09	1.0	0.20	ug/l	4.00		77 50-115	20	30	
Aroclor 1260	2.98	1.0	0.40	ug/l	4.00		74 60-115	10	25	
Surrogate: Decachlorobiphenyl	0.404			ug/l	0.500		81 45-120			

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**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B15070 Extracted: 02/15/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B15070-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 02/15/2005 (5B15070-BS1)</b>											
Mercury	8.18	0.20	0.063	ug/l	8.00		102	85-115			
<b>Matrix Spike Analyzed: 02/15/2005 (5B15070-MS1)</b>											
Mercury	8.26	0.20	0.063	ug/l	8.00	ND	103	70-130			
<b>Matrix Spike Dup Analyzed: 02/15/2005 (5B15070-MSD1)</b>											
Mercury	8.26	0.20	0.063	ug/l	8.00	ND	103	70-130	0	20	
<b>Batch: 5B17112 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/18/2005-02/20/2005 (5B17112-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Arsenic	0.713	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							J
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	ND	1.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.00575	0.010	0.0032	mg/l							
Lead	ND	1.0	0.13	ug/l							J
Manganese	ND	1.0	0.44	ug/l							
Nickel	ND	1.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	0.343	1.0	0.075	ug/l							
Vanadium	ND	1.0	0.86	ug/l							J
Zinc	ND	20	3.1	ug/l							

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5B14010	0.10	0.50	ND	0.98	02/14/05	02/18/05	
Acenaphthylene	EPA 625	5B14010	0.10	0.50	ND	0.98	02/14/05	02/18/05	
Aniline	EPA 625	5B14010	2.9	10	ND	0.98	02/14/05	02/18/05	
Anthracene	EPA 625	5B14010	0.083	0.50	ND	0.98	02/14/05	02/18/05	
Benzidine	EPA 625	5B14010	2.4	5.0	ND	0.98	02/14/05	02/18/05	L2
Benzoic acid	EPA 625	5B14010	3.7	20	ND	0.98	02/14/05	02/18/05	
Benzo(a)anthracene	EPA 625	5B14010	0.038	5.0	ND	0.98	02/14/05	02/18/05	
Benzo(a)pyrene	EPA 625	5B14010	0.14	2.0	ND	0.98	02/14/05	02/18/05	
Benzo(b)fluoranthene	EPA 625	5B14010	0.050	2.0	ND	0.98	02/14/05	02/18/05	
Benzo(g,h,i)perylene	EPA 625	5B14010	0.059	5.0	ND	0.98	02/14/05	02/18/05	
Benzo(k)fluoranthene	EPA 625	5B14010	0.053	0.50	ND	0.98	02/14/05	02/18/05	
<b>Benzyl alcohol</b>	EPA 625	5B14010	0.21	5.0	<b>0.27</b>	0.98	02/14/05	02/18/05	J
Bis(2-chloroethoxy)methane	EPA 625	5B14010	0.072	0.50	ND	0.98	02/14/05	02/18/05	
Bis(2-chloroethyl)ether	EPA 625	5B14010	0.084	0.50	ND	0.98	02/14/05	02/18/05	
Bis(2-chloroisopropyl)ether	EPA 625	5B14010	0.11	0.50	ND	0.98	02/14/05	02/18/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5B14010	1.1	5.0	ND	0.98	02/14/05	02/18/05	
4-Bromophenyl phenyl ether	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05	
Butyl benzyl phthalate	EPA 625	5B14010	0.34	5.0	ND	0.98	02/14/05	02/18/05	
4-Chloroaniline	EPA 625	5B14010	0.20	2.0	ND	0.98	02/14/05	02/18/05	
2-Chloronaphthalene	EPA 625	5B14010	0.059	0.50	ND	0.98	02/14/05	02/18/05	
4-Chloro-3-methylphenol	EPA 625	5B14010	0.34	2.0	ND	0.98	02/14/05	02/18/05	
4-Chlorophenyl phenyl ether	EPA 625	5B14010	0.056	0.50	ND	0.98	02/14/05	02/18/05	
2-Chlorophenol	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05	
Chrysene	EPA 625	5B14010	0.072	0.50	ND	0.98	02/14/05	02/18/05	
Dibenz(a,h)anthracene	EPA 625	5B14010	0.083	0.50	ND	0.98	02/14/05	02/18/05	
Dibenzofuran	EPA 625	5B14010	0.075	0.50	ND	0.98	02/14/05	02/18/05	
Di-n-butyl phthalate	EPA 625	5B14010	0.26	2.0	ND	0.98	02/14/05	02/18/05	
1,2-Dichlorobenzene	EPA 625	5B14010	0.11	0.50	ND	0.98	02/14/05	02/18/05	
1,3-Dichlorobenzene	EPA 625	5B14010	0.13	0.50	ND	0.98	02/14/05	02/18/05	
1,4-Dichlorobenzene	EPA 625	5B14010	0.050	0.50	ND	0.98	02/14/05	02/18/05	
3,3-Dichlorobenzidine	EPA 625	5B14010	0.93	5.0	ND	0.98	02/14/05	02/18/05	
2,4-Dichlorophenol	EPA 625	5B14010	0.21	2.0	ND	0.98	02/14/05	02/18/05	
Diethyl phthalate	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05	
2,4-Dimethylphenol	EPA 625	5B14010	0.31	2.0	ND	0.98	02/14/05	02/18/05	
Dimethyl phthalate	EPA 625	5B14010	0.081	0.50	ND	0.98	02/14/05	02/18/05	
4,6-Dinitro-2-methylphenol	EPA 625	5B14010	0.38	5.0	ND	0.98	02/14/05	02/18/05	
2,4-Dinitrophenol	EPA 625	5B14010	2.7	5.0	ND	0.98	02/14/05	02/18/05	
2,4-Dinitrotoluene	EPA 625	5B14010	0.23	5.0	ND	0.98	02/14/05	02/18/05	
2,6-Dinitrotoluene	EPA 625	5B14010	0.24	5.0	ND	0.98	02/14/05	02/18/05	
Di-n-octyl phthalate	EPA 625	5B14010	0.17	5.0	ND	0.98	02/14/05	02/18/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B14010	0.087	1.0	ND	0.98	02/14/05	02/18/05	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5B14010	0.089	0.50	ND	0.98	02/14/05	02/18/05	
Fluorene	EPA 625	5B14010	0.075	0.50	ND	0.98	02/14/05	02/18/05	
Hexachlorobenzene	EPA 625	5B14010	0.13	1.0	ND	0.98	02/14/05	02/18/05	
Hexachlorobutadiene	EPA 625	5B14010	0.38	2.0	ND	0.98	02/14/05	02/18/05	
Hexachlorocyclopentadiene	EPA 625	5B14010	1.8	5.0	ND	0.98	02/14/05	02/18/05	
Hexachloroethane	EPA 625	5B14010	0.51	3.0	ND	0.98	02/14/05	02/18/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5B14010	0.19	2.0	ND	0.98	02/14/05	02/18/05	
Isophorone	EPA 625	5B14010	0.059	1.0	ND	0.98	02/14/05	02/18/05	
<b>2-Methylnaphthalene</b>	EPA 625	5B14010	0.13	1.0	<b>0.16</b>	0.98	02/14/05	02/18/05	B, J
2-Methylphenol	EPA 625	5B14010	0.28	2.0	ND	0.98	02/14/05	02/18/05	
4-Methylphenol	EPA 625	5B14010	0.20	5.0	ND	0.98	02/14/05	02/18/05	
Naphthalene	EPA 625	5B14010	0.13	1.0	ND	0.98	02/14/05	02/18/05	
2-Nitroaniline	EPA 625	5B14010	0.18	5.0	ND	0.98	02/14/05	02/18/05	
3-Nitroaniline	EPA 625	5B14010	0.35	5.0	ND	0.98	02/14/05	02/18/05	
4-Nitroaniline	EPA 625	5B14010	0.49	5.0	ND	0.98	02/14/05	02/18/05	
Nitrobenzene	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05	
2-Nitrophenol	EPA 625	5B14010	0.23	2.0	ND	0.98	02/14/05	02/18/05	
4-Nitrophenol	EPA 625	5B14010	0.73	5.0	ND	0.98	02/14/05	02/18/05	
N-Nitrosodimethylamine	EPA 625	5B14010	0.22	2.0	ND	0.98	02/14/05	02/18/05	C
N-Nitroso-di-n-propylamine	EPA 625	5B14010	0.18	2.0	ND	0.98	02/14/05	02/18/05	
N-Nitrosodiphenylamine	EPA 625	5B14010	0.077	1.0	ND	0.98	02/14/05	02/18/05	
Pentachlorophenol	EPA 625	5B14010	0.78	2.0	ND	0.98	02/14/05	02/18/05	
Phenanthrene	EPA 625	5B14010	0.071	0.50	ND	0.98	02/14/05	02/18/05	
Phenol	EPA 625	5B14010	0.14	1.0	ND	0.98	02/14/05	02/18/05	
Pyrene	EPA 625	5B14010	0.059	0.50	ND	0.98	02/14/05	02/18/05	
1,2,4-Trichlorobenzene	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05	
2,4,5-Trichlorophenol	EPA 625	5B14010	0.075	2.0	ND	0.98	02/14/05	02/18/05	
2,4,6-Trichlorophenol	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05	
Surrogate: 2-Fluorophenol (35-120%)					77 %				
Surrogate: Phenol-d6 (45-120%)					80 %				
Surrogate: 2,4,6-Tribromophenol (50-125%)					88 %				
Surrogate: Nitrobenzene-d5 (45-120%)					78 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					75 %				
Surrogate: Terphenyl-d14 (45-135%)					71 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05	
alpha-BHC	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
beta-BHC	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
delta-BHC	EPA 608	5B17042	0.020	0.20	ND	0.962	02/17/05	02/17/05	
gamma-BHC (Lindane)	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
Chlordane	EPA 608	5B17042	0.20	1.0	ND	0.962	02/17/05	02/17/05	
4,4'-DDD	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
4,4'-DDE	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05	
4,4'-DDT	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05	C5
Dieldrin	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
Endosulfan I	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
Endosulfan II	EPA 608	5B17042	0.040	0.10	ND	0.962	02/17/05	02/17/05	
Endosulfan sulfate	EPA 608	5B17042	0.015	0.20	ND	0.962	02/17/05	02/17/05	
Endrin	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	
Endrin aldehyde	EPA 608	5B17042	0.045	0.10	ND	0.962	02/17/05	02/17/05	
Endrin ketone	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05	C5
Heptachlor	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05	
Heptachlor epoxide	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05	
Methoxychlor	EPA 608	5B17042	0.035	0.10	ND	0.962	02/17/05	02/17/05	C5
Toxaphene	EPA 608	5B17042	1.5	5.0	ND	0.962	02/17/05	02/17/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					61 %				
Surrogate: Decachlorobiphenyl (45-120%)					81 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5B17042	0.20	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1221	EPA 608	5B17042	0.10	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1232	EPA 608	5B17042	0.15	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1242	EPA 608	5B17042	0.15	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1248	EPA 608	5B17042	0.25	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1254	EPA 608	5B17042	0.25	1.0	ND	0.962	02/17/05	02/18/05	
Aroclor 1260	EPA 608	5B17042	0.40	1.0	ND	0.962	02/17/05	02/18/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					74 %				

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Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Barium	EPA 200.8	5B17112	0.00014	0.0010	<b>0.024</b>	1	02/17/05	02/22/05	
Boron	EPA 200.7	5B17127	0.0074	0.050	<b>0.047</b>	1	02/17/05	02/20/05	J
Iron	EPA 200.8	5B17112	0.0032	0.010	<b>2.2</b>	1	02/17/05	02/22/05	

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Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5B17112	0.18	2.0	0.63	1	02/17/05	02/22/05	J
Arsenic	EPA 200.8	5B17112	0.49	1.0	1.1	1	02/17/05	02/22/05	B
Beryllium	EPA 200.8	5B17112	0.037	0.50	0.10	1	02/17/05	02/22/05	J
Cadmium	EPA 200.8	5B17112	0.015	1.0	0.13	1	02/17/05	02/22/05	J
Chromium	EPA 200.8	5B17112	0.26	1.0	3.9	1	02/17/05	02/24/05	
Cobalt	EPA 200.8	5B17112	0.10	1.0	0.84	1	02/17/05	02/22/05	J
Copper	EPA 200.8	5B17112	0.49	2.0	4.4	1	02/17/05	02/22/05	
Lead	EPA 200.8	5B17112	0.13	1.0	1.6	1	02/17/05	02/22/05	
Manganese	EPA 200.8	5B17112	0.44	1.0	43	1	02/17/05	02/22/05	
Mercury	EPA 245.1	5B15070	0.063	0.20	ND	1	02/15/05	02/15/05	
Nickel	EPA 200.8	5B17112	0.15	1.0	3.4	1	02/17/05	02/22/05	
Selenium	EPA 200.8	5B17112	0.36	2.0	ND	1	02/17/05	02/22/05	
Silver	EPA 200.8	5B17112	0.089	1.0	ND	1	02/17/05	02/22/05	
Thallium	EPA 200.8	5B17112	0.075	1.0	ND	1	02/17/05	02/22/05	
Vanadium	EPA 200.8	5B17112	0.86	1.0	5.5	1	02/17/05	02/23/05	
Zinc	EPA 200.8	5B17112	3.1	20	17	1	02/17/05	02/22/05	J

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5B15110	0.30	0.50	<b>0.56</b>	1	02/15/05	02/15/05	
Biochemical Oxygen Demand	EPA 405.1	5B11108	0.59	2.0	<b>3.3</b>	1	02/11/05	02/16/05	
Chloride	EPA 300.0	5B11120	0.26	0.50	<b>5.1</b>	1	02/11/05	02/12/05	
Chromium VI	EPA 218.6	5B11047	0.000045	0.0010	ND	1	02/11/05	02/11/05	
Total Cyanide	EPA 335.2	5B12048	0.0022	0.0050	ND	1	02/12/05	02/12/05	
Fluoride	EPA 300.0	5B11120	0.10	0.50	<b>0.29</b>	1	02/11/05	02/12/05	J
Nitrate/Nitrite-N	EPA 300.0	5B11120	0.072	0.26	<b>0.62</b>	1	02/11/05	02/12/05	
Oil & Grease	EPA 413.1	5B17117	0.94	5.0	ND	1	02/17/05	02/17/05	
Residual Chlorine	EPA 330.5	5B11072	0.10	0.10	ND	1	02/11/05	02/11/05	
Sulfate	EPA 300.0	5B11120	0.18	0.50	<b>13</b>	1	02/11/05	02/12/05	
Surfactants (MBAS)	SM5540-C	5B12050	0.088	0.20	ND	2	02/12/05	02/12/05	RL-1
Total Dissolved Solids	SM2540C	5B16119	10	10	<b>98</b>	1	02/16/05	02/16/05	
Total Organic Carbon	EPA 415.1	5B23083	0.25	1.0	<b>11</b>	1	02/23/05	02/23/05	
Total Suspended Solids	EPA 160.2	5B17122	10	10	<b>46</b>	1	02/17/05	02/17/05	

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Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5B11129	0.10	0.10	ND	1	02/11/05	02/11/05	

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Sampled: 02/11/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B12055	0.080	2.0	53	2	02/12/05	02/12/05	

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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5B16069	0.80	4.0	ND	1	02/16/05	02/17/05	

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**INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B16120	1.0	1.0	130	1	02/16/05	02/16/05	

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Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (Outfall 011-composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
1,4-Dioxane	EPA 8260B	P5B1701	0.49	1.0	ND	1	02/17/05	02/17/05	
<i>Surrogate: Dibromofluoromethane (80-125%)</i>					96 %				

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Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011-composite (IOB1004-01) - Water</b>					
EPA 160.5	2	02/11/2005 16:00	02/11/2005 20:30	02/11/2005 22:30	02/11/2005 23:00
EPA 180.1	2	02/11/2005 16:00	02/11/2005 20:30	02/12/2005 12:00	02/12/2005 13:00
EPA 218.6	1	02/11/2005 16:00	02/11/2005 20:30	02/11/2005 22:30	02/11/2005 23:25
EPA 300.0	2	02/11/2005 16:00	02/11/2005 20:30	02/11/2005 23:00	02/12/2005 06:36
EPA 330.5	1	02/11/2005 16:00	02/11/2005 20:30	02/11/2005 18:06	02/11/2005 23:00
EPA 405.1	2	02/11/2005 16:00	02/11/2005 20:30	02/11/2005 23:50	02/16/2005 13:30
EPA 624	3	02/11/2005 16:00	02/11/2005 20:30	02/12/2005 00:00	02/12/2005 18:57
SM5540-C	2	02/11/2005 16:00	02/11/2005 20:30	02/12/2005 13:09	02/12/2005 17:41
<b>Sample ID: Trip Blank (IOB1004-02) - Water</b>					
EPA 624	3	02/11/2005 16:00	02/11/2005 20:30	02/12/2005 00:00	02/12/2005 21:01

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Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B15078 Extracted: 02/15/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B15078-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 02/15/2005 (5B15078-BS1)</b>											
Total Recoverable Hydrocarbons	4.46	1.0	0.31	mg/l	5.00		89	65-120			M-NR1
<b>LCS Dup Analyzed: 02/15/2005 (5B15078-BSD1)</b>											
Total Recoverable Hydrocarbons	4.21	1.0	0.31	mg/l	5.00		84	65-120	6	20	

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## METHOD BLANK/QC DATA

### EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B12001 Extracted: 02/12/05</b>										
<b>Blank Analyzed: 02/14/2005 (5B12001-BLK1)</b>										
EFH (C13 - C22)	ND	0.50	0.082	mg/l						
EFH (C13 - C40)	ND	0.50	0.082	mg/l						
Surrogate: n-Octacosane	0.104			mg/l	0.200		52 40-125			
<b>LCS Analyzed: 02/14/2005 (5B12001-BS1)</b>										
EFH (C13 - C40)	0.547	0.50	0.082	mg/l	0.775		71 40-120			M-NR1
Surrogate: n-Octacosane	0.125			mg/l	0.200		62 40-125			
<b>LCS Dup Analyzed: 02/14/2005 (5B12001-BSD1)</b>										
EFH (C13 - C40)	0.439	0.50	0.082	mg/l	0.775		57 40-120	22	25	J
Surrogate: n-Octacosane	0.0969			mg/l	0.200		48 40-125			

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**METHOD BLANK/QC DATA**

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B20029 Extracted: 02/20/05</b>											
<b>Blank Analyzed: 02/20/2005 (5B20029-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00927			mg/l	0.0100		93	65-140			
<b>LCS Analyzed: 02/20/2005 (5B20029-BS1)</b>											
GRO (C4 - C12)	0.616	0.10	0.050	mg/l	0.800		77	70-140			
Surrogate: 4-BFB (FID)	0.0260			mg/l	0.0300		87	65-140			
<b>Matrix Spike Analyzed: 02/20/2005 (5B20029-MS1)</b>											
						<b>Source: IOB1121-09</b>					
GRO (C4 - C12)	0.219	0.10	0.050	mg/l	0.220	ND	100	60-140			
Surrogate: 4-BFB (FID)	0.00982			mg/l	0.0100		98	65-140			
<b>Matrix Spike Dup Analyzed: 02/20/2005 (5B20029-MSD1)</b>											
						<b>Source: IOB1121-09</b>					
GRO (C4 - C12)	0.209	0.10	0.050	mg/l	0.220	ND	95	60-140	5	20	
Surrogate: 4-BFB (FID)	0.0104			mg/l	0.0100		104	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17014 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17014-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	26.4			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: SB12011 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (SB12011-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	21.9			ug/l	25.0		88	80-120			
Surrogate: Toluene-d8	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.3			ug/l	25.0		97	80-120			
<b>LCS Analyzed: 02/12/2005 (SB12011-BS1)</b>											
2-Chloroethyl vinyl ether	26.8	5.0	1.3	ug/l	25.0		107	20-175			
Surrogate: Dibromofluoromethane	21.8			ug/l	25.0		87	80-120			
Surrogate: Toluene-d8	26.6			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			
<b>Matrix Spike Analyzed: 02/12/2005 (SB12011-MS1) Source: IOB0980-01</b>											
2-Chloroethyl vinyl ether	27.2	5.0	1.3	ug/l	25.0	ND	109	20-175			
Surrogate: Dibromofluoromethane	22.6			ug/l	25.0		90	80-120			
Surrogate: Toluene-d8	26.3			ug/l	25.0		105	80-120			
Surrogate: 4-Bromofluorobenzene	25.1			ug/l	25.0		100	80-120			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (SB12011-MSD1) Source: IOB0980-01</b>											
2-Chloroethyl vinyl ether	27.5	5.0	1.3	ug/l	25.0	ND	110	20-175	1	25	
Surrogate: Dibromofluoromethane	22.7			ug/l	25.0		91	80-120			
Surrogate: Toluene-d8	26.4			ug/l	25.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17112 Extracted: 02/17/05</b>											
<b>LCS Analyzed: 02/18/2005-02/20/2005 (5B17112-BS1)</b>											
Antimony	87.9	2.0	0.18	ug/l	80.0		110	85-115			
Arsenic	85.9	1.0	0.49	ug/l	80.0		107	85-115			
Barium	0.0779	0.0010	0.00014	mg/l	0.0800		97	85-115			
Beryllium	76.5	0.50	0.037	ug/l	80.0		96	85-115			
Cadmium	73.4	1.0	0.015	ug/l	80.0		92	85-115			
Chromium	80.5	1.0	0.26	ug/l	80.0		101	85-115			
Cobalt	79.2	1.0	0.10	ug/l	80.0		99	85-115			
Copper	80.0	2.0	0.49	ug/l	80.0		100	85-115			
Iron	0.799	0.010	0.0032	mg/l	0.800		100	85-115			
Lead	80.0	1.0	0.13	ug/l	80.0		100	85-115			
Manganese	78.9	1.0	0.44	ug/l	80.0		99	85-115			
Nickel	80.5	1.0	0.15	ug/l	80.0		101	85-115			
Selenium	76.6	2.0	0.36	ug/l	80.0		96	85-115			
Silver	77.7	1.0	0.089	ug/l	80.0		97	85-115			
Thallium	80.5	1.0	0.075	ug/l	80.0		101	85-115			
Vanadium	79.6	1.0	0.86	ug/l	80.0		100	85-115			
Zinc	75.4	20	3.1	ug/l	80.0		94	85-115			

**Matrix Spike Analyzed: 02/18/2005-02/20/2005 (5B17112-MS1)**

**Source: IOB1070-01**

Antimony	90.2	2.0	0.18	ug/l	80.0	0.61	112	70-130			
Arsenic	88.1	1.0	0.49	ug/l	80.0	0.70	109	70-130			
Barium	0.0947	0.0010	0.00014	mg/l	0.0800	0.016	98	70-130			
Beryllium	73.9	0.50	0.037	ug/l	80.0	ND	92	70-130			
Cadmium	73.9	1.0	0.015	ug/l	80.0	0.37	92	70-130			
Chromium	84.8	1.0	0.26	ug/l	80.0	2.7	103	70-130			
Cobalt	80.3	1.0	0.10	ug/l	80.0	0.43	100	70-130			
Copper	92.0	2.0	0.49	ug/l	80.0	11	101	70-130			
Iron	1.11	0.010	0.0032	mg/l	0.800	0.35	95	70-130			
Lead	91.8	1.0	0.13	ug/l	80.0	13	98	70-130			
Manganese	107	1.0	0.44	ug/l	80.0	25	102	70-130			
Nickel	83.5	1.0	0.15	ug/l	80.0	2.6	101	70-130			
Selenium	76.2	2.0	0.36	ug/l	80.0	0.48	95	70-130			
Silver	77.6	1.0	0.089	ug/l	80.0	ND	97	70-130			
Thallium	79.6	1.0	0.075	ug/l	80.0	0.42	99	70-130			
Vanadium	89.3	1.0	0.86	ug/l	80.0	8.0	102	70-130			
Zinc	338	20	3.1	ug/l	80.0	270	85	70-130			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17112 Extracted: 02/17/05</b>										
<b>Matrix Spike Dup Analyzed: 02/18/2005-02/20/2005 (5B17112-MSD1)</b>					<b>Source: IOB1070-01</b>					
Antimony	91.1	2.0	0.18	ug/l	80.0	0.61	113	70-130	1	20
Arsenic	87.3	1.0	0.49	ug/l	80.0	0.70	108	70-130	1	20
Barium	0.0942	0.0010	0.00014	mg/l	0.0800	0.016	98	70-130	1	20
Beryllium	74.9	0.50	0.037	ug/l	80.0	ND	94	70-130	1	20
Cadmium	72.3	1.0	0.015	ug/l	80.0	0.37	90	70-130	2	20
Chromium	84.7	1.0	0.26	ug/l	80.0	2.7	102	70-130	0	20
Cobalt	79.9	1.0	0.10	ug/l	80.0	0.43	99	70-130	1	20
Copper	91.8	2.0	0.49	ug/l	80.0	11	101	70-130	0	20
Iron	1.14	0.010	0.0032	mg/l	0.800	0.35	99	70-130	3	20
Lead	92.8	1.0	0.13	ug/l	80.0	13	100	70-130	1	20
Manganese	105	1.0	0.44	ug/l	80.0	25	100	70-130	2	20
Nickel	82.8	1.0	0.15	ug/l	80.0	2.6	100	70-130	1	20
Selenium	76.5	2.0	0.36	ug/l	80.0	0.48	95	70-130	0	20
Silver	77.3	1.0	0.089	ug/l	80.0	ND	97	70-130	0	20
Thallium	30.4	1.0	0.075	ug/l	80.0	0.42	100	70-130	1	20
Vanadium	88.8	1.0	0.86	ug/l	80.0	8.0	101	70-130	1	20
Zinc	340	20	3.1	ug/l	80.0	270	88	70-130	1	20

**Batch: 5B17127 Extracted: 02/17/05**

**Blank Analyzed: 02/18/2005 (5B17127-BLK1)**

Boron	ND	0.050	0.0074	mg/l
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**LCS Analyzed: 02/18/2005 (5B17127-BS1)**

Boron	0.463	0.050	0.0074	mg/l	0.500	93	85-115
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**Matrix Spike Analyzed: 02/18/2005 (5B17127-MS1)**

				<b>Source: IOB0814-02</b>				
Boron	0.573	0.050	0.0074	mg/l	0.500	0.077	99	70-130

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**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17127 Extracted: 02/17/05</b>											
<b>Matrix Spike Dup Analyzed: 02/18/2005 (5B17127-MSD1)</b>											
Boron	0.565	0.050	0.0074	mg/l	0.500	0.077	98	70-130	1	20	

Source: IOB0814-02

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B11047 Extracted: 02/11/05</b>											
<b>Blank Analyzed: 02/11/2005 (5B11047-BLK1)</b>											
Chromium VI	ND	0.0010	0.000045	mg/l							
<b>LCS Analyzed: 02/11/2005 (5B11047-BS1)</b>											
Chromium VI	0.0521	0.0010	0.000045	mg/l	0.0500		104	90-110			
<b>Matrix Spike Analyzed: 02/11/2005 (5B11047-MS1)</b>											
Chromium VI	0.0370	0.0010	0.000045	mg/l	0.0500	0.00018	74	90-110			M2
<b>Matrix Spike Dup Analyzed: 02/11/2005 (5B11047-MSD1)</b>											
Chromium VI	0.0368	0.0010	0.000045	mg/l	0.0500	0.00018	73	90-110	1	10	M2
<b>Batch: 5B11072 Extracted: 02/11/05</b>											
<b>Duplicate Analyzed: 02/11/2005 (5B11072-DUP1)</b>											
Residual Chlorine	ND	0.10	0.10	mg/l						20	
<b>Batch: 5B11108 Extracted: 02/11/05</b>											
<b>Blank Analyzed: 02/16/2005 (5B11108-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 02/16/2005 (5B11108-BS1)</b>											
Biochemical Oxygen Demand	206	100	30	mg/l	198		104	85-115			
<b>LCS Dup Analyzed: 02/16/2005 (5B11108-BSD1)</b>											
Biochemical Oxygen Demand	204	100	30	mg/l	198		103	85-115	1	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B11120 Extracted: 02/11/05</b>											
<b>Blank Analyzed: 02/11/2005 (5B11120-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.10	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 02/11/2005 (5B11120-BS1)</b>											
Chloride	4.84	0.50	0.26	mg/l	5.00		97	90-110			
Fluoride	4.87	0.50	0.10	mg/l	5.00		97	90-110			
Sulfate	10.0	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 02/12/2005 (5B11120-MS1)</b>											
						<b>Source: IOB0980-01</b>					
Chloride	15.6	0.50	0.26	mg/l	5.00	11	92	80-120			
Fluoride	5.03	0.50	0.10	mg/l	5.00	0.29	95	80-120			
Sulfate	38.7	0.50	0.18	mg/l	10.0	29	97	80-120			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B11120-MSD1)</b>											
						<b>Source: IOB0980-01</b>					
Chloride	15.8	0.50	0.26	mg/l	5.00	11	96	80-120	1	20	
Fluoride	5.10	0.50	0.10	mg/l	5.00	0.29	96	80-120	1	20	
Sulfate	39.3	0.50	0.18	mg/l	10.0	29	103	80-120	2	20	
<b>Batch: 5B12048 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12048-BLK1)</b>											
Total Cyanide	ND	0.0050	0.0022	mg/l							
<b>LCS Analyzed: 02/12/2005 (5B12048-BS1)</b>											
Total Cyanide	0.192	0.0050	0.0022	mg/l	0.200		96	90-110			

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**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B12048 Extracted: 02/12/05</b>											
<b>Matrix Spike Analyzed: 02/12/2005 (5B12048-MS1)</b>						<b>Source: IOB0928-01</b>					
Total Cyanide	0.162	0.0050	0.0022	mg/l	0.200	ND	81	70-115			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12048-MSD1)</b>						<b>Source: IOB0928-01</b>					
Total Cyanide	0.147	0.0050	0.0022	mg/l	0.200	ND	74	70-115	10	15	
<b>Batch: 5B12050 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12050-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 02/12/2005 (5B12050-BS1)</b>											
Surfactants (MBAS)	0.247	0.10	0.044	mg/l	0.250		99	90-110			
<b>Matrix Spike Analyzed: 02/12/2005 (5B12050-MS1)</b>						<b>Source: IOB1021-01</b>					
Surfactants (MBAS)	0.315	0.10	0.044	mg/l	0.250	0.084	92	50-125			
<b>Matrix Spike Dup Analyzed: 02/12/2005 (5B12050-MSD1)</b>						<b>Source: IOB1021-01</b>					
Surfactants (MBAS)	0.284	0.10	0.044	mg/l	0.250	0.084	80	50-125	10	20	
<b>Batch: 5B12055 Extracted: 02/12/05</b>											
<b>Blank Analyzed: 02/12/2005 (5B12055-BLK1)</b>											
Turbidity	0.0400	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 02/12/2005 (5B12055-DUP1)</b>						<b>Source: IOB0952-01</b>					
Turbidity	48.8	2.0	0.080	NTU		48			2	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B15110 Extracted: 02/15/05</b>											
<b>Blank Analyzed: 02/15/2005 (5B15110-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 02/15/2005 (5B15110-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0		98	80-115			
<b>Matrix Spike Analyzed: 02/15/2005 (5B15110-MS1)</b>											
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	ND	101	70-120			
<b>Matrix Spike Dup Analyzed: 02/15/2005 (5B15110-MSD1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	ND	95	70-120	6	15	
<b>Batch: 5B16069 Extracted: 02/16/05</b>											
<b>Blank Analyzed: 02/16/2005 (5B16069-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 02/16/2005 (5B16069-BS1)</b>											
Perchlorate	52.0	4.0	0.80	ug/l	50.0		104	85-115			
<b>Matrix Spike Analyzed: 02/16/2005 (5B16069-MS1)</b>											
Perchlorate	51.9	4.0	0.80	ug/l	50.0	ND	104	80-120			
<b>Matrix Spike Dup Analyzed: 02/16/2005 (5B16069-MSD1)</b>											
Perchlorate	51.6	4.0	0.80	ug/l	50.0	ND	103	80-120	1	20	
<b>Batch: 5B16119 Extracted: 02/16/05</b>											
<b>Blank Analyzed: 02/16/2005 (5B16119-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							

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Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B16119 Extracted: 02/16/05</b>											
<b>LCS Analyzed: 02/16/2005 (5B16119-BS1)</b>											
Total Dissolved Solids	988	10	10	mg/l	1000		99	90-110			
<b>Duplicate Analyzed: 02/16/2005 (5B16119-DUP1)</b>											
Total Dissolved Solids	1280	10	10	mg/l		Source: IOB1106-12 1300			2	10	
<b>Batch: 5B16120 Extracted: 02/16/05</b>											
<b>Duplicate Analyzed: 02/16/2005 (5B16120-DUP1)</b>											
Specific Conductance	95.3	1.0	1.0	umhos/cm		Source: IOB0937-02 95			0	5	
<b>Batch: 5B17117 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17117-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 02/17/2005 (5B17117-BS1)</b>											
Oil & Grease	17.6	5.0	0.94	mg/l	20.0		88	65-120			M-NRI
<b>LCS Dup Analyzed: 02/17/2005 (5B17117-BSD1)</b>											
Oil & Grease	16.4	5.0	0.94	mg/l	20.0		82	65-120	7	20	
<b>Batch: 5B17122 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (5B17122-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							

Del Mar Analytical, Irvine  
 Wendy Kirkeeng For Michele Harper  
 Project Manager

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# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B17122 Extracted: 02/17/05</b>											
<b>LCS Analyzed: 02/17/2005 (5B17122-BS1)</b>											
Total Suspended Solids	953	10	10	mg/l	1000		95	85-115			
<b>Duplicate Analyzed: 02/17/2005 (5B17122-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l		Source: IOB1088-02 ND				10	
<b>Batch: 5B23083 Extracted: 02/23/05</b>											
<b>Blank Analyzed: 02/23/2005 (5B23083-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 02/23/2005 (5B23083-BS1)</b>											
Total Organic Carbon	10.4	1.0	0.25	mg/l	10.0		104	90-110			
<b>Matrix Spike Analyzed: 02/23/2005 (5B23083-MS1)</b>											
Total Organic Carbon	6.12	1.0	0.25	mg/l	5.00	0.49	113	80-120			
<b>Matrix Spike Dup Analyzed: 02/23/2005 (5B23083-MSD1)</b>											
Total Organic Carbon	6.30	1.0	0.25	mg/l	5.00	0.49	116	80-120	3	20	

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**METHOD BLANK/QC DATA**

**1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5B1701 Extracted: 02/17/05</b>											
<b>Blank Analyzed: 02/17/2005 (P5B1701-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	0.930			ug/l	1.00		93	80-125			
<b>LCS Analyzed: 02/17/2005 (P5B1701-BS1)</b>											
1,4-Dioxane	10.9	1.0	0.49	ug/l	10.0		109	70-130			
Surrogate: Dibromofluoromethane	0.920			ug/l	1.00		92	80-125			
<b>LCS Dup Analyzed: 02/17/2005 (P5B1701-BSD1)</b>											
1,4-Dioxane	12.3	1.0	0.49	ug/l	10.0		123	70-130	12	20	
Surrogate: Dibromofluoromethane	0.950			ug/l	1.00		95	80-125			
<b>Matrix Spike Analyzed: 02/17/2005 (P5B1701-MS1)</b>											
						<b>Source: POB0398-01</b>					
1,4-Dioxane	11.1	1.0	0.49	ug/l	10.0	ND	111	70-150			
Surrogate: Dibromofluoromethane	0.980			ug/l	1.00		98	80-125			
<b>Matrix Spike Dup Analyzed: 02/17/2005 (P5B1701-MSD1)</b>											
						<b>Source: POB0398-01</b>					
1,4-Dioxane	11.0	1.0	0.49	ug/l	10.0	ND	110	70-150	1	25	
Surrogate: Dibromofluoromethane	1.00			ug/l	1.00		100	80-125			

Del Mar Analytical, Irvine  
 Wendy Kirkeeng For Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- C** Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
- C5** Calibration Verification recovery was below the method control limit for this analyte. An additional check standard was analyzed at the reporting limit to ensure instrument sensitivity at the reporting limit. Samples ND.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-NRI** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- RL-1** Reporting limit raised due to sample matrix effects.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

## ADDITIONAL COMMENTS

### For TICs:

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

### For 1,2-Diphenylhydrazine:

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

### For GRO (C4-C12):

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

### For Extractable Fuel Hydrocarbons (EFH, DRO, ORO):

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Wendy Kirkeeng For Michele Harper  
Project Manager

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
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## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
EPA 8260B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical Perspectives

2714 Exchange Drive - Wilmington, NC 28405

Analysis Performed: 1613-Dioxin-HR

Samples: IOB1004-01

Analysis Performed: EDD + Level 4

Samples: IOB1004-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chmic

### Del Mar Analytical, Irvine

Wendy Kirkeeng For Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
Received: 02/11/05

**Aquatic Testing Laboratories-SUB** California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Samples: IOB1004-01

Analysis Performed: Bioassay-Acute 96hr

Samples: IOB1004-01

**Del Mar Analytical - Phoenix** NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B

Samples: IOB1004-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4

Samples: IOB1004-01

Analysis Performed: Gross Alpha

Samples: IOB1004-01

Analysis Performed: Gross Beta

Samples: IOB1004-01

Analysis Performed: Radium, Combined

Samples: IOB1004-01

Analysis Performed: Strontium 90

Samples: IOB1004-01

Analysis Performed: Tritium

Samples: IOB1004-01

**Truesdail Laboratories-SUB** California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine

Samples: IOB1004-01

Analysis Performed: Level 4 Data Package

Samples: IOB1004-01

**Del Mar Analytical, Irvine**  
Wendy Kirkeeng For Michele Harper  
Project Manager

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**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 5.8/12/04

Client Name/Address:  
**MWH-Pasadena**  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Del Mar Contact: Michele Harper

Project Manager: Bronwyn Kelly

Sampler: *Linda Hays*

Project: Boeing-SSFL NPDES  
 Outfall 011 - 13267  
 Sampling  
 Perimeter Pond

Phone Number: (626) 568-6691  
 Fax Number: (626) 568-6515

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	8015B (GRO)	8015 (Extractable Fuel Hydrocarbons), Dioxane-8260B-out	VOCs 624+A+A+2CVE	Monomethylhydrazine	Bioassay-Acute, Bioassay-7 day Chronic	VOCs 624 + xylenes + Freon 113 + 1,1-DCE + Freon 123a + Cyclohexane	625 - PP List, (608)-Pest + PCB	Fluoride, Cr VI	Total Recoverable Metals: B, Ba, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V	418.1 (TRPH) Residual Chlorine	Field Readings: Temp = pH =	Comments
Outfall 011	W	Poly -1Gal	1	None	2/11/05 1900	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1320	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1340	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1400	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1420	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1460	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1500	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1520	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1540	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Outfall 011	W	Poly -1Gal	1	None	1400	X	X	X	X	X	X	X	X	X	X		Total Flow (gals)= Flow (gpm)=
Trip Blank	W	VOAs	9	HCL	1400	X		X			X						Total Flow (gals)= Flow (gpm)=
Relinquished By <i>Linda Hays</i>					Date/Time: 2/11/05 17:00						Date/Time: 2/11/05 17:00						
Relinquished By <i>SD</i>					Date/Time: 2/11/05 20:30						Date/Time: 2/11/05 20:30						
Relinquished By <i>SD</i>					Date/Time: 2/11/05 20:30						Date/Time: 2/11/05 20:30						

Turn around Time: (check)  
 24 Hours \_\_\_\_\_ 5 Days \_\_\_\_\_  
 48 Hours \_\_\_\_\_ 10 Days \_\_\_\_\_  
 72 Hours \_\_\_\_\_ Normal \_\_\_\_\_  
 Perchlorate Only 72 Hours \_\_\_\_\_  
 Metals Only 72 Hours \_\_\_\_\_  
 Sample Integrity (Check) On Ice:  
 Intact  3'

**Note:** Composite by flow weighted averages and analyze according to 13267 Sampling protocol. \* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY \* GROSS ALPHA > 15pCi/L

**F A X**




**MWH**

300 N. Lake Ave., Suite 1200  
 Pasadena, California 91101  
 Tel: 626-568-6691  
 Fax: 626-568-6515

Date: 03/01/05

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
 Krissi McIlvenna / MWH 925-975-3412

From: Bronwyn K. Kelly

sign: 

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 1  
(including cover)

**Per Request:**

Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested, Not Completed	Change(s) and Method (s) Now Requested
IOA0567	Outfall 011 -- Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.
IOA0549	Outfall 011 -- Grab	01/11/05		608 Pest/PCB-PP list, 625-PP list, Sb, As, Ba, Be, B, Cd, Cr, Co, F, Fe, Mn, Ni, Se, Ag, Tl, V, Zn, 1,4-Dioxane, 624-Freon 113, Freon 123a, Cyclohexane
IOB1004	Outfall 011 -- Composite	01/11/05		NH3, BOD, Cl-, N/N-N, Oil and Grease, Sulfate, MBAS, TDS, TSS, Settleable Solids, Turbidity, CN, Clo4-, Conductivity, Lead, Cr, Cu, Hg, TOC, TCDD.

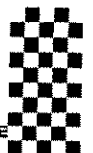
The reason for these changes:

- Incorrectly marked on COC form* \_\_\_\_\_
- Lack of sample volume* \_\_\_\_\_
- MWH office personnel require this change* \_\_\_\_\_ X \_\_\_\_\_
- Other: Containers mislabeled* \_\_\_\_\_

This Change Order supersedes all previous change orders submitted.

Thank you

~8505913.doc





2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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April 6, 2005

MWH-Pasadena/ Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Attention: Bronwyn Kelly  
Project: 13267 (Study1)/Outfall 011  
Sampled: 02/11/05  
Del Mar Analytical Number: IOB1004

Dear Ms. Kelly:

Aquatic Testing Laboratories performed the Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), Eberline Services tested gross alpha/gross beta (EPA 900.0), tritium (H-3, EPA 906.0), and strontium-90 (Sr-90, EPA 905.0) and Alta Analytical Perspectives performed Method 1613 Dioxin, and Truesdail Laboratories performed the Hydrazines by EPA 8315 analysis for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	EBERLINE ID	ALTA ID	TRUESDAIL ID
Outfall 011-composite	IOB1004-01	A-05021209-001/002	R502134-8263	P5072 2989 011	939706-1

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022 at extension 215.

Sincerely yours,  
DEL MAR ANALYTICAL

  
Michele Harper  
Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650- 0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Date:** February 19, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05021209-001/002  
**Sample I.D.:** IOB1004-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 02/11/05  
Date Received: 02/12/05  
Date Tested: 02/12/05 to 02/18/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TUa</b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TUc</b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05021209-001  
 Client/ID: Del Mar IOB1004-01

Start Date: 02/12/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 13 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050208.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.2	8.1	7.8	0	0	RW 1200
	100%	21.0	9.7	6.7	0	0	
24 Hr	Control	20.3	6.9	7.7	0	0	2 1100
	100%	20.3	6.2	7.0	0	0	
48 Hr	Control	20.4	7.4	7.5	0	0	2 1200
	100%	20.5	7.4	7.0	0	0	
Renewal	Control	20.4	8.0	7.7	0	0	2 1200
	100%	20.3	8.7	6.8	0	0	
72 Hr	Control	19.8	7.8	7.4	0	0	RW 1100
	100%	19.6	7.8	6.9	0	0	
96 Hr	Control	20.7	7.8	7.4	0	0	RW 1100
	100%	20.5	7.6	6.9	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 6.7; Conductivity: 108 umho; Temp: 4°C;  
 DO: 9.7 mg/l; Alkalinity: 34 mg/l; Hardness: 46 mg/l; NH<sub>3</sub>-N: 0.3 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No  
 Control: Alkalinity: 54 mg/l; Hardness: 87 mg/l; Conductivity: 295 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes /  No  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05021209  
Client/ID: Del Mar IOB1004-01

Date Tested: 02/12/05 to 02/18/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050204.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	25.8
6.25%	100%	26.5
12.5%	100%	28.2
25%	100%	27.3
50%	100%	25.8
100%	100%	25.4

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female	Pass (25.8 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 15.8%)
Statistically significantly different concentrations relative difference > 13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight response at conc. tested)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1004

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone : (805) 650-0546 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1004-01 Water      Sampled: 02/11/05 16:00</b>		
Bioassay-7 dy Chrnrc	02/13/05 04:00	Instant Notification ceriodaphnia, 13267
Bioassay-Acute 96hr	02/13/05 04:00	fathead minnow, 13267
<b>Containers Supplied:</b>		
1 gal Poly (IOB1004-01AP)		
1 gal Poly (IOB1004-01AQ)		

SAMPLE INTEGRITY:					
All containers intact:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Samples Preserved Properly:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	9°C	

Released By: Jesus Salva      Date: 2/12/05      Time: 0700      Received By: BD & Jeanne      Date: 2/12/05      Time: 0700  
 Released By: BD & Jeanne      Date: 2/12/05      Time: 0900      Received By: ATL      Date: 2-12-05      Time: 0900





March 8, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB1004  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R502134-8263

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on February 15, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

*MM*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8263</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502134-01</u>	Contract <u>PROJECT# IOB1004</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
IOB1004-01	8263-001	02/11/05	03/01/05	GrossAlpha	2.03 ± 0.91	pCi/L	0.787
			03/01/05	Gross Beta	2.30 ± 1.2	pCi/L	1.78
			03/02/05	H3	21.1 ± 140	pCi/L	240
			02/25/05	Sr90	-0.060 ± 0.23	pCi/L	0.470

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/08/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8263</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502134-01</u>	Contract <u>PROJECT# IOB1G04</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8261-002	GrossAlpha	8.92 ± 1.1	pCi/Smpl	11.2	0.403	80% recovery
		Gross Beta	10.6 ± 0.77	pCi/Smpl	12.1	0.556	88% recovery
		H3	281 ± 24	pCi/Smpl	259	23.4	108% recovery
		Sr90	12.0 ± 0.59	pCi/Smpl	11.1	0.238	108% recovery
<u>BLANK</u>							
	8261-003	GrossAlpha	-0.032 ± 0.15	pCi/Smpl	NA	0.374	<MDA
		Gross Beta	-0.073 ± 0.30	pCi/Smpl	NA	0.554	<MDA
		H3	13.6 ± 15	pCi/Smpl	NA	23.9	<MDA
		Sr90	-0.091 ± 0.10	pCi/Smpl	NA	0.234	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-004	GrossAlpha	3.40 ± 1.4	0.926
	Gross Beta	6.02 ± 1.4	1.80
	H3	393 ± 160	242
	Sr90	-0.186 ± 0.19	0.431

<u>ORIGINALS</u>					
Sample ID	Results ± 2σ	MDA	3σ		
			RPD	(Tot)	Eval
8261-001	1.64 ± 1.0	0.936	70	112	satis.
	5.18 ± 1.3	1.80	15	60	satis.
	71.9 ± 150	246	138	144	satis.
	-0.077 ± 0.25	0.499	-	0	satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8261-005	GrossAlpha	81.8 ± 5.3	1.04
	Gross Beta	82.0 ± 3.7	1.81
	H3	17800 ± 520	243

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8261-001	1.64 ± 1.0	0.936	76.6	105	
	5.18 ± 1.3	1.80	73.9	104	
	71.9 ± 150	246	18900	94	

Certified by <u><i>[Signature]</i></u>
Report Date <u>03/08/05</u>
Page 2



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-9043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1004

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Sampled: 02/11/05 16:00	Comments
Sample ID: IOB1004-01 Water			Instant Notification
EDD + Level 4-OUT	03/11/05 16:00		
Gross Alpha-O	02/11/06 16:00		900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Gross Beta-O	02/11/06 16:00		900.0, IF RESULT>15 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/11/06 16:00		HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Strontium 90-O	02/11/06 16:00		905.0
Tritium-O	02/11/06 16:00		906

**Containers Supplied:**  
 1 gal Poly (IOB1004-01AC) *w/ HNO<sub>3</sub>*  
 40 ml Voa Vial (IOB1004-01AU)  
 40 ml Voa Vial (IOB1004-01AV)

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

<i>Jesus Salas</i>	<i>2-14-05</i>	<i>1730</i>	<i>Z/L</i>	<i>2/15/05</i>	<i>10:00</i>
Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: Del Mar City: Irvine State: CA  
 Date/Time received: 2/15/05 10:00 CoC No.: F081004  
F081004-C1  
 Container I.D. No.: Blue Caddy AP 5100 Requested TAT (Days): 21 P.O. Received Yes  No

INSPECTION

1. Custody seals on shipping container intact? Yes  No  N/A
2. Custody seals on shipping container dated & signed? Yes  No  N/A
3. Custody seals on sample containers intact? Yes  No  N/A
4. Custody seals on sample containers dated & signed? Yes  No  N/A
5. Packing material is: Wet  Dry
6. Number of samples in shipping container: 1 Sample Matrix: Water
7. Number of containers per sample: 3 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes  No
9. Paperwork agrees with samples? Yes  No
10. Samples have: Tape  Hazard labels  Rad labels  Appropriate sample labels
11. Samples are: In good condition  Leaking  Broken Container  Missing
12. Samples are: Preserved  Not preserved  pH < 2 Preservative HNO3
13. Describe any anomalies: \_\_\_\_\_
14. Was P.M. notified of any anomalies? Yes  No  Date \_\_\_\_\_
15. Inspected by: Z/LP Date: 2/15/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_


**ALTA ANALYTICAL PERSPECTIVES**

3 March 2005

Scott Unze  
 Pace Analytical Services  
 1700 Elm Street  
 Minneapolis, MN 55414

Ph: 612-607-1700  
 Fax: 612-607-6444

Subject: Certificate of Results

Dear Scott;

Attached to this narrative are the analytical results you requested on the samples submitted for the determination of polychlorinated dibenzo-*p*-dioxins and dibenzofurans. The insert below summarizes the relevant information pertaining to your project. In particular, the QC annotations bring to your attention specific analytical observations and assessments made during the sample handling and data interpretation phases. A brief description of the report's components is provided on the next page.

Project Information Summary	When applicable, see QC Annotations for details
Client Project No.	
AAP Project No.	P5072
Analytical Protocol	Method 1613B
No. Samples Submitted	13
No. Samples Analyzed	13
No. Laboratory Method Blanks	1
No. OPRs / Batch CS3	1
No. Outstanding Samples	0
Date Received	1-Mar-2005
Condition Received	good
Temperature upon Receipt (C)	1-3
Extraction within Holding Time	yes
Analysis within Holding Time	yes
Data meet QA/QC Requirements	yes
Exceptions	none
Analytical Difficulties	none

2714 EXCHANGE DRIVE  
 WILMINGTON  
 NORTH CAROLINA 28405  
 TEL: 910-794-1613 FAX 910-794-3919

**QC Annotations:**

1. A "J" data qualifier is used for analytes with a concentration below the reporting limit.

Alta Analytical Perspectives remains committed to serving you in the most effective manner. Should you have any questions or need additional information and technical support, please, do not hesitate to contact us. We wanted to thank you for choosing Alta Analytical Perspectives as part of your analytical support team.

Sincerely,



Amy J. Boehm  
Project Manager

Sample ID: IOB1004-01

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072	Date Received:	01 Mar 05
Project ID:	General Analytical HRMS	Weight/Volume:	0.99 L	Sample ID:	P5072_2989_011	Date Extracted:	01 Mar 05
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989	Date Analyzed:	03 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries		
					ES	CS	
2,3,7,8-TCDD	ND	1.79			72.2	84	
1,2,3,7,8-PeCDD	ND	2.92			72.5	87	
1,2,3,4,7,8-HxCDD	ND	12.2			68.3	83.2	
1,2,3,6,7,8-HxCDD	ND	12			77.6	83.2	
1,2,3,7,8,9-HxCDD	ND	13.8			71.1	83.2	
1,2,3,4,6,7,8-HpCDD	20.8	9.88		J	61.1	72.2	
OCDD	213	31.3			43.9	72.2	
2,3,7,8-TCDF	ND	2.71			69.7	84	
1,2,3,7,8-PeCDF	ND	2.52			73.4	78.3	
2,3,4,7,8-PeCDF	ND	2.53			70.3	78.3	
1,2,3,4,7,8-HxCDF	ND	6.66			71.2	83.2	
1,2,3,6,7,8-HxCDF	ND	6.24			78	83.2	
2,3,4,6,7,8-HxCDF	ND	8.23			69.5	83.2	
1,2,3,7,8,9-HxCDF	ND	12.4			64.6	83.2	
1,2,3,4,6,7,8-HpCDF	ND	3.42			57.2	72.2	
1,2,3,4,7,8,9-HpCDF	ND	5.49			55.1	72.2	
OCDF	ND	20.8			46.5	72.2	
<b>Totals &amp; TEQs</b>							
TCDDs	ND	1.79					
PeCDDs	ND	2.92					
HxCDDs	ND	12.7					
HpCDDs	43.1	9.88					
TCDFs	ND	2.71					
PeCDFs	ND	2.52					
HxCDFs	ND	8.1					
HpCDFs	ND	4.35					
<b>Total PCDD/Fs</b>	<b>256</b>		<b>256</b>				



2714 Exchange Drive  
Wilmington  
North Carolina 28405  
USA

Tel: 910 794-1613  
Fax: 910 794-3919  
e-mail: yt@ultratrace.com  
web: www.ultratrace.com

AAP 2005 Rev. B


Checkcode: 4355

Reviewer: *[Signature]*  
Date: 23 Mar 05



Sample ID: 0\_2989\_MB001

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072	Date Received:	n/a
Project ID:	General Analytical HRMS	Weight/Volume:	1.00 L	Sample ID:	0_2989_MB001	Date Extracted:	01 Mar 05
Date Collected:	n/a	pH	6	QC Batch No.:	2989	Date Analyzed:	02 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries		
					ES	CS	
2,3,7,8-TCDD	ND	1.65			75.2	80.6	
1,2,3,7,8-PeCDD	ND	1.55			70.5	83.7	
1,2,3,4,7,8-HxCDD	ND	2.57			80	86.4	
1,2,3,6,7,8-HxCDD	ND	2.4			91.5	86.4	
1,2,3,7,8,9-HxCDD	ND	2.8			86	86.4	
1,2,3,4,6,7,8-HpCDD	ND	1.98			74.9	69.8	
OCDD	ND	4.78			67.4	69.8	
2,3,7,8-TCDF	ND	1.04			81.1	80.6	
1,2,3,7,8-PeCDF	ND	1.91			85.1	82.9	
2,3,4,7,8-PeCDF	ND	1.98			76.6	82.9	
1,2,3,4,7,8-HxCDF	ND	0.812			79.4	86.4	
1,2,3,6,7,8-HxCDF	ND	0.764			86.7	86.4	
2,3,4,6,7,8-HxCDF	ND	1.01			77.8	86.4	
1,2,3,7,8,9-HxCDF	ND	1.42			75.6	86.4	
1,2,3,4,6,7,8-HpCDF	ND	1.78			64.7	69.8	
1,2,3,4,7,8,9-HpCDF	ND	2.67			65.1	69.8	
OCDF	ND	11.1			67.2	69.8	
<b>Totals &amp; TEQs</b>							
TCDDs	ND	1.65			 <b>ALTA ANALYTICAL PERSPECTIVES</b> 2714 Exchange Drive Wilmington North Carolina 28405 USA Tel: 910 794-1613 Fax: 910 794-3919 e-mail: yt@ultratrace.com web: www.ultratrace.com		
PeCDDs	ND	1.55					
HxCDDs	ND	2.59					
HpCDDs	ND	1.98					
TCDFs	ND	1.04					
PeCDFs	ND	1.94					
HxCDFs	ND	0.974					
HpCDFs	ND	2.19					
<b>Total PCDD/Fs</b>	<b>0</b>		<b>0</b>				

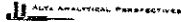
Checkcode: 3365

AAP 2005 Rev. B

Reviewer: *[Signature]*  
 Date: 03 Mar 05

P5072 - TEQ  
 Project ID: General Analytical HRMS

Sample Summary  
 Part 1



Method 1613

Analyte	0_2968_MB 001	IOB1001-01	IOB0993-01	IOB0996-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0980-01	IOB1008-01	IOB1002-01	IOB0992-01	IOB1004-01	IOB0988-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
2,3,7,8-TCDF	(1.55)	(2.29)	(2.06)	(2.02)	(1.34)	(1.71)	(2.29)	(2.55)	(1.61)	(1.44)	(2.87)	(1.79)	(3.24)	(3.01)
1,2,3,7,8-PeCDD	(1.55)	(1.55)	(1.79)	(2.09)	(2.11)	(1.73)	(3.2)	(1.89)	(1.52)	(2.04)	(3.14)	(2.92)	(2.18)	(5.36)
1,2,3,6,7,8-HxCDD	(2.57)	(3.45)	(2.55)	(2.71)	(2.48)	(3.89)	(4.19)	(2.42)	3.57	(2.74)	(5.91)	(12.2)	(4.91)	(4.94)
1,2,3,7,8,9-HxCDD	(2.4)	(3.31)	(2.57)	(2.7)	(2.34)	(3.8)	(4.11)	(2.41)	8.47	(2.88)	(5.98)	(12)	(4.94)	(4.7)
1,2,3,4,6,7,8-HxCDD	(2.5)	(3.83)	(3.13)	(3.33)	(2.82)	(4.66)	(4.95)	(2.86)	5.27	(3.13)	(7.12)	(13.8)	(5.34)	(5.61)
OCDD	(1.98)	75.4	31.5	10	(9.38)	12.2	(5.34)	49.8	207	12.1	(10.8)	20.8	(3.19)	(9.6)
	(4.78)	883	287	134	70.4	167	56.1	471	2120	163	70.2	213	50.3	80
2,3,7,8-TCDF	(1.04)	(1.24)	(1.54)	(1.85)	(0.895)	(2.08)	(1.37)	(1.54)	(1.49)	(1.03)	(2.58)	(2.71)	(2.39)	(2.51)
1,2,3,7,8-PeCDF	(1.91)	(1.79)	(2.75)	(1.44)	(2.33)	(1.84)	(3.71)	(1.98)	(2.35)	(2.11)	(4.02)	(2.52)	(2.98)	(2.46)
1,2,3,4,7,8-HxCDF	(1.56)	(1.86)	(2.8)	(1.48)	(2.42)	(1.89)	(3.89)	(2.03)	(2.31)	(1.95)	(3.97)	(2.53)	(3)	(2.49)
1,2,3,6,7,8-HxCDF	(0.812)	(0.867)	(0.9)	(0.785)	(0.943)	(1.36)	(1.39)	(1.47)	(0.97)	(0.815)	(1.55)	(6.65)	(1.52)	(1.13)
1,2,3,4,6,7,8-HxCDF	(0.784)	(0.843)	(0.827)	(0.708)	(0.871)	(1.31)	(1.3)	(1.51)	(0.996)	(0.78)	(1.42)	(5.24)	(1.52)	(1.19)
2,3,7,8,9-PeCDF	(1.01)	(1.12)	(1.04)	(0.933)	(1.12)	(1.85)	(1.73)	(1.3)	(1.1)	(0.99)	(1.91)	(8.23)	(2.03)	(1.46)
1,2,3,4,6,7,8-HpCDF	(1.42)	(1.67)	(1.58)	(1.47)	(1.73)	(2.41)	(2.59)	(2.85)	(1.7)	(1.51)	(2.81)	(12.4)	(2.74)	(2.05)
1,2,3,4,6,7,8-HpCDF	(1.78)	16.8	(1.89)	(4.57)	(1.9)	4.04	(3.25)	10.8	27.2	(1.69)	(4.35)	(3.42)	(2.05)	(3.28)
OCDF	(2.67)	(3.46)	(2.95)	(7.47)	(3.25)	(2.53)	(4.59)	(2.58)	(4.43)	(2.59)	(7.3)	(5.49)	(3.04)	(4.58)
	(11.1)	155	(11)	(22.4)	(12.4)	(9.53)	(14.91)	34.9	67.1	(10.1)	(7.89)	(20.8)	(13.1)	(8.89)
Checksum	3365	4361	4881	4565	5239	5527	5797	2067	0335	0612	3929	4355	4622	4900

( ) = DL  
 ( ) = EMPC


Reviewer: *[Signature]*  
 Date: *[Date]*

**P5072 - Totals**  
**Project ID: General Analytical HRMS**

Sample Summary Part 2		Method 1613												
Analyte	0_2888_MBC01	IOB1001-01	IOB0983-01	IOB0990-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0980-01	IOB1008-01	IOB1002-01	IOB0982-01	IOB1004-01	IOB0988-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
<b>Totals</b>														
TCDDs	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
PeCDDs	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
HxCDDs	0	7.38	4.44	0	0	0	0	0	39.8	0	0	0	0	0
HeCDDs	0	153	65.1	25.2	9.46	29.6	0	101	415	12.1	0	43.1	12.2	0
OCDD	0	883	267	134	70.4	157	56.1	471	2120	163	70.2	213	50.3	50
TCDFs	0	0	0	0	0	0	0	0	6.53	0	0	0	0	0
PeCDFs	0	0	0.858	0	0	0.78	0.256	0	2.57	0	0.456	0	0	0
HxCDFs	0	2.58	0	0	0	0	0	4.13	32.8	0	0	0	0	0
HeCDFs	0	92.9	0	0	0	10.2	0	36.5	98.7	5.96	0	0	0	0
OCDF	0	155	0	0	0	0	0	34.9	67.1	0	0	0	0	0
Total PCDD/Fs (ND=0; EMPC=0)	0.00	1,290	338	159	79.9	197	56.4	648	2,800	182	70.7	256	62.6	50
Total PCDD/Fs (ND=0; EMPC=EMPC)	0.00	1,300	342	160	79.9	197	56.4	663	2,830	193	70.7	256	62.6	50
Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)	42.2	1,330	381	215	128	238	119	691	2,840	229	144	370	121	114
Total 2378s (ND=0; EMPC=0)	0.00	1,130	299	144	70.4	173	56.1	567	2,440	176	70.2	234	50.3	50
Total 2378s (ND=0.5; EMPC=0)	21.1	1,140	319	172	94.6	193	87.5	581	2,450	193	107	291	79.5	82
Total 2378s (ND=1; EMPC=0)	42.2	1,160	338	200	119	214	119	595	2,450	211	144	348	109	114
Total 2378s (ND=0; EMPC=1)	0.00	1,130	299	144	70.4	173	56.1	567	2,440	176	70.2	234	50.3	50
Total 2378s (ND=0.5; EMPC=1)	21.1	1,140	319	172	94.6	193	87.5	581	2,450	193	107	291	79.5	82
Total 2378s (ND=1; EMPC=1)	42.2	1,160	338	200	119	214	119	595	2,450	211	144	348	109	114
Checkcode	3365	4361	4681	4965	5239	5527	5797	0067	0335	0612	3929	4355	4622	4900

Total 2378s = Sum of 17 2378-substituted PCDD/PCDF congeners (SARA 313)

( ) = DL  
 [ ] = EMPC

Reviewer:   
 Date: 03/28/03

P5072 - Others  
 Project ID: General Analytical HRMS

Sample Summary  
 Part 3

ALTA ANALYTICAL PERSPECTIVES

Method 1613

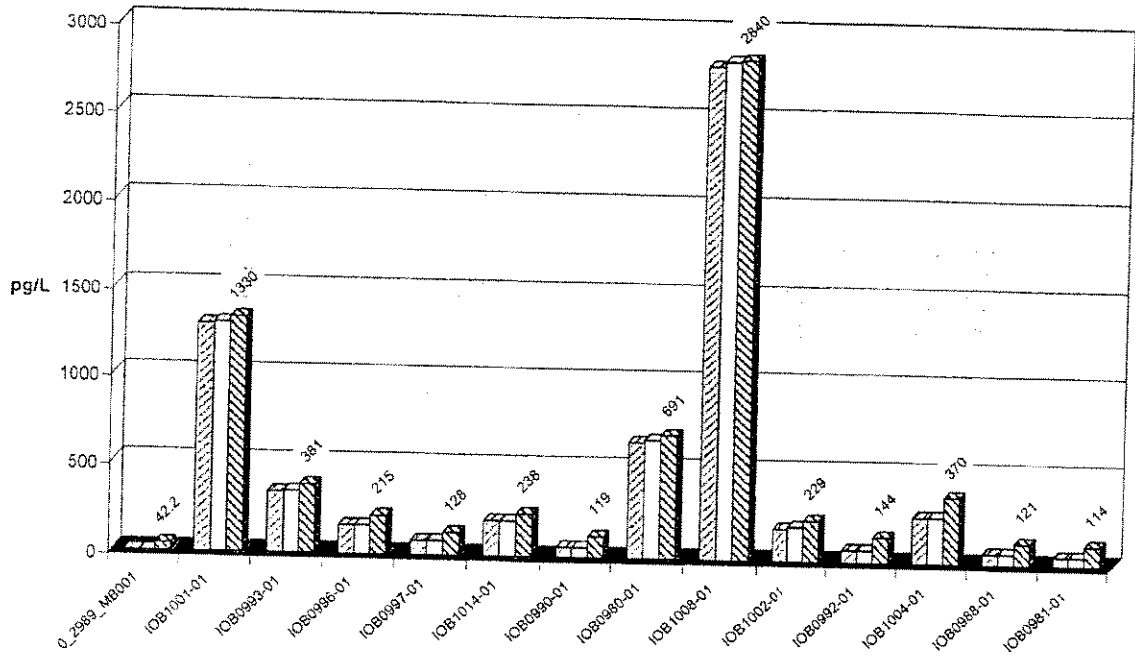
Analyte	0_2989_M8001	IOB1001-01	IOB0993-01	IOB0996-01	IOB0997-01	IOB1014-01	IOB0990-01	IOB0990-01	IOB1008-01	IOB1002-01	IOB0992-01	IOB1004-01	IOB0988-01	IOB0981-01
	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
Other PCDD/Fs (ND=0, EMPC=0)														
Other TCDD	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
Other PeCDD	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
Other HxCDD	0	7.38	4.44	0	0	0	0	0	22.5	0	0	0	0	0
Other HpCDD	0	77.2	33.6	15.2	9.46	17.4	0	51.5	208	0	0	22.3	12.2	0
Other TCDF	0	0	0	0	0	0	0	0	6.53	0	0	0	0	0
Other PeCDF	0	0	0.858	0	0	0.76	0.256	0	2.57	0	0.456	0	0	0
Other HxCDF	0	2.58	0	0	0	0	0	4.13	32.8	0	0	0	0	0
Other HpCDF	0	76.1	0	0	0	8.16	0	25.7	71.6	5.96	0	0	0	0
Other PCDD/Fs (ND=0, EMPC=EMPC)														
Other TCDD	0	0	0	0	0	0	0	0	4.77	0	0	0	0	0
Other PeCDD	0	0	0	0	0	0	0	0	15.5	0	0	0	0	0
Other HxCDD	0	7.38	8.57	0	0	0	0	8.86	47.7	0	0	0	0	0
Other HpCDD	0	77.2	33.6	15.2	9.46	17.4	0	51.5	208	11.3	0	22.3	12.2	0
Other TCDF	0	0	0	0	0	0	0	2.21	6.53	0	0	0	0	0
Other PeCDF	0	0	0.858	0.213	0	0.76	0.256	0.368	2.57	0	0.456	0	0	0
Other HxCDF	0	9.88	0	0	0	0	0	7.22	32.8	0	0	0	0	0
Other HpCDF	0	76.1	0	0	0	8.16	0	25.7	71.6	5.96	0	0	0	0
Checkcode	3385	4361	4681	4985	5239	5527	5787	0087	0335	0612	3929	4355	4622	4900

() = DL  
 [] = EMPC

Reviewer: *TO*  
 Date: 03MAR03

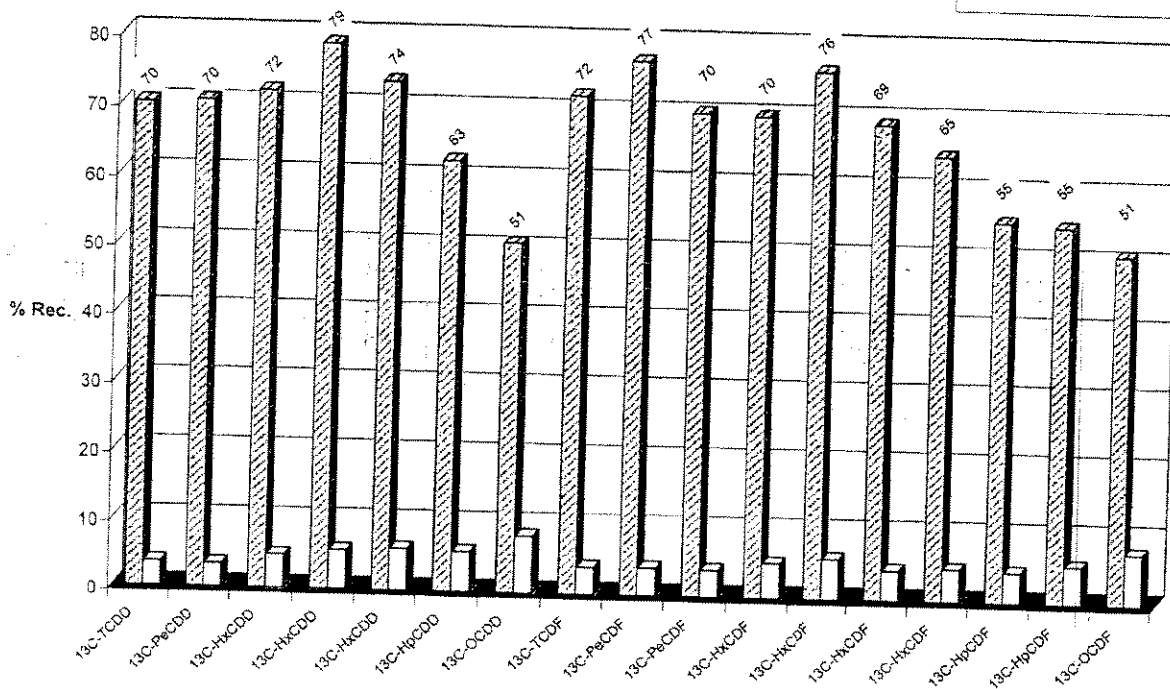
**Totals**  
 Project ID: General Analytical HRMS  
 P5072

□ Total PCDD/Fs (ND=0; EMPC=0)  
 □ Total PCDD/Fs (ND=0; EMPC=EMPC)  
 ▨ Total PCDD/Fs (2378-X ND=DL; EMPC=EMPC)



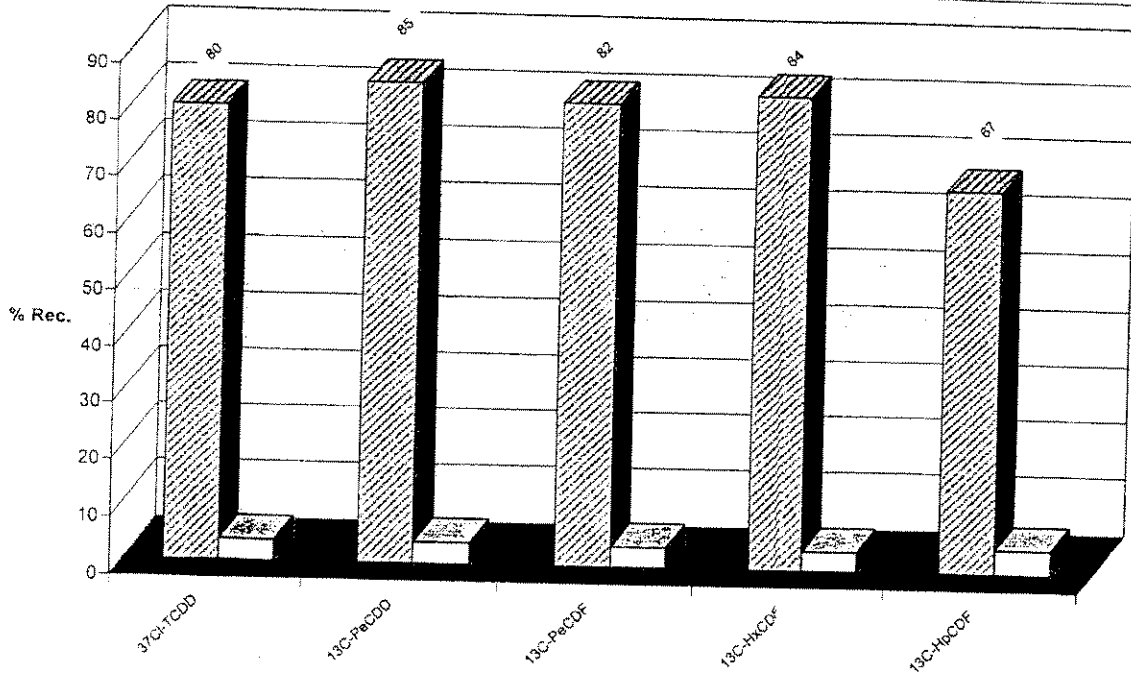
Mean Recoveries of Extraction Standards (N=14)  
Project ID: General Analytical HRMS  
P5072

Mean    Std. Dev.



Mean Recoveries of Clean-Up Standards (N=14)  
Project ID: General Analytical HRMS  
P5072

Mean    Std. Dev.





17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89129 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOB1004** 107704

<p><b>SENDING LABORATORY:</b>          Del Mar Analytical, Irvine          17461 Derian Avenue, Suite 100          Irvine, CA 92614          Phone: (949) 261-1022          Fax: (949) 261-1228          Project Manager: Michele Harper</p>	<p><b>RECEIVING LABORATORY:</b>          Pace Analytical, MN- SUB          1700 Elm Street, Ste 200          Minneapolis, MN 55414          Phone : (612) 607-1700          Fax: (612) 607-6444</p>
--	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB1004-01 Water</b> 1613-Dioxin-HR EDD + Level 4	<b>Sampled: 02/11/05 16:00</b> 02/18/05 16:00 03/11/05 16:00	<b>Instant Notification</b> J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b> 1 L Amber (IOB1004-01G) 1 L Amber (IOB1004-01H)		

107704001

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): 3

Released By: Vasud Sakar Date: 2-14-05 Time: 1700 Received By: Bright Flexu Date: 2-15-05 Time: 9:00

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A  
Company: **PACE**  
Address: **1700 Elm St.**  
**Suite 200**  
**Mpls., MN 55414**  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Section B  
Report To: **SCOTT UNZE**  
Copy To: \_\_\_\_\_  
Invoice To: \_\_\_\_\_  
P.O.: \_\_\_\_\_  
Project Name: \_\_\_\_\_  
Project Number: \_\_\_\_\_

Section C  
To Be Completed by Pace Analytical and Client  
Quote Reference: **814593**  
Project Manager: **SCOTT UNZE**  
Project #: \_\_\_\_\_  
Profile #: \_\_\_\_\_  
Requested Analyte: \_\_\_\_\_

Client Information (Check quote/contract):  
Requested Due Date: **7/3 Day**

\* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.  
Turn Around Time (TAT) in calendar days.

ITEM #	SAMPLE ID One character per box. (A-Z, 0-9 / -)	Valid Matrix Codes MATRIX WATER SOIL OIL WIPE AIR TISSUE OTHER	CODE WT SL OL WP AR TS OT	DATE COLLECTED mm / dd / yy	TIME COLLECTED hr: mm a/p	Preservatives										Containers # Containers	RELINQUISHED BY / AFFILIATION DATE TIME	ACCEPTED BY / AFFILIATION DATE TIME	REMARKS / Lab ID	
						Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	Methanol	Other							
1	I0B1001-01		WT	02/16/05	15:30	X														
2	I0B0993-01			10:50																
3	I0B0996-01			12:15																
4	I0B0997-01			15:16																
5	I0B1014-01			12:20																
6	I0B0990-01			08:55																
7	I0B0980-01			10:56																
8	I0B1008-01			13:32																
9	I0B1002-01			14:25																
10	I0B0992-01			10:15																
11	I0B1004-01			16:00																
12	I0B0988-01			11:44																

REGULATORY AGENCY  
 NC  SC  GA  NPDES  GROUND WATER  DRINKING WATER  
 Other  UST  RCRA  Other

SAMPLE NOTES  
 Temp in °C: **3, 1**  
 Received on Ice: **Y/N**  
 Sealed Cooler: **Y/N**  
 Samples Intact: **Y/N**

Additional Comments:  
**Sample I0B1002-01 & I0B0988-01 are both dated 02/10/05**

SAMPLER NAME AND SIGNATURE  
 PRINT Name of SAMPLER: \_\_\_\_\_  
 SIGNATURE of SAMPLER: *Scott Unze*  
 DATE Signed: (MM/DD/YY) **3-1-05**

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

**Section A**  
 Required Client Information:  
 Company: lace  
 Address: 1700 Elm Street  
Suite 200  
Mpls., MN 55414  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

**Section B**  
 Required Client Information:  
 Report To: SCOTT UNZE  
 Copy To: \_\_\_\_\_  
 Invoice To: \_\_\_\_\_  
 P.O.: \_\_\_\_\_  
 Project Name: \_\_\_\_\_  
 Project Number: \_\_\_\_\_

**Section C**  
 Client Information (Check quote/contract):  
 Requested Due Date: \_\_\_\_\_ (FAT)  
 \* Turn around times less than 14 days subject to laboratory and contractor obligations and may result in a rush turnaround surcharge.  
 Turn Around Time (FAT) in calendar days: \_\_\_\_\_

To Be Completed by Pace Analytical and Client  
 Quote Reference: 814592  
 Project Manager: SCOTT UNZE  
 Project #: \_\_\_\_\_  
 Profile #: \_\_\_\_\_

**Section D** Required Client Information:  
**SAMPLE ID**  
 One character per box.  
 (A-Z, 0-9, /, -)  
 Sample IDs MUST BE UNIQUE

Valid Matrix Codes:  
 MATRIX CODE  
 WATER WT  
 SOIL SL  
 OIL OL  
 WIPE WP  
 AIR AR  
 TISSUE TS  
 OTHER OT

Preservatives:  
 H<sub>2</sub>SO<sub>4</sub>  
 HNO<sub>3</sub>  
 HCl  
 NaOH  
 Na<sub>2</sub>SO<sub>4</sub>  
 Methanol  
 Other \_\_\_\_\_

Requested Analysis:  
163, 1600 / PF  
157, 1605, 1608  
Me TEQ

ITEM #	DATE COLLECTED	mm / dd / yy	TIME COLLECTED	hrs:min:amp	# Containers	Unpreserved	Preservatives							Remarks / Lab ID			
							H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> SO <sub>4</sub>	Methanol	Other				
1	2/11/05	WT	09:21	1X													
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

**SITE LOCATION**  
 NC  SC  GA  Other \_\_\_\_\_

**REGULATORY AGENCY**  
 NPDES  GROUND WATER  DRINKING WATER  
 UST  RCRA  Other \_\_\_\_\_

**SAMPLE CONDITION**  
 Temp in °C: 31  
 Received on Ice: Y/N  
 Sealed Cooler: Y/N  
 Samples Intact: Y/N

**SAMPLE NOTES**  
Email to:  
Scott. Unze @ pacelabs.com

**RELINQUISHED BY / AFFILIATION**  
Scott. Unze / Pace  
157, 1605, 1608

**ACCEPTED BY / AFFILIATION**  
3/14/05

**DATE**  
3/14/05

**TIME**  
15:25

**DATE SIGNED**  
3/14/05

**SAMPLER NAME AND SIGNATURE**  
 PRINT Name of SAMPLER:  
 SIGNATURE of SAMPLER:

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

February 22, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
*Attention:* Michele Harper

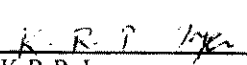
*Project Name:* IOB1004  
*Date Received:* 02/14/05

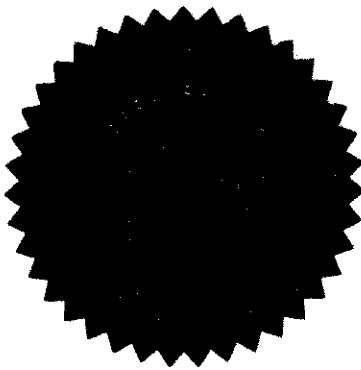
*Truesdail Project:* 939706

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
939706-1	IOB1004-01	Water	02/11/05	16:00	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer



  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

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(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

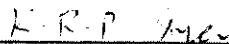
**Project Name:** IOB1004  
**Date Received:** 02/14/05

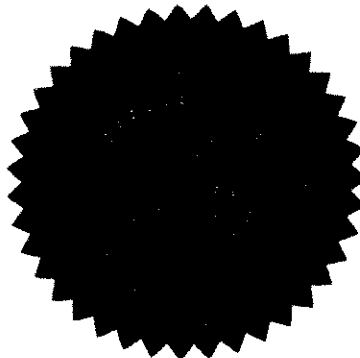
**Truesdail Project:** 939706

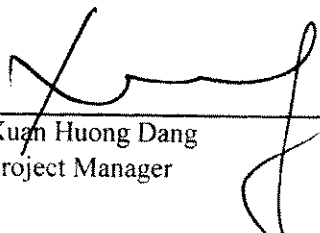
## Case Narrative

- Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.
- Analysis** The analysis was performed as requested on the chain-of-custody.
- Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.
- Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.
- The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
\_\_\_\_\_  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer



  
\_\_\_\_\_  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1937

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780 7008  
(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave.  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB1004  
**P.O. Number:** IOB1004  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 939706  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

## Analytical Results

Page 1 of 1

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl	
		Hydrazine	ND	Hydrazine	ND
704765-MB	Method Blank	ND	ND	ND	ND
939706	IOB1004-01	ND	ND	ND	ND
MIDL		1.2		0.27	
PQL		5.0		5.0	
				0.39	
				1.0	

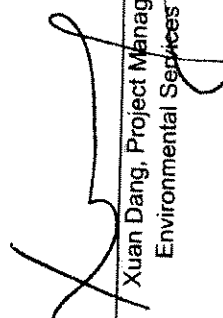
MDL: Method Detection Limit, ug/L

PQL: Practical Quantitation Limit, ug/L

ND: Not Detected at or above the MDL value.

N/A: Not Applicable

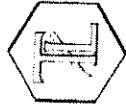
Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE, TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Ave.  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOB1004  
**P.O. Number:** IOB1004  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2968; Analysis: 365  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704765  
**Project Lab. No.:** 939706  
**Spiked Sample ID:** 939702  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	24.5	98.1	85-115	PASS
u-Dimethyl Hydrazine	25.0	25.4	102	85-115	PASS
Hydrazine	5.0	4.87	97.4	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	50.0	49.9	100	85-115	PASS
u-Dimethyl Hydrazine	50.0	46.8	93.5	85-115	PASS
Hydrazine	10.0	10.9	109	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

#### LCS/LCSD

Parameter	Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	Control Limits		Flag
		LCS	LCSD		LCS	LCSD	
Monomethyl Hydrazine	50.0	51.2	50.8	102	102	0.68%	PASS
u-Dimethyl Hydrazine	50.0	47.3	47.3	94.6	94.6	0.01%	PASS
Hydrazine	10.0	11.5	11.6	115	116	1.07%	PASS

#### MS/MSD

Parameter	Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	Control Limits		Flag
		MS	MSD		MS	MSD	
Monomethyl Hydrazine	50.0	37.4	35.3	74.8	70.6	5.67%	PASS
u-Dimethyl Hydrazine	50.0	44.3	44.7	88.6	89.3	0.82%	PASS
Hydrazine	10.0	7.61	7.27	76.1	72.7	4.52%	PASS

ICV: Initial Calibration Verification

QCS: Quality Control Standard

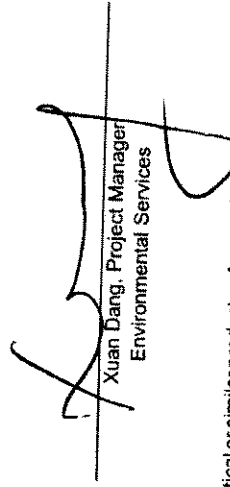
LCS: Laboratory Control Spike

MS: Matrix Spike

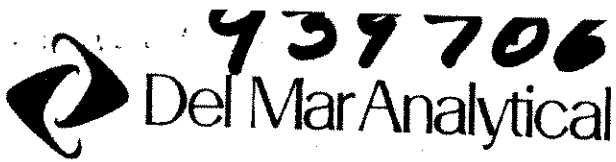
%D: Percent Difference

Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB1004

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone: (714) 730-6239  
 Fax: (714) 730-6462

*Rec'd 02/11/05  
 s23c 939706  
 14 LS 2/14/05*

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments	
Sample ID: IOB1004-01 Water	Sampled: 02/11/05 16:00	Instant Notification	
Hydrazine-OUT	02/14/05 16:00	Sub Truesdail for Monomethylhydrazine, 13267	
Level 4 Data Package	03/11/05 16:00		

**Containers Supplied:**  
 1 L Amber (IOB1004-01AK)  
 1 L Amber (IOB1004-01AL)

**ALERT!!**

**Level IV QC**

**For Sample Conditions  
See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: <i>[Signature]</i>	Date: 2/14/05	Time: 7:20	Received By: <i>[Signature]</i>	Date: 2/14/05	Time: 7:00
Released By: <i>[Signature]</i>	Date: 2/14/05	Time: 7:20	Received By: <i>[Signature]</i>	Date: 2/14/05	Time: 7:00



TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 939706

Date Delivered: 02/14/05 Time: 07:22 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client  Yes  No  N/A
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water

**ALERT!!**  
**Level IV QC**

16. Comments: \_\_\_\_\_

17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Stubbins



## Internal Chain of Custody Logbook

Number: 939706  
 Name: Del Mar

Storage Temperature: 4.0C

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				2/14/05	9:45			<i>[Signature]</i>
	Hydro 2	2/14/05	10:30 AM	3/14/05	11 AM	100ml	TEST 2000	<i>[Signature]</i>

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

## **APPENDIX A**

### **Section 40**

Outfall 011, February 11, 2005

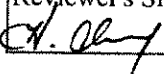
MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF30  
 Task Order 313150010  
 SDG No. Multi  
 No. of Analyses 13

Laboratory Alta Analytical Perspective  
 Reviewer H. Chang  
 Analysis/Method Dioxin&Furans/1613

Date: March 18, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Detects below the calibration range were qualified "J."
Holding Times	False negative and false positives noted.
GC/MS Tune/Inst. Perform	Several transcription errors were noted.
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple SDGs  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 13  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: March 18, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta AP)	Matrix	COC Method
Outfall 001	IOB0980-01	P5072_2989_007	water	1613B
Outfall 002	IOB0981-01	P5072_2989_013	water	1613B
Outfall 003	IOB0988-01	P5072_2989_012	water	1613B
Outfall 004	IOB1002-01	P5072_2989_009	water	1613B
Outfall 005	IOB0990-01	P5072_2989_006	water	1613B
Outfall 006	IOB0992-01	P5072_2989_010	water	1613B
Outfall 007	IOB0993-01	P5072_2989_002	water	1613B
Outfall 008	IOB0997-01	P5072_2989_004	water	1613B
Outfall 009	IOB0996-01	P5072_2989_003	water	1613B
Outfall 010	IOB1001-01	P5072_2989_001	water	1613B
Outfall 011 Composite	IOB1004-01	P5072_2989_011	water	1613B
Outfall 011	IOB1014-01	P5072_2989_005	water	1613B
Outfall 018	IOB1008-01	P5072_2989_008	water	1613B

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All of the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  except sample Outfall 009 which was at  $8^{\circ}\text{C}$ . Due to non-volatile nature of the analytes, no qualifications were necessary for the elevated cooler temperature. The samples were received at Pace Analytical with cooler temperatures of  $1.6^{\circ}\text{C}$ ,  $2.3^{\circ}\text{C}$ , and  $3^{\circ}\text{C}$ . The samples were received at Alta Analytical Perspectives with cooler temperatures of  $1^{\circ}\text{C}$  and  $3^{\circ}\text{C}$ . According to the laboratory login sheets, all samples were received intact and in good condition at Del Mar and Alta AP. No sample conditions were available for review for the sample receipt at Pace. No qualifications were required.

#### 2.1.2 Chain of Custody

It appears that the samples were initially sent from Del Mar Analytical to Pace Analytical then subsequently shipped to Alta Analytical Perspectives. The COCs from the field to Del Mar, Del Mar to Pace, and Pace to Alta were available for review. The COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. The custody seals were not present on the coolers upon receipt at either Del Mar or Alta. No custody seal information was available for Pace. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Column Performance Check Standard (CPSM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to initial calibration analysis. A separate CPSM was not analyzed for daily analytical sequence; instead, CPSM compounds were added to OPR analysis. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibrations, analyzed 08/12/04. The calibrations each consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the native compounds and  $\leq 35\%$  for the labeled compounds. The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.4 BLANKS

One method blank (0\_2989\_MB001) was extracted and analyzed with the samples in these SDGs. There were no detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_2989\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of the Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data. The laboratory reported total PeCDFs detects in samples Outfall 005, Outfall 006, Outfall 007, and Outfall 011. The reviewer deemed the signals used to be below the signal-to-noise ratio of 2.5 and the results were changed to nondetects. A false negative for total HxCDD was noted in sample Outfall 001 and was changed to a detect. No further qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." The laboratory did not flag OCDD in samples Outfall 002 and Outfall 003 although the reported concentrations were below the lower MCL. OCDD in these samples was qualified as estimated, "J." In addition, Alta analyzed an additional calibration standard at concentrations below the level specified in the method. Not all results below the lower MCLs were flagged as estimated by the laboratory. These results were qualified as estimated, "J," by the reviewer. The laboratory also did not flag detects below the lower MCL for totals as estimated. These totals were qualified as estimated, "J." The "DNQ" qualification code was applied only if all components of the totals were below the lower MCL. Total HpCDF in samples Outfall 001 and Outfall 010 had one of the components below the lower MCL but one within the MCL. Total HpCDF in these samples were qualified as estimated, "J."

The laboratory indicated that one of the non-2,3,7,8 substituted HxCDD detect, present in majority of the samples, was due to recovery standard (13C-1,2,3,4,6,7-HxCDD) contribution. This compound was also present in the method blank. This compound was not included in the total HxCDD concentration. Several total HxCDD results could not be reproduced from the raw data by the reviewer and were hand-corrected on the Form I. No further qualifications were required.

**Sample ID: IOB0990-01** *Cutfall 005* **Method 1613**

**Client Data**  
 Name: Pace Inc.  
 Project ID: General Analytical HRMS  
 Date Collected: 11 Feb 05

**Sample Data**  
 Matrix: Aqueous  
 Weight/Volume: 1.02 L  
 pH: 6

**Laboratory Data**  
 Project No.: P5072  
 Sample ID: P5072\_2989\_006  
 QC Batch No.: 2989  
 Date Received: 01 Mar 05  
 Date Extracted: 01 Mar 05  
 Date Analyzed: 03 Mar 05

Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries	
					ES	CS
2,3,7,8-TCDD	ND	2.29			68.7	73.8
1,2,3,7,8-PeCDD	ND	3.2			69.4	78.6
1,2,3,4,7,8-HxCDD	ND	4.19			74.5	83.5
1,2,3,6,7,8-HxCDD	ND	4.11			83.2	83.5
1,2,3,7,8,9-HxCDD	ND	4.95			78.1	83.5
1,2,3,4,6,7,8-HpCDD	ND	5.34			67.8	61.4
OCDD	56.1	19.6			53.6	61.4
2,3,7,8-TCDF	ND	1.37			69.9	73.8
1,2,3,7,8-PeCDF	ND	3.71			76.6	76.4
2,3,4,7,8-PeCDF	ND	3.89			67.9	76.4
1,2,3,4,7,8-HxCDF	ND	1.39			76.1	83.5
1,2,3,6,7,8-HxCDF	ND	1.3			81.5	83.5
2,3,4,6,7,8-HxCDF	ND	1.73			71.4	83.5
1,2,3,7,8,9-HxCDF	ND	2.59			67.5	83.5
1,2,3,4,6,7,8-HpCDF	ND	3.26			55.4	61.4
1,2,3,4,7,8,9-HpCDF	ND	4.59			59.7	61.4
OCDF	ND	14.9			52.2	61.4

Totals & TEQs			
TCDDs	2.29		
PeCDDs	3.2		
HxCDDs	4.43		
HpCDDs	5.34		
TCDFs	1.37		
PeCDFs	3.8		
HxCDFs	1.69		
HpCDFs	3.9		
<b>Total PCDD/Fs</b>	<b>56.4</b>	<b>56.1</b>	<b>56.1</b>

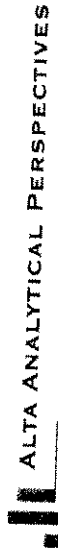
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**Sample ID: IOB0992-01**

*Datfall 006*

**Method 1613**

<b>Client Data</b>		<b>Sample Data</b>		<b>Laboratory Data</b>	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.02 L	Sample ID:	P5072_2989_010
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	2.87			78.6
1,2,3,7,8-PeCDD	ND	3.14			83.9
1,2,3,4,7,8-HxCDD	ND	5.91			85.8
1,2,3,6,7,8-HxCDD	ND	5.98			85.8
1,2,3,7,8,9-HxCDD	ND	7.12			85.8
1,2,3,4,6,7,8-HpCDD	ND	10.8			70
OCDD	70.2	11.6			70
2,3,7,8-TCDF	ND	2.58			78.6
1,2,3,7,8-PeCDF	ND	4.02			81.3
2,3,4,7,8-PeCDF	ND	3.97			81.3
1,2,3,4,7,8-HxCDF	ND	1.55			85.8
1,2,3,6,7,8-HxCDF	ND	1.42			85.8
2,3,4,6,7,8-HxCDF	ND	1.91			85.8
1,2,3,7,8,9-HxCDF	ND	2.81			85.8
1,2,3,4,6,7,8-HpCDF	ND	4.35			85.8
1,2,3,4,7,8,9-HpCDF	ND	7.3			70
OCDF	ND	7.69			70
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.87			
PeCDDs	ND	3.14			
HxCDDs	ND	6.35			
HpCDDs	ND	10.8			
TCDFs	ND	2.58			
PeCDFs	<del>0.456</del> ND	3.99			
HxCDFs	ND	1.85			
HpCDFs	ND	5.69			
<b>Total PCDD/Fs</b>	<del>70.7</del> 70.2		<del>70.7</del> 70.2		



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Sample ID: IOB0980-01

Outfall 001

Method 1613

Client Data		Sample Data		Laboratory Data		Recoveries	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	Date Received:	ES	CS
Project ID:	General Analytical HRMS	Weight/Volume:	1.00 L	P5072	01 Mar 05		
Date Collected:	11 Feb 05	pH	6	Sample ID:	01 Mar 05		
Analyte	Conc.	DL	EMPC	QC Batch No.:	Date Analyzed:	Qualifier	
	pg/L	pg/L	pg/L	2989 <td>03 Mar 05</td> <td></td> <td></td>	03 Mar 05		
2,3,7,8-TCDD	ND	2.55					79.1
1,2,3,7,8-PeCDD	ND	1.89					89.4
1,2,3,4,7,8-HxCDD	ND	2.42					83.1
1,2,3,6,7,8-HxCDD	ND	2.41					83.1
1,2,3,7,8,9-HxCDD	ND	2.88					83.1
1,2,3,4,6,7,8-HpCDD	49.8	7.48					62.4
OCDD	471	6.38					62.4
2,3,7,8-TCDF	ND	1.64					79.1
1,2,3,7,8-PeCDF	ND	1.98					83.9
2,3,4,7,8-PeCDF	ND	2.03					83.9
1,2,3,4,7,8-HxCDF	ND	1.47					83.1
1,2,3,6,7,8-HxCDF	ND	1.51					83.1
2,3,4,6,7,8-HxCDF	ND	1.9					83.1
1,2,3,7,8,9-HxCDF	ND	2.85					83.1
1,2,3,4,6,7,8-HpCDF	10.8	1.71				J	62.4
1,2,3,4,7,8,9-HpCDF	ND	2.58					62.4
OCDF	34.9	12				J	62.4
<b>Totals &amp; TEQs</b>							
TCDDs	ND	2.55					
PeCDDs	ND	1.89					
HxCDDs	<del>ND</del> 5.96	2.58					
HpCDDs	101	7.48					
TCDFs	ND	1.64					
PeCDFs	ND	2.01					
HxCDFs	4.13	1.87					
HpCDFs	36.5	2.12					
Total PCDD/Fs	<del>648</del> 653						

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Sample ID: IOB0981-01

Curfall 002

Method 1613

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.04 L	Sample ID:	P5072_2989_013
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	3.01			74.3
1,2,3,7,8-PeCDD	ND	5.36			78.4
1,2,3,4,7,8-HxCDD	ND	4.94			75.8
1,2,3,6,7,8-HxCDD	ND	4.7			75.8
1,2,3,7,8,9-HxCDD	ND	5.81			75.8
1,2,3,4,6,7,8-HpCDD	ND	9.6			63.7
OCDD	50	10.3			63.7
2,3,7,8-TCDF	ND	2.61			74.3
1,2,3,7,8-PeCDF	ND	2.46			78.7
2,3,4,7,8-PeCDF	ND	2.49			78.7
1,2,3,4,7,8-HxCDF	ND	1.13			75.8
1,2,3,6,7,8-HxCDF	ND	1.19			75.8
2,3,4,6,7,8-HxCDF	ND	1.46			75.8
1,2,3,7,8,9-HxCDF	ND	2.05			75.8
1,2,3,4,6,7,8-HpCDF	ND	3.28			75.8
1,2,3,4,7,8,9-HpCDF	ND	4.88			63.7
OCDF	ND	8.89			63.7
<b>Totals &amp; TEQs</b>					
TCDDs	ND	3.01			
PeCDDs	ND	5.36			
HxCDDs	ND	5.15			
HpCDDs	ND	9.6			
TCDFs	ND	2.61			
PeCDFs	ND	2.47			
HxCDFs	ND	1.42			
HpCDFs	ND	4.02			
<b>Total PCDD/Fs</b>	50		50		

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**Sample ID: IOB0988-01** *Cuffey 003* **Method 1613**

**Client Data**  
 Name: Pace Inc.  
 Project ID: General Analytical HRMS  
 Date Collected: 10 Feb 05  
**Sample Data**  
 Matrix: Aqueous  
 Weight/Volume: 1.04 L  
 pH: 6  
**Laboratory Data**  
 Project No.: P5072  
 Sample ID: P5072\_2989\_012  
 QC Batch No.: 2989  
 Date Received: 01 Mar 05  
 Date Extracted: 01 Mar 05  
 Date Analyzed: 03 Mar 05

Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries	
					ES	CS
2,3,7,8-TCDD	ND	3.24			68	84.7
1,2,3,7,8-PeCDD	ND	2.18			72.8	85.5
1,2,3,4,7,8-HxCDD	ND	4.91			68.3	88.4
1,2,3,6,7,8-HxCDD	ND	4.84			73	88.4
1,2,3,7,8,9-HxCDD	ND	5.54			67.5	88.4
1,2,3,4,6,7,8-HpCDD	ND	3.19			55.7	76
OCDD	50.3	10.1			37.9	76
2,3,7,8-TCDF	ND	2.39			70.5	84.7
1,2,3,7,8-PeCDF	ND	2.98			77.2	84.1
2,3,4,7,8-PeCDF	ND	3			68.6	84.1
1,2,3,4,7,8-HxCDF	ND	1.62			66.5	88.4
1,2,3,6,7,8-HxCDF	ND	1.53			68.5	88.4
2,3,4,6,7,8-HxCDF	ND	2.03			64	88.4
1,2,3,7,8,9-HxCDF	ND	2.74			61.4	88.4
1,2,3,4,6,7,8-HpCDF	ND	2.05			50.8	76
1,2,3,4,7,8,9-HpCDF	ND	3.04			50.2	76
OCDF	ND	13.1			40.7	76
<b>Totals &amp; TEQs</b>						
TCDDs	ND	3.24				
PeCDDs	ND	2.18				
HxCDDs	ND	5.11				
HpCDDs	12.2	3.19				
TCDFs	ND	2.39				
PeCDFs	ND	2.99				
HxCDFs	ND	1.93				
HpCDFs	ND	2.5				
<b>Total PCDD/Fs</b>	<b>62.6</b>		<b>62.6</b>			

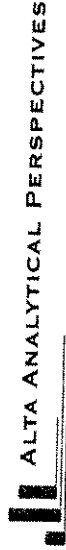
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Sample ID: IOB1002-01

Outfall 004

Method 1613

Client Data		Sample Data		Laboratory Data	
Name: Pace Inc. General Analytical HRMS	Matrix: Aqueous	Project No.: P5072	Date Received: 01 Mar 05	Project No.: P5072	Date Received: 01 Mar 05
Date Collected: 10 Feb 05	Weight/Volume: 1.05 L	Sample ID: P5072_2989_009	Date Extracted: 01 Mar 05	Sample ID: P5072_2989_009	Date Extracted: 01 Mar 05
	pH: 6	QC Batch No.: 2989	Date Analyzed: 03 Mar 05	QC Batch No.: 2989	Date Analyzed: 03 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries
				ES	CS
2,3,7,8-TCDD	ND	1.44			78.2
1,2,3,7,8-PeCDD	ND	2.04			84.9
1,2,3,4,7,8-HxCDD	ND	2.74			79.7
1,2,3,6,7,8-HxCDD	ND	2.88			79.7
1,2,3,7,8,9-HxCDD	ND	3.13			79.7
1,2,3,4,6,7,8-HpCDD	12.1	5.97			63
OCDD	163	11.8			63
2,3,7,8-TCDF	ND	1.03			78.2
1,2,3,7,8-PeCDF	ND	2.11			77.7
2,3,4,7,8-PeCDF	ND	1.95			77.7
1,2,3,4,7,8-HxCDF	ND	0.815			79.7
1,2,3,6,7,8-HxCDF	ND	0.78			79.7
2,3,4,6,7,8-HxCDF	ND	0.99			79.7
1,2,3,7,8,9-HxCDF	ND	1.51			79.7
1,2,3,4,6,7,8-HpCDF	ND	1.69			79.7
1,2,3,4,7,8,9-HpCDF	ND	2.59			63
OCDF	ND	10.1			63
<b>Totals &amp; TEQs</b>					
TCDDs	ND	1.44			
PeCDDs	ND	2.04			
HxCDDs	ND	2.92			
HpCDDs	12.1	5.97	23.4		
TCDFs	ND	1.03			
PeCDFs	ND	2.03			
HxCDFs	ND	0.989			
HpCDFs	5.96	2.1			
<b>Total PCDD/Fs</b>	<b>182</b>		<b>193</b>		



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**Sample ID: IOB1004-01** *Cutfall Oil Composite* **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	0.99 L	Sample ID:	P5072_2989_011
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	1.79			72.2 84
1,2,3,7,8-PeCDD	ND	2.92			72.5 87
1,2,3,4,7,8-HxCDD	ND	12.2			68.3 83.2
1,2,3,6,7,8-HxCDD	ND	12			77.6 83.2
1,2,3,7,8,9-HxCDD	ND	13.8			71.1 83.2
1,2,3,4,6,7,8-HpCDD	20.8	9.88			61.1 72.2
OCDD	213	31.3		J	43.9 72.2
2,3,7,8-TCDF	ND	2.71			69.7 84
1,2,3,7,8-PeCDF	ND	2.52			73.4 78.3
2,3,4,7,8-PeCDF	ND	2.53			70.3 78.3
1,2,3,4,7,8-HxCDF	ND	6.66			71.2 83.2
1,2,3,6,7,8-HxCDF	ND	6.24			78 83.2
2,3,4,6,7,8-HpCDF	ND	8.23			69.5 83.2
1,2,3,7,8,9-HpCDF	ND	12.4			64.6 83.2
1,2,3,4,6,7,8-HpCDF	ND	3.42			57.2 72.2
1,2,3,4,7,8,9-HpCDF	ND	5.49			55.1 72.2
OCDF	ND	20.8			46.5 72.2
<b>Totals &amp; TEQs</b>					
TCDDs	ND	1.79			
PeCDDs	ND	2.92			
HxCDDs	ND	12.7			
HpCDDs	43.1	9.88			
TCDFs	ND	2.71			
PeCDFs	ND	2.52			
HxCDFs	ND	8.1			
HpCDFs	ND	4.35			
<b>Total PCDD/Fs</b>	<b>256</b>		<b>256</b>		


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# Sample ID: IOB1008-01 Outfall 018 Method 1613

Client Data		Sample Data		Laboratory Data		Recoveries	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	Date Received:	ES	CS
Project ID:	General Analytical HRMS	Weight/Volume:	1.03 L	P5072	01 Mar 05		
Date Collected:	11 Feb 05	pH	6	Sample ID:	01 Mar 05		
Analyte	Conc.	DL	EMPC	QC Batch No.:	Date Analyzed:	ES	CS
	pg/L	pg/L	pg/L				
2,3,7,8-TCDD	ND	1.61				72	81.4
1,2,3,7,8-PeCDD	ND	1.62				71.7	83.2
1,2,3,4,7,8-HxCDD	3.57	3.44		J		80.8	84.2
1,2,3,6,7,8-HxCDD	8.47	3.3		J		85.5	84.2
1,2,3,7,8,9-HxCDD	5.27	4.06		J		81.4	84.2
1,2,3,4,6,7,8-HpCDD	207	13.7				68.6	69
OCDD	2,120	5.72				61.7	69
2,3,7,8-TCDF	ND	1.49				74.2	81.4
1,2,3,7,8-PeCDF	ND	2.35				78.4	80.4
2,3,4,7,8-PeCDF	ND	2.31				72.3	80.4
1,2,3,4,7,8-HxCDF	ND	0.97				74.1	84.2
1,2,3,6,7,8-HxCDF	ND	0.898				85.5	84.2
2,3,4,6,7,8-HxCDF	ND	1.1				75.4	84.2
1,2,3,7,8,9-HxCDF	ND	1.7				70.7	84.2
1,2,3,4,6,7,8-HpCDF	27.2	2.79				63.2	69
1,2,3,4,7,8,9-HpCDF	ND	4.43				60.4	69
OCDF	67.1	12.5				60.2	69
<b>Totals &amp; TEQs</b>							
TCDDs	4.77	1.61					
PeCDDs	15.5	1.62					
HxCDDs	<del>99.9</del> 44.1	3.61	65.1				
HpCDDs	415	13.7					
TCDFs	6.53	1.49					
PeCDFs	2.57	2.33					
HxCDFs	32.8	1.13					
HpCDFs	98.7	3.53					
<b>Total PCDD/Fs</b>	<del>2,800</del> 2810		2,830				



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Sample ID: IOB1014-01 Outfall Oil

Method 1613

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.02 L	Sample ID:	P5072_2989_005
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS

2,3,7,8-TCDD	ND	1.71			72.2	83.4
1,2,3,7,8-PeCDD	ND	1.73			71.9	88.3
1,2,3,4,7,8-HxCDD	ND	3.89			72.2	87.2
1,2,3,6,7,8-HxCDD	ND	3.8			81.1	87.2
1,2,3,7,8,9-HxCDD	ND	4.66			73.6	87.2
1,2,3,4,6,7,8-HpCDD	12.2	10.1			59	71
OCDD	157	9.39		J	44.9	71
2,3,7,8-TCDF	ND	2.08			74.1	83.4
1,2,3,7,8-PeCDF	ND	1.84			76.1	85.5
2,3,4,7,8-PeCDF	ND	1.89			69.3	85.5
1,2,3,4,7,8-HxCDF	ND	1.36			63.6	87.2
1,2,3,6,7,8-HxCDF	ND	1.31			70.6	87.2
2,3,4,6,7,8-HxCDF	ND	1.65			67.1	87.2
1,2,3,7,8,9-HxCDF	ND	2.41			62.6	87.2
1,2,3,4,6,7,8-HpCDF	4.04	1.47		J	52.8	71
1,2,3,4,7,8,9-HpCDF	ND	2.53			49.4	71
OCDF	ND	9.53			43.5	71

<b>Totals &amp; TEQs</b>						
TCDDs	ND	1.71				
PeCDDs	ND	1.73				
HxCDDs	ND	4.12				
HpCDDs	29.6	10.1				
TCDFs	ND	2.08				
PeCDFs	<del>0.76</del> ND	1.86				
HxCDFs	ND	1.64				
HpCDFs	10.2	1.94				
<b>Total PCDD/Fs</b>	<b>197</b>					<b>197</b>

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**Sample ID: IOB0993-01**    **Method 1613**

Outfall 007

Client Data		Sample Data		Laboratory Data	
Name: Pace Inc. General Analytical HRMS	Matrix: Aqueous	Project No.: P5072	Date Received: 01 Mar 05	Project No.: P5072	Date Received: 01 Mar 05
Date Collected: 11 Feb 05	Weight/Volume: 1.03 L	Sample ID: P5072_2989_002	Date Extracted: 01 Mar 05	Sample ID: P5072_2989_002	Date Extracted: 01 Mar 05
	pH: 6	QC Batch No.:	Date Analyzed: 03 Mar 05	QC Batch No.: 2989	Date Analyzed: 03 Mar 05
Analyte	Conc. pg/L	DL pg/L	EMPC pg/L	Qualifier	Recoveries
				ES	CS
2,3,7,8-TCDD	ND	2.06			84.9
1,2,3,7,8-PeCDD	ND	1.79			89.3
1,2,3,4,7,8-HxCDD	ND	2.55			84.1
1,2,3,6,7,8-HxCDD	ND	2.57			84.1
1,2,3,7,8,9-HxCDD	ND	3.13			84.1
1,2,3,4,6,7,8-HpCDD	31.5	3.87			68
OCDD	267	9.8			68
2,3,7,8-TCDF	ND	1.64			84.9
1,2,3,7,8-PeCDF	ND	2.75			87.1
2,3,4,7,8-PeCDF	ND	2.8			87.1
1,2,3,4,7,8-HxCDF	ND	0.9			84.1
1,2,3,6,7,8-HxCDF	ND	0.827			84.1
2,3,4,6,7,8-HxCDF	ND	1.04			84.1
1,2,3,7,8,9-HxCDF	ND	1.58			84.1
1,2,3,4,6,7,8-HpCDF	ND	1.89			68
1,2,3,4,7,8,9-HpCDF	ND	2.95			68
OCDF	ND	11			68
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.06			
PeCDDs	ND	1.79			
HxCDDs	<del>4.44</del> 3.59	2.76	-8.57 7.72		
HpCDDs	65.1	3.87			
TCDFs	ND	1.64			
PeCDFs	<del>0.858</del> ND	2.77			
HxCDFs	ND	1.05			
HpCDFs	ND	2.38			
<b>Total PCDD/Fs</b>	<del>338</del> 336		342-341		

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Checkcode: 4681    **AMEC VALIDATED**    AAP 2005 Rev. B

RECEIVED

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

**Sample ID: IOB0996-01** *Outfall 009* **Method 1613**

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.04 L	Sample ID:	P5072_2989_003
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	2.02			64.7 78.7
1,2,3,7,8-PeCDD	ND	2.09			66 84.4
1,2,3,4,7,8-HxCDD	ND	2.71			68.1 84.8
1,2,3,6,7,8-HxCDD	ND	2.7			75.8 84.8
1,2,3,7,8,9-HxCDD	ND	3.33			68.5 84.8
1,2,3,4,6,7,8-HpCDD	10	6.63			54.6 67.6
OCDD	134	11.1		J	42.2 67.6
2,3,7,8-TCDF	ND	1.85			67 78.7
1,2,3,7,8-PeCDF	ND	1.44			75.4 85.4
2,3,4,7,8-PeCDF	ND	1.48			67.3 85.4
1,2,3,4,7,8-HxCDF	ND	0.785			62.8 84.8
1,2,3,6,7,8-HxCDF	ND	0.706			71.7 84.8
2,3,4,6,7,8-HpCDF	ND	0.933			63.9 84.8
1,2,3,7,8,9-HxCDF	ND	1.47			58.3 84.8
1,2,3,4,6,7,8-HpCDF	ND	4.57			47.6 67.6
1,2,3,4,7,8,9-HpCDF	ND	7.47			43.9 67.6
OCDF	ND	22.4			41.6 67.6
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.02			
PeCDDs	ND	2.09			
HxCDDs	ND	2.92			
HpCDDs	25.2	6.63			
TCDFs	ND	1.85			
PeCDFs	ND	1.46	0.213		
HxCDFs	ND	0.935			
HpCDFs	ND	5.85			
<b>Total PCDD/Fs</b>	<b>159</b>		<b>160</b>		

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Sample ID: IOB0997-01 Outfall 008

Method 1613

Client Data		Sample Data		Laboratory Data	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.05 L	Sample ID:	P5072_2989_004
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
Analyte	Conc.	DL	EMPC	Qualifier	Recoveries
	pg/L	pg/L	pg/L		ES CS
2,3,7,8-TCDD	ND	1.34			65.8 77.1
1,2,3,7,8-PeCDD	ND	2.11			62.8 79.6
1,2,3,4,7,8-HxCDD	ND	2.48			66.4 79.4
1,2,3,6,7,8-HxCDD	ND	2.34			71.2 79.4
1,2,3,7,8,9-HxCDD	ND	2.82			67.2 79.4
1,2,3,4,6,7,8-HpCDD	ND	9.38			55.3 65
OCDD	70.4	6.96			48.1 65
2,3,7,8-TCDF	ND	0.995			68.3 77.1
1,2,3,7,8-PeCDF	ND	2.33			70.6 77.3
2,3,4,7,8-PeCDF	ND	2.42			62.6 77.3
1,2,3,4,7,8-HxCDF	ND	0.943			62.6 79.4
1,2,3,6,7,8-HxCDF	ND	0.871			68.5 79.4
2,3,4,6,7,8-HxCDF	ND	1.12			61.8 79.4
1,2,3,7,8,9-HxCDF	ND	1.73			57.8 79.4
1,2,3,4,6,7,8-HpCDF	ND	1.9			53.5 65
1,2,3,4,7,8,9-HpCDF	ND	3.25			49.3 65
OCDF	ND	12.4			47.2 65
<b>Totals &amp; TEQs</b>					
TCDDs	ND	1.34			
PeCDDs	ND	2.11			
HxCDDs	ND	2.55			
HpCDDs	9.46	9.38			
TCDFs	ND	0.995			
PeCDFs	ND	2.37			
HxCDFs	ND	1.13			
HpCDFs	ND	2.5			
<b>Total PCDD/Fs</b>	<b>79.9</b>		<b>79.9</b>		

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AMEC VALIDATED **LEVEL IV** Reviewer Date  
 Checkcode: 5239 AAP 2005 Rev. B



**Sample ID: IOB1001-01** *Outfall 010*

**Method 1613**

<u>Client Data</u>		<u>Sample Data</u>		<u>Laboratory Data</u>	
Name:	Pace Inc.	Matrix:	Aqueous	Project No.:	P5072
Project ID:	General Analytical HRMS	Weight/Volume:	1.00 L	Sample ID:	P5072_2989_001
Date Collected:	11 Feb 05	pH	6	QC Batch No.:	2989
<u>Analyte</u>	<u>Conc.</u> pg/L	<u>DL</u> pg/L	<u>EMPC</u> pg/L	<u>Qualifier</u>	<u>Recoveries</u>
				ES	CS
2,3,7,8-TCDD	ND	2.29			82.8
1,2,3,7,8-PeCDD	ND	1.65			88.3
1,2,3,4,7,8-HxCDD	ND	3.45			83.8
1,2,3,6,7,8-HxCDD	ND	3.21			83.8
1,2,3,7,8,9-HxCDD	ND	3.83			83.8
1,2,3,4,6,7,8-HpCDD	75.4	6.41			64.9
OCDD	883	11			64.9
2,3,7,8-TCDF	ND	1.24			82.8
1,2,3,7,8-PeCDF	ND	1.79			84.3
2,3,4,7,8-PeCDF	ND	1.86			84.3
1,2,3,4,7,8-HxCDF	ND	0.867			83.8
1,2,3,6,7,8-HxCDF	ND	0.843			83.8
2,3,4,6,7,8-HxCDF	ND	1.12			83.8
1,2,3,7,8,9-HxCDF	ND	1.67			83.8
1,2,3,4,6,7,8-HpCDF	16.8	2.36		J	64.9
1,2,3,4,7,8,9-HpCDF	ND	3.46			64.9
OCDF	155	10.2			64.9
<b>Totals &amp; TEQs</b>					
TCDDs	ND	2.29			
PeCDDs	ND	1.65			
HxCDDs	<del>7.98</del> 5.16	3.5			
HpCDDs	153	6.41			
TCDFs	ND	1.24			
PeCDFs	ND	1.82			
HxCDFs	2.68	1.09	9.88		
HpCDFs	92.9	2.87			
<b>Total PCDD/Fs</b>	<b>1,290</b>		<b>1,300</b>		



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Reviewer \_\_\_\_\_  
Date \_\_\_\_\_

**LEVEL 1**

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ8  
 Task Order 313150010  
 SDG No. IOB1004

No. of Analyses 1

Laboratory Truesdail

Date: 03/31/05

Reviewer P. Meeks

Reviewer's Signature P. Meeks

Analysis/Method Hydrazines

**ACTION ITEMS\***

1. **Case Narrative Deficiencies**
2. **Out of Scope Analyses**
3. **Analyses Not Conducted**
4. **Missing Hardcopy Deliverables**
5. **Incorrect Hardcopy Deliverables**
6. **Deviations from Analysis Protocol, e.g.,**
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS<sup>b</sup>**

Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 1  
Reviewer: P. Meeks  
Date of Review: March 31, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOB1004  
Analysis: Hydrazines

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011	IOB1004-01	939456	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation and no preservation was noted in the field. The case narratives for this SDG noted that the sample was received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC from the field to Del Mar was signed and dated by field and laboratory personnel, and the transfer COC from Del Mar to Truesdail Laboratories was signed and dated by personnel from both laboratories. Both the original COC and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the sample was transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 ID on the Form I; therefore, the reviewer hand-corrected the Form I to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met and the sample was analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 02/14/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analysis had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with this SDG. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the sample were nondetects at the reporting limit. No qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One laboratory control sample/laboratory control sample duplicate was analyzed with this SDG. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogates were not utilized in this analysis. No qualifications were required.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MSD/MSD analyses were performed on Outfall 002; therefore, no assessment was made with respect to this criterion. Method accuracy and precision were assessed based on LCS/LCSD results. No qualifications were required.

## **2.7 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### **2.7.1 Field Blanks and Equipment Rinsates**

The site sample in this SDG had no associated field QC. No qualifications were required.

### **2.7.2 Field Duplicates**

There were no field duplicate samples in this SDG.

## **2.8 COMPOUND IDENTIFICATION**

The sample was analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## **2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.



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# REPORT

**Client:** Del Mar Analytical  
 17461 Derian Ave.  
 Irvine, CA 92614

**Attention:** Michele Harper  
 Liquid / 1 Sample  
**Project Name:** IOB1004  
**P.O. Number:** IOB1004  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 939706  
**Report Date:** February 16, 2005  
**Sampling Date:** February 11, 2005  
**Receiving Date:** February 14, 2005  
**Extraction Date:** February 14, 2005  
**Analysis Date:** February 15, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine	
		Hydrazine	Rev	Hydrazine	Rev	Hydrazine	Rev
704765-MB	Method Blank	ND	*	ND	*	ND	*
939706	Outfall oil	ND	U	ND	U	ND	U
MDL	IOB1004-01	1.2	U	0.27	U	ND	U
PQL		5.0		5.0		0.39	

PM 3/30/05

MDL: Method Detection Limit, ug/L  
 PQL: Practical Quantitation Limit, ug/L  
 ND: Not Detected at or above the MDL value.  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

**AMEC VALIDATED**

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

*Xuan Dang*  
 Xuan Dang, Project Manager  
 Environmental Services







# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 30, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6010B for Inductively Coupled Plasma*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOB1004  
Analysis: MET

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Composite	Outfall 011 Composite	IOB1004-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COC was signed and dated by field and laboratory personnel. Not all analytes were requested on the COC. The remaining analytes were requested in a memo from MWH personnel dated 03/01/05. A duplicate was submitted for Outfall 011 Composite; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The date of collection recorded on the COC and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals, and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for the ICP and ICP/MS metals and 80-120% for mercury. Thallium, antimony, and manganese were recovered below the control limit in the 0.1 ppb, 0.2 ppb, and 1.0 ppb reporting limit check standards, respectively; therefore, nondetected antimony and thallium were qualified as estimated, "UJ," and manganese detected in Outfall 011 Composite was qualified as estimated, "J." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

Boron was detected in a bracketing CCB at 0.0737 mg/L; therefore, boron detected in Outfall 011 Composite was qualified as estimated, "UJ." Antimony was detected in both CCBs bracketing the analysis of Outfall 011 Composite, indicating that the laboratory was not able to report antimony at the level of the MDL. The reviewer raised the antimony MDL to the highest level of interference reported in the CCBs, 0.94 µg/L, and qualified the result as estimated. No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP boron analysis, but were not run on the day the site sample was analyzed. The recoveries for the interferents and the other spiked analytes were within the control limits of 80-120%.

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and antimony and lead were not spiked into the ICSAB solution. Copper, cadmium, manganese, and nickel were detected above the applicable reporting limit in the ICSA. The results for aluminum, sodium, and potassium were above the calibration range of the instrument in the ICSA and ICSAB analyses and the manganese result was above the calibration range in the ICSA analysis. As aluminum, sodium, magnesium, and potassium were not reported in the site sample, no qualifications were required. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP LCS and ICP/MS LCS samples associated with the retained results were identified as 5B17127-BS1 and 5B17112-BS1, respectively. The mercury LCS sample was identified as 5B15070-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was evaluated based on LCS results.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of this sample; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the sample in this SDG; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site sample and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the sample in this data package. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

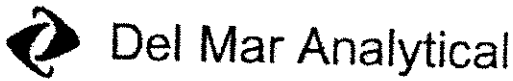
Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated sample.

### 2.13.1 Field Blanks and Equipment Rinsates

The sample in this SDG had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site sample.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Data	Final Copy
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.											
Reporting Units: mg/l											
Barium	EPA 200.8	5B17112	0.00014	0.0010	0.024	1	02/17/05	02/22/05			
Boron	EPA 200.7	5B17127	0.0074	0.050	0.047	1	02/17/05	02/20/05			
Iron	EPA 200.8	5B17112	0.0032	0.010	2.2	1	02/17/05	02/22/05	J UJ		B, DMS

**AMEC VALIDATED**

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Dev Qual	Qual Code
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5B17112	0.94	2.0	0.94						
Arsenic	EPA 200.8	5B17112	0.18	1.0	0.63	1	02/17/05	02/22/05	J		
Beryllium	EPA 200.8	5B17112	0.49	0.50	1.1	1	02/17/05	02/22/05	B		
Cadmium	EPA 200.8	5B17112	0.037	1.0	0.10	1	02/17/05	02/22/05	J		
Chromium	EPA 200.8	5B17112	0.015	1.0	0.13	1	02/17/05	02/22/05	J		
Cobalt	EPA 200.8	5B17112	0.26	1.0	3.9	1	02/17/05	02/24/05	J		
Copper	EPA 200.8	5B17112	0.10	1.0	0.84	1	02/17/05	02/22/05	J		
Lead	EPA 200.8	5B17112	0.49	2.0	4.4	1	02/17/05	02/22/05	J		
Manganese	EPA 200.8	5B17112	0.13	1.0	1.6	1	02/17/05	02/22/05			
Mercury	EPA 200.8	5B17112	0.44	1.0	43	1	02/17/05	02/22/05			
Nickel	EPA 245.1	5B15070	0.063	0.20	ND	1	02/15/05	02/15/05			*3
Selenium	EPA 200.8	5B17112	0.15	1.0	3.4	1	02/17/05	02/22/05			
Silver	EPA 200.8	5B17112	0.36	2.0	ND	1	02/17/05	02/22/05			
Thallium	EPA 200.8	5B17112	0.089	1.0	ND	1	02/17/05	02/22/05			
Vanadium	EPA 200.8	5B17112	0.075	1.0	ND	1	02/17/05	02/22/05			*3
Zinc	EPA 200.8	5B17112	0.86	1.0	5.5	1	02/17/05	02/23/05			
	EPA 200.8	5B17112	3.1	20	17	1	02/17/05	02/22/05	J		DNC

Handwritten notes in the right margin:  
 Dev Qual / Qual Code  
 B, J, \*3  
 DNC  
 \*3  
 \*3  
 DNC

pm 2/30/05

**AMEC VALIDATED**

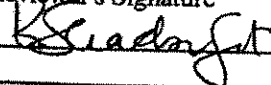
DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP24  
 Task Order 313150010  
 SDG No. IOB1004

No. of Analyses 1  
 Date April 1, 2005  
 Reviewer's Signature  


Laboratory Del Mar Analytical

Reviewer K. Shadowlight

Analysis/Method Pesticides

ACTION ITEMS*	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were assigned for %D continuing calibration outliers
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS*	
Acceptable as reviewed.	
* Subcontracted analytical laboratory is not meeting contract and/or method requirements. * Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 3I3150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Composite	Outfall 011 Composite	IOB1004-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The cooler was received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analyses presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 02/17/05 associated with the pesticide analysis of this SDG, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 02/11/05 associated with the PCB analysis in this SDG which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The pesticide analysis of sample Outfall 011 Composite was bracketed by four continuing calibrations, two preceding and two following the analyses. The %Ds for target compounds endrin aldehyde (02/17/05), 4,4'-DDT and methoxychlor (02/18/05 at 03:14 a.m. and 03:41 a.m.) and heptachlor, 4,4'-DDT, endrin aldehyde and endrin ketone (02/18/05 at 03:41 a.m.) exceeded 15% on the primary channel; therefore, the aforementioned target compounds were qualified as estimated, "UJ," in sample Outfall 011 Composite. The remaining %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. The PCB analysis for this SDG was bracketed by two CCVs and the %Ds for Aroclor 1016 and Aroclor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted.

No further qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5B17042-BLK1) was extracted and analyzed with this SDG. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5B17042-BS1/BSD1) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## **2.6 SURROGATE RECOVERY**

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of the samples were within the laboratory-established control limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

There were no MS/MSD analyses associated with this SDG. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## **2.8 SAMPLE CLEANUP PERFORMANCE**

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## **2.9 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### **2.9.1 Field Blanks and Equipment Rinsates**

There were no field QC samples associated with this SDG. No qualifications were required.

### **2.9.2 Field Duplicates**

There were no field duplicate samples associated with this SDG.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

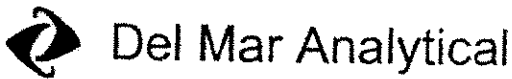
Compound quantification was verified for this SDG; however, as there were no detects reported in the sample, quantitation was verified by recalculating a representative number of



*DATA VALIDATION REPORT*

Project: NPDES  
SDG: IOB1004  
Analysis: Pest/PCB

blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volumes extracted. Results were reported in ug/L (ppb). No qualifications were required.



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MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB1004  
 Attention: Bronwyn Kelly Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Qual	Qual Code
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.											
Reporting Units: ug/l											
Aldrin	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05		U	
alpha-BHC	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05			
beta-BHC	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05			
delta-BHC	EPA 608	5B17042	0.020	0.20	ND	0.962	02/17/05	02/17/05			
gamma-BHC (Lindane)	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05			
Chlordane	EPA 608	5B17042	0.20	1.0	ND	0.962	02/17/05	02/17/05			
4,4'-DDD	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05			
4,4'-DDE	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05			
4,4'-DDT	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05			
Dieldrin	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05	CS	UJ	C
Endosulfan I	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05		U	
Endosulfan II	EPA 608	5B17042	0.040	0.10	ND	0.962	02/17/05	02/17/05			
Endosulfan sulfate	EPA 608	5B17042	0.015	0.20	ND	0.962	02/17/05	02/17/05			
Endrin	EPA 608	5B17042	0.015	0.10	ND	0.962	02/17/05	02/17/05			
Endrin aldehyde	EPA 608	5B17042	0.045	0.10	ND	0.962	02/17/05	02/17/05			
Endrin ketone	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05			
Heptachlor	EPA 608	5B17042	0.030	0.10	ND	0.962	02/17/05	02/17/05	CS	UJ	C
Heptachlor epoxide	EPA 608	5B17042	0.020	0.10	ND	0.962	02/17/05	02/17/05		UJ	C
Methoxychlor	EPA 608	5B17042	0.035	0.10	ND	0.962	02/17/05	02/17/05		U	
Toxaphene	EPA 608	5B17042	1.5	5.0	ND	0.962	02/17/05	02/17/05	CS	UJ	C
Surrogate: Tetrachloro-m-xylene (35-120%)										U	
Surrogate: Decachlorobiphenyl (45-120%)										U	



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.										
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5B17042	0.20	1.0	ND	0.962	02/17/05	02/18/05		CC ↓
Aroclor 1221	EPA 608	5B17042	0.10	1.0	ND	0.962	02/17/05	02/18/05		
Aroclor 1232	EPA 608	5B17042	0.15	1.0	ND	0.962	02/17/05	02/18/05		
Aroclor 1242	EPA 608	5B17042	0.15	1.0	ND	0.962	02/17/05	02/18/05		
Aroclor 1248	EPA 608	5B17042	0.25	1.0	ND	0.962	02/17/05	02/18/05		
Aroclor 1254	EPA 608	5B17042	0.25	1.0	ND	0.962	02/17/05	02/18/05		
Aroclor 1260	EPA 608	5B17042	0.40	1.0	ND	0.962	02/17/05	02/18/05		
Surrogate: Decachlorobiphenyl (45-120%)					74 %					

ANALYZED

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB0418, IOB0980, IOB0993, IOB0996, IOB0997,  
IOB1001, IOB1004, IOB1014, & IOB1069  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 11  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 23, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 002	IOB0418-01	8237-001	water	900.0, 905.0, 906.0
Outfall 001	IOB0980-01	8265-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 001RE1	IOB0980-01RE1	8265-001	water	900.0
Outfall 007	IOB0993-01	8261-001	water	900.0, 905.0, 906.0
Outfall 007 RE1	IOB0993-01 RE1	8377-001	water	906.0
Outfall 009	IOB0996-01	8262-001	water	900.0, 905.0, 906.0
Outfall 009 RE1	IOB0996-01 RE1	8378-001	water	906.0
Outfall 008	IOB0997-01	8266-001	water	900.0, 905.0, 906.0
Outfall 008 RE1	IOB0997-01 RE1	8379-001	water	906.0
Outfall 010	IOB1001-01	8267-001	water	900.0, 905.0, 906.0
Outfall 010 RE1	IOB1001-01 RE1	8380-001	water	906.0
Outfall 011	IOB1004-01	8263-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Unfiltered	IOB1014-01	8264-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Filtered	IOB1014-03	8264-001	water	900.0, 905.0, 906.0
Outfall 003 Filtered	IOB1069-01	8268-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOB1069-02	8268-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOB1069-03	8269-001	water	901.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Most samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

According to the Eberline login sheet, Outfall 002 was received unpreserved. It was confirmed in correspondence with Eberline dated 01/31/05, that the gross alpha, gross beta, and strontium samples were not preserved upon receipt. The gross alpha, gross beta, and strontium results were not qualified for lack of preservation, as the method also specifies a five-day holding time for unpreserved samples.

Eberline noted on their login sheets that Outfall 007, Outfall 008, Outfall 009 and Outfall 010 were received preserved, in plastic containers. The method states that tritium samples should not be preserved. Per a telephone conversation with M. Mannion of Eberline, these samples were adjusted back to a pH of about 7 upon receipt at Eberline. Due to the improper pH adjustments, the tritium results for Outfall 007, Outfall 008, Outfall 009, and Outfall 010 were rejected, "R." Del Mar Analytical sent additional aliquots of Outfall 007, Outfall 008, Outfall 009, and Outfall 010 for tritium reanalyses. These samples were received in the proper containers and were not preserved.

Additionally, according to the Los Angeles Regional Water Quality Control Board's guidance letter dated 01/12/05, samples collected for tritium analysis should be submitted in glass containers to avoid potential loss of tritium by sorption onto the plastic container. As the Outfall 007, Outfall 008, Outfall 009 and Outfall 010 tritium analyses were previously rejected, no further qualifications were required.

After all analyses were complete, Del Mar Analytical sent extra volume of Outfall 001 to Eberline for gross alpha reanalysis and radium-228 and radium-226 analyses. Extra volume of Outfall 011 (IOB1004 and IOB1014) was sent to Eberline for radium-228 and radium-226 analyses. These aliquots were received properly preserved. The radium-226 and radium-228 results for Outfall 003 Unfiltered and Outfall 011 Unfiltered (IOB1014) were not preserved and were not qualified for lack of preservation, as the methods specify a five-day holding time for unpreserved samples.

Additionally, per a request from Del Mar Analytical (see section 2.1.2), Eberline filtered and then preserved radium-226 and radium-228 aliquots for Outfall 003 Filtered and gross alpha, gross beta, and strontium aliquots for Outfall 011 Filtered (IOB1014). No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories.

Filtered, unfiltered, and substrate analyses were requested for Outfall 011 (IOB1014) on the original COC from the field to Del Mar. These instructions did not appear on the transfer COC to Eberline and subsequently only unfiltered analyses were originally performed. Extra volume of Outfall 011 (IOB1014) was sent by Del Mar Analytical (see section 2.1.1) for the filtered analyses. The results are reported as Outfall 011 Filtered (IOB1014).

The remaining original and transfer COCs accounted for the samples and analyses presented in this data package. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. A gross alpha reanalysis was requested for Outfall 001, and tritium reanalyses were requested for Outfall 007, Outfall 008, Outfall 009, and Outfall 010. To distinguish between the original and reanalysis results, the reviewer added an "RE1" suffix to the original MWH and Del Mar Analytical IDs. No qualifications were required.

### 2.1.3 Holding Times

The tritium analyses were analyzed within 180 days of collection. The Outfall 002 gross alpha, gross beta, and strontium, Outfall 003 Unfiltered gross alpha, gross beta, strontium, radium-226, and radium-228, and Outfall 011 Unfiltered (IOB1014) gross alpha, gross beta, strontium, radium-226, and radium-228 samples were analyzed beyond the five day holding time for unpreserved samples; therefore, these results were qualified as estimated, "J," for detects and, "UJ," for nondetects. As the Outfall 011 Filtered (IOB1014) aliquots for gross alpha, gross beta, and strontium were preserved more than five days after collection, these nondetected results were qualified as estimated, "UJ." No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha

The initial calibration included with the data was performed in February 2003. All detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects, unless otherwise rejected (see section 2.10).

### Gross Beta

The initial calibrations were performed in June 1997. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in February 2001 or June 2003. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%, and the actinium chemical yields were greater than 50%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Blank spikes were analyzed in association with the samples in these SDGs. For one blank spike, the gross alpha, gross beta, and strontium recoveries were outside of the 3-sigma limits, but all had acceptable recoveries of 80%, 88%, and 108%, respectively. One radium-228 blank spike was recovered outside of the 3-sigma limits, but had an acceptable recovery of 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 002, Outfall 007, and Outfall 003 Substrate, tritium on Outfall 007 RE1, and radium-226 and radium-228 for Outfall 011 (IOB1004). The gross alpha and tritium RPDs were greater than 20% for Outfall 007. The gross alpha results were within 3-sigma and were considered acceptable, but the tritium result was just above 3-sigma; however, as no associated tritium detects were retained (see section 2.1.1), no qualifications were required. The remaining RPD were  $\leq 20\%$ . No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 002 and Outfall 007 and for tritium on Outfall 007 RE1. The Outfall 002 recovery for gross alpha was below 3-sigma; therefore, the gross alpha results in Outfall 001, Outfall 002, Outfall 008, Outfall 009, Outfall 010, Outfall 011 Unfiltered (IOB1014), Outfall 011 (IOB1004), Outfall 003 Filtered, and Outfall 003 Unfiltered were qualified as estimated, "J," for detects and, "UJ," for nondetects. Outfall 007 was also analyzed with Outfall 002, however, as Outfall 007 had an acceptable recovery for gross alpha, no qualifications were applied. The remaining recoveries were within the 3-sigma limits. No further qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted.

The original planchet for gross alpha in Outfall 001 was recounted once per a request from MWH personnel. The recount yielded a result equivalent to original count and was not reported. The sample was later reanalyzed from extra sample volume provided by Del Mar Analytical, and was reported as Outfall 001 RE1. As the two gross alpha results were similar, the reviewer rejected, "R," the reanalysis, Outfall 001 RE1, in favor of the original result, Outfall 001. No further qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8237</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502073-01</u>	Contract <u>PROJECT# IOB0418</u>
Received Date <u>02/08/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 002 1080418-01	8237-001		02/04/05	03/02/05	GrossAlpha	0.865 ± 2.9	pCi/L	4.35	UJ	H, R, Q
				03/02/05	Gross Beta	4.17 ± 3.4	pCi/L	5.53	UJ	H
				02/28/05	H3	5.86 ± 94	pCi/L	158	UJ	H
				02/25/05	Sr90	0.010 ± 0.22	pCi/L	0.420	UJ	H

pm 3/24/05

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Eberline Services

ANALYSIS RESULTS

SDG <u>8265</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502136-01</u>	Contract <u>PROJECT# IOB0980</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Sample ID <u>Outfall 001</u> IOB0980-01	8265-001	02/11/05	03/01/05	GrossAlpha	17.3 ± 4.5	pCi/L	2.78	J	R, A	
			03/01/05	Gross Beta	20.0 ± 3.4	pCi/L	3.94			
			03/29/05	Ra-228	0.904 ± 0.20	pCi/L	0.449			
			03/03/05	Tritium	157 ± 150	pCi/L	244	U		
			04/04/05	Ra-226	0.660 ± 0.32	pCi/L	0.423			
			02/25/05	Sr-90	0.034 ± 0.20	pCi/L	0.392	U		

AM 3/19/05

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ANALYSIS RESULTS

SDG <u>8384</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503234-01</u>	Contract <u>PROJECT# IOB0980</u>
Received Date <u>03/30/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 001 RE1</u>								
IOB0980-01 RE1	8384-001	02/11/05	04/04/05	GrossAlpha	18.1 ± 4.3	pCi/L	2.40		R	D

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SDG <u>8261</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502132-01</u>	Contract <u>PROJECT# IOB0993</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab									
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>	<u>FW</u>	<u>Qual</u>	<u>Qual</u>
								<u>Code</u>		<u>Code</u>
Client: <u>Outfall 007</u> IOB0993-01	8261-001	02/11/05	03/01/05	GrossAlpha	1.64 ± 1.0	pCi/L	0.936	J		R
			03/01/05	Gross Beta	5.18 ± 1.3	pCi/L	1.80			
			03/02/05	H3	71.9 ± 150	pCi/L	246	R		*1
			02/25/05	Sr90	-0.077 ± 0.25	pCi/L	0.499	C		

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ANALYSIS RESULTS

SDG <u>8377</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503226-01</u>	Contract <u>PROJECT# IOB0993</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 007 RE1</u> IOB0993-01 RE1								
		8377-001	02/11/05	04/08/05	H3	-86.2 ± 99	pCi/L	171	U	

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ANALYSIS RESULTS

SDG <u>8262</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502133-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Raw Qual	Qual Code
Client <u>Sample ID</u> Out fall 009 IOB0996-01  PM 3/24/05		8262-001	02/11/05	03/01/05	GrossAlpha	0.812 ± 0.63	pCi/L	0.864	U	R,Q #1
				03/01/05	Gross Beta	1.76 ± 1.1	pCi/L	1.79	U	
				03/02/05	H3	59.8 ± 140	pCi/L	240	R	
				02/25/05	Sr90	0.078 ± 0.25	pCi/L	0.470	U	

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ANALYSIS RESULTS

SDG <u>8378</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503227-01</u>	Contract <u>PROJECT# IOB0996</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 009 RE1 IOB0996-01 RE1 AM 4/20/05	8378-001	02/11/05	04/09/05	H3	-129 ± 98	pCi/L	172		U	

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SDG <u>8266</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502137-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA	Per Qual	Qual Code
Client Sample ID Outfall 008 IOB0997-01	8266-001		02/11/05	03/01/05	GrossAlpha	6.07 ± 1.7	pCi/L	1.06	J	R.Q
				03/01/05	Gross Beta	7.48 ± 1.5	pCi/L	1.88		
				03/03/05	H3	110 ± 150	pCi/L	242	R	*1
				02/25/05	Sr90	-0.107 ± 0.22	pCi/L	0.458	U	

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SDG <u>8379</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R50122B-01</u>	Contract <u>PROJECT# IOB0997</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
<u>Sample ID</u> IOB0997-01 <b>RE1</b>	<u>Sample ID</u> 8379-001	02/11/05	04/09/05	H3	-76.3 ± 100	pCi/L	172	U	

pm 4/20/05

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ANALYSIS RESULTS

SDG <u>8267</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502138-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Outfall 010 IOB1001-01		8267-001	02/11/05	03/01/05	GrossAlpha	4.98 ± 1.5	pCi/L	1.06	J	R, Q
				03/01/05	Gross Beta	8.16 ± 1.6	pCi/L	1.92		
				03/03/05	H3	271 ± 150	pCi/L	240	R X	<del>511 + 24</del>
				02/25/05	Sr90	-0.061 ± 0.24	pCi/L	0.485	U	

pm 3/24/05

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ANALYSIS RESULTS

SDG <u>8380</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503229-01</u>	Contract <u>PROJECT# IOB1001</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<u>Outfall 010 RE1</u>								
		IOB1001-01RE1	8380-001	02/11/05	04/09/05	H3	-59.6 ± 100	pCi/L	175	U

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ANALYSIS RESULTS

SDG <u>8269</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502140-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>SOLID</u>

Client	Lab							Rev	Qual
Sample ID	Sample ID	Collected	Analyzed	Nuclide	Results - 2σ	Units	MDA	Qual	Code
IOB1069-03	8269-001	02/11/05	02/22/05	Cs137 (G)	U	pCi/Smpl	11.6	U	

Outfall 003 Substrate

MM 3/24/05

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ANALYSIS RESULTS

SDG <u>8264</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502135-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA	Rw Qual	Qual Code
<u>Sample ID</u> IOB1014-01	<u>Sample ID</u> 8264-001	02/11/05	03/01/05	GrossAlpha	0.895 ± 0.76	pCi/L	1.05	UT FB FB FB FB	R, Q, H H H H
<u>Outfall Oil Unfiltered</u>			03/01/05	Gross Beta	2.50 ± 1.3	pCi/L	1.90		
			04/22/05	Ra228	0.375 ± 0.24	pCi/L	0.612		
			03/02/05	H3	97.4 ± 140	pCi/L	237		
			05/04/05	Ra226	0.034 ± 0.022	pCi/L	0.034		
			02/25/05	Sr90	-0.216 ± 0.23	pCi/L	0.519		

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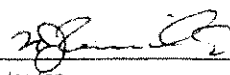
ANALYSIS RESULTS

SDG <u>8347</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503157-01</u>	Contract <u>PROJECT# IOB1014</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
Sample ID	Sample ID								
<i>Outfall Oil Filtered</i>									
IOB1014-03	8347-001	02/11/05	04/02/05	GrossAlpha	0.681 ± 0.61	pCi/L	0.811	UJ	H, R
			04/02/05	Gross Beta	1.33 ± 1.1	pCi/L	1.76	UJ	H
			04/07/05	H3	-80.6 ± 97	pCi/L	169	U	
			04/05/05	Sr90	0.004 ± 0.24	pCi/L	0.474	UJ	H

*PM 5/17/05*

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ANALYSIS RESULTS

SDG <u>8261</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502134-01</u>	Contract <u>PROJECT# IOB1004</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Client Sample ID IOB1004-01  <i>Outfall (1)</i>  <i>Am 5/5/05</i>	8263-001	02/11/05	03/01/05	03/01/05	GrossAlpha	2.03 ± 0.91	pCi/L	0.787
			03/01/05	03/01/05	Gross Beta	2.30 ± 1.2	pCi/L	1.78
			04/22/05	04/22/05	Ra228	0.143 ± 0.31	pCi/L	0.787
			03/02/05	03/02/05	H3	21.1 ± 140	pCi/L	240
			05/04/05	05/04/05	Ra226	0.030 ± 0.018	pCi/L	0.027
			02/25/05	02/25/05	Sr90	-0.060 ± 0.23	pCi/L	0.470

Qual	Code
J	R, Q
U	
U	
U	

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**Eberline Services**  
**ANALYSIS RESULTS**

SDG <u>8268</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R502139-01</u>	Contract <u>PROJECT# IOB1069</u>
Received Date <u>02/15/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Outfall 003 Filtered</u>	<u>8268-001</u>	<u>02/11/05</u>	<u>03/01/05</u>	<u>GrossAlpha</u>	<u>-0.288 ± 0.45</u>	<u>pCi/L</u>	<u>0.969</u>
<u>IOB1069-01</u>			<u>03/01/05</u>	<u>Gross Beta</u>	<u>4.44 ± 1.3</u>	<u>pCi/L</u>	<u>1.80</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>1.37 ± 0.46</u>	<u>pCi/L</u>	<u>0.772</u>
			<u>03/03/05</u>	<u>H3</u>	<u>138 ± 150</u>	<u>pCi/L</u>	<u>242</u>
			<u>05/05/05</u>	<u>Ra226</u>	<u>0.056 ± 0.021</u>	<u>pCi/L</u>	<u>0.029</u>
			<u>02/25/05</u>	<u>Sr90</u>	<u>1.04 ± 0.31</u>	<u>pCi/L</u>	<u>0.428</u>
<u>Outfall 003 Unfiltered</u>	<u>8268-002</u>	<u>02/11/05</u>	<u>03/01/05</u>	<u>GrossAlpha</u>	<u>0.240 ± 0.58</u>	<u>pCi/L</u>	<u>1.09</u>
<u>IOB1069-02</u>			<u>03/01/05</u>	<u>Gross Beta</u>	<u>3.53 ± 1.2</u>	<u>pCi/L</u>	<u>1.82</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>1.30 ± 0.37</u>	<u>pCi/L</u>	<u>0.756</u>
			<u>03/03/05</u>	<u>H3</u>	<u>106 ± 150</u>	<u>pCi/L</u>	<u>242</u>
			<u>05/05/05</u>	<u>Ra226</u>	<u>0.018 ± 0.019</u>	<u>pCi/L</u>	<u>0.031</u>
			<u>02/25/05</u>	<u>Sr90</u>	<u>1.10 ± 0.34</u>	<u>pCi/L</u>	<u>0.462</u>

Rev Qual	Qual Code
<u>UJ</u>	<u>R, Q</u>
<u>U</u>	
<u>BSHDBH</u>	<u>R, Q, H</u>
	<u>H</u>
	<u>H</u>
	<u>H</u>

*pm s/s/s*

**NOT VALIDATED**  
**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV41  
 Task Order 313150010  
 SDG No. IOB1004

No. of Analyses 1

Laboratory Del Mar

Date: April 1, 2005

Reviewer M. Pokorny

Reviewer's Signature  


Analysis/Method Semivolatiles

ACTION ITEMS*	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications required for calibration and LCS outliers.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-composite	Outfall 011-composite	IOB1004-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The sample in this SDG was received at the laboratory within the temperature limits of 4°C ±2°C, at 3°C. The analysis did not require preservation, and no preservation was noted in the field. The COC noted that the sample was received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. The COC accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water sample was extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the sample was analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 02/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds except for the  $r^2$  values for 2,4-dinitrophenol, 4-nitroaniline, and 4,6-dinitro-2-methylphenol. 2,4-Dinitrophenol, 4-nitroaniline, and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the sample of this SDG. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 02/18/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$ , except for the %Ds for n-nitrosodimethylamine, benzoic acid, and 4-nitrophenol. N-Nitrosodimethylamine, benzoic acid, and 4-nitrophenol were qualified as estimated nondetects, "UJ," in the sample of this SDG. A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

### 2.4 BLANKS

One method blank (SB14010-BLK1) was extracted and analyzed with this SDG. Diethylphthalate, fluorene, 2-methylnaphthalene, naphthalene, and phenanthrene were detected in the method blank. 2-Methylnaphthalene was qualified as a nondetect, "U," in the sample of this

SDG. Review of the raw data indicated no reportable false negatives. No further qualifications were required.

## **2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One blank spike/ blank spike duplicate pair (5B14010-BS1/BSD1) was extracted and analyzed with this SDG. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples. All percent recoveries and RPDs were within the laboratory QC limits except for benzidine which was not recovered in the BSD and the RPDs for benzidine and NDMA. The sample of this SDG had benzidine and NDMA qualified as estimated nondetects, "UJ." A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## **2.6 SURROGATE RECOVERY**

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were associated with this SDG. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples.

### **2.8.1 Field Blanks and Equipment Rinsates**

There were no field QC samples associated with this SDG. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples associated with this SDG.

## **2.9 INTERNAL STANDARDS PERFORMANCE**

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial and the method detection limit study. Detects below the reporting limit were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for this SDG. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)											
Reporting Units: ug/l											
Acenaphthene	EPA 625	5B14010	0.10	0.50	ND	0.98	02/14/05	02/18/05			
Acenaphthylene	EPA 625	5B14010	0.10	0.50	ND	0.98	02/14/05	02/18/05			
Aniline	EPA 625	5B14010	2.9	10	ND	0.98	02/14/05	02/18/05			
Anthracene	EPA 625	5B14010	0.083	0.50	ND	0.98	02/14/05	02/18/05			
Benidine	EPA 625	5B14010	2.4	5.0	ND	0.98	02/14/05	02/18/05	L2		UT #5
Benzoic acid	EPA 625	5B14010	3.7	20	ND	0.98	02/14/05	02/18/05			
Benzo(a)anthracene	EPA 625	5B14010	0.038	5.0	ND	0.98	02/14/05	02/18/05			
Benzo(a)pyrene	EPA 625	5B14010	0.14	2.0	ND	0.98	02/14/05	02/18/05			
Benzo(b)fluoranthene	EPA 625	5B14010	0.050	2.0	ND	0.98	02/14/05	02/18/05			
Benzo(g,h,i)perylene	EPA 625	5B14010	0.059	5.0	ND	0.98	02/14/05	02/18/05			
Benzo(k)fluoranthene	EPA 625	5B14010	0.053	0.50	ND	0.98	02/14/05	02/18/05			
Benzyl alcohol	EPA 625	5B14010	0.21	5.0	0.27	0.98	02/14/05	02/18/05	J		DNG
Bis(2-chloroethoxy)methane	EPA 625	5B14010	0.072	0.50	ND	0.98	02/14/05	02/18/05			
Bis(2-chloroethyl)ether	EPA 625	5B14010	0.084	0.50	ND	0.98	02/14/05	02/18/05			
Bis(2-chloroisopropyl)ether	EPA 625	5B14010	0.11	0.50	ND	0.98	02/14/05	02/18/05			
Bis(2-ethylhexyl)phthalate	EPA 625	5B14010	1.1	5.0	ND	0.98	02/14/05	02/18/05			
4-Bromophenyl phenyl ether	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05			
Butyl benzyl phthalate	EPA 625	5B14010	0.34	5.0	ND	0.98	02/14/05	02/18/05			
4-Chloroaniline	EPA 625	5B14010	0.20	2.0	ND	0.98	02/14/05	02/18/05			
2-Chloronaphthalene	EPA 625	5B14010	0.059	0.50	ND	0.98	02/14/05	02/18/05			
4-Chloro-3-methylphenol	EPA 625	5B14010	0.34	2.0	ND	0.98	02/14/05	02/18/05			
4-Chlorophenyl phenyl ether	EPA 625	5B14010	0.056	0.50	ND	0.98	02/14/05	02/18/05			
2-Chlorophenol	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05			
Chrysene	EPA 625	5B14010	0.072	0.50	ND	0.98	02/14/05	02/18/05			
Dibenz(a,h)anthracene	EPA 625	5B14010	0.083	0.50	ND	0.98	02/14/05	02/18/05			
Dibenzofuran	EPA 625	5B14010	0.075	0.50	ND	0.98	02/14/05	02/18/05			
Di-n-butyl phthalate	EPA 625	5B14010	0.26	2.0	ND	0.98	02/14/05	02/18/05			
1,2-Dichlorobenzene	EPA 625	5B14010	0.11	0.50	ND	0.98	02/14/05	02/18/05			
1,3-Dichlorobenzene	EPA 625	5B14010	0.13	0.50	ND	0.98	02/14/05	02/18/05			
1,4-Dichlorobenzene	EPA 625	5B14010	0.050	0.50	ND	0.98	02/14/05	02/18/05			
3,3-Dichlorobenzidine	EPA 625	5B14010	0.93	5.0	ND	0.98	02/14/05	02/18/05			
2,4-Dichlorophenol	EPA 625	5B14010	0.21	2.0	ND	0.98	02/14/05	02/18/05			
Diethyl phthalate	EPA 625	5B14010	0.12	1.0	ND	0.98	02/14/05	02/18/05			
2,4-Dimethylphenol	EPA 625	5B14010	0.31	2.0	ND	0.98	02/14/05	02/18/05			
Dimethyl phthalate	EPA 625	5B14010	0.081	0.50	ND	0.98	02/14/05	02/18/05			
4,6-Dinitro-2-methylphenol	EPA 625	5B14010	0.38	5.0	ND	0.98	02/14/05	02/18/05			
2,4-Dinitrophenol	EPA 625	5B14010	2.7	5.0	ND	0.98	02/14/05	02/18/05			
2,4-Dinitrotoluene	EPA 625	5B14010	0.23	5.0	ND	0.98	02/14/05	02/18/05			
2,6-Dinitrotoluene	EPA 625	5B14010	0.24	5.0	ND	0.98	02/14/05	02/18/05			
Di-n-octyl phthalate	EPA 625	5B14010	0.17	5.0	ND	0.98	02/14/05	02/18/05			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B14010	0.087	1.0	ND	0.98	02/14/05	02/18/05			

DRAFT REPORT  
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LEVEL IV



# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB1004

Sampled: 02/11/05

Received: 02/11/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Ref	Qual Code
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5B14010	0.089	0.50	ND	0.98	02/14/05	02/18/05			
Fluorene	EPA 625	5B14010	0.075	0.50	ND	0.98	02/14/05	02/18/05			
Hexachlorobenzene	EPA 625	5B14010	0.13	1.0	ND	0.98	02/14/05	02/18/05			
Hexachlorobutadiene	EPA 625	5B14010	0.38	2.0	ND	0.98	02/14/05	02/18/05			
Hexachlorocyclopentadiene	EPA 625	5B14010	1.8	5.0	ND	0.98	02/14/05	02/18/05			
Hexachloroethane	EPA 625	5B14010	0.51	3.0	ND	0.98	02/14/05	02/18/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5B14010	0.19	2.0	ND	0.98	02/14/05	02/18/05			
Isophorone	EPA 625	5B14010	0.059	1.0	ND	0.98	02/14/05	02/18/05			
2-Methylnaphthalene	EPA 625	5B14010	0.13	1.0	0.16	0.98	02/14/05	02/18/05	B, J	C	B
2-Methylphenol	EPA 625	5B14010	0.28	2.0	ND	0.98	02/14/05	02/18/05			
4-Methylphenol	EPA 625	5B14010	0.20	5.0	ND	0.98	02/14/05	02/18/05			
Naphthalene	EPA 625	5B14010	0.13	1.0	ND	0.98	02/14/05	02/18/05			
2-Nitroaniline	EPA 625	5B14010	0.18	5.0	ND	0.98	02/14/05	02/18/05			
3-Nitroaniline	EPA 625	5B14010	0.35	5.0	ND	0.98	02/14/05	02/18/05			
4-Nitroaniline	EPA 625	5B14010	0.49	5.0	ND	0.98	02/14/05	02/18/05			
Nitrobenzene	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05			
2-Nitrophenol	EPA 625	5B14010	0.23	2.0	ND	0.98	02/14/05	02/18/05			
4-Nitrophenol	EPA 625	5B14010	0.73	5.0	ND	0.98	02/14/05	02/18/05			
N-Nitrosodimethylamine	EPA 625	5B14010	0.22	2.0	ND	0.98	02/14/05	02/18/05	C	U, J, F	C, F, C
N-Nitroso-di-n-propylamine	EPA 625	5B14010	0.18	2.0	ND	0.98	02/14/05	02/18/05			
N-Nitrosodiphenylamine	EPA 625	5B14010	0.077	1.0	ND	0.98	02/14/05	02/18/05			
Pentachlorophenol	EPA 625	5B14010	0.78	2.0	ND	0.98	02/14/05	02/18/05			
Phenanthrene	EPA 625	5B14010	0.071	0.50	ND	0.98	02/14/05	02/18/05			
Phenol	EPA 625	5B14010	0.14	1.0	ND	0.98	02/14/05	02/18/05			
Pyrene	EPA 625	5B14010	0.059	0.50	ND	0.98	02/14/05	02/18/05			
1,2,4-Trichlorobenzene	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05			
2,4,5-Trichlorophenol	EPA 625	5B14010	0.075	2.0	ND	0.98	02/14/05	02/18/05			
2,4,6-Trichlorophenol	EPA 625	5B14010	0.10	1.0	ND	0.98	02/14/05	02/18/05			
Surrogate: 2-Fluorophenol (35-120%)											77 %
Surrogate: Phenol-d6 (45-120%)											80 %
Surrogate: 2,4,6-Tribromophenol (50-125%)											88 %
Surrogate: Nitrobenzene-d5 (45-120%)											78 %
Surrogate: 2-Fluorobiphenyl (45-120%)											75 %
Surrogate: Terphenyl-d14 (45-135%)											71 %

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IOB1004 <Page 15 of 58> WRP 4-1-05

## LEVEL IV







# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/PURGEABLE

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Composite	Outfall 011 Composite	IOB1004-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB1004-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/26/04 was associated with this SDG. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for the CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One water method blank (5B20029-BLK1) was associated with this SDG. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5B20029-BS1) was associated with this SDG. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The samples and QC were fortified with the surrogate compound bromofluorobenzene (BFB). The surrogate recovery was within the laboratory QC limits of 65-140% for the samples. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed for this SDG; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with this SDG. Target compound GRO was not detected in the trip blank. There were no other field QC samples associated with this SDG. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in this SDG.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in this SDG. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. No qualifications were required.



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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB1004  
 Attention: Bronwyn Kelly  
 Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.										
Reporting Units: ug/l										
GRO (C4 - C12)	EPA 8015 Mod.	5B20029	50	100	ND	1	02/20/05	02/21/05	u	Qual
Surrogate: 4-BFB (FID) (65-140%)					88 %					
Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
GRO (C4 - C12)	EPA 8015 Mod.	5B20029	50	100	ND	1	02/20/05	02/20/05	u	Qual
Surrogate: 4-BFB (FID) (65-140%)					85 %					

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF47  
 Task Order 313150010  
 SDG No. IOB1004

No. of Analyses 1

Laboratory Del Mar Analytical

Date April 1, 2005

Reviewer K. Shadowlight

Reviewer's Signature K. Shadowlight

Analysis/Method TPH-Extractable

ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 1  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Composite	Outfall 011 Composite	IOB1004-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The sample in this SDG was received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COC was signed and dated by both field and laboratory personnel, and accounted for the analysis presented in this SDG. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The sample was extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 12/21/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One method blank (5B12001-BLK1) was extracted and analyzed with the sample in this SDG. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5B12001-BS1/5B12001-BS1D) was extracted and analyzed with the sample in this SDG. The recoveries of alkane range C13-C40 from spiked diesel was within the laboratory-established QC limits of 40-120% and the RPD was  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The sample and QC were fortified with the surrogate compound n-octacosane. The surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recovery was calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the sample of this SDG. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site sample in this SDG. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples associated with this SDG.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for this SDG. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factor on the sample result summary reflected the sample amount extracted. No qualifications were required.



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB1004

Sampled: 02/11/05  
Received: 02/11/05

**DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5B12001	0.082	0.50	ND	0.99	02/12/05	02/14/05	ll
Surrogate: n-Octacosane (40-125%)									
					55 %				

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
DRAFT REPORT  
DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO72  
 Task Order 313150010  
 SDG No. IOB1004


Laboratory Del Mar

No. of Analyses 2

Reviewer M. Pokorny

Date: April 1, 2005

Analysis/Method Volatiles

Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications required for calibration outliers.
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## **APPENDIX A**

### **Section 41**

Outfall 011, February 25, 2005

Del Mar Analytical Laboratory Report







MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

**CORRECTIVE ACTION REPORT**

Department: Extractions  
Method: EPA 625  
QC Batch: 5B28001

Date: 03/03/2005  
Matrix: Water

**Identification and Definition of Problem:**

The percent recovery for benzidine in the LCS was below method acceptance limits.

**Determination of the Cause of the Problem:**

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

**Corrective Action Taken:**

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

Dave Dawes

Date: 03/04/2005 09:37 AM

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01RE1 (Outfall 011 Composite - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C24109	0.31	1.0	ND	1	03/24/05	03/24/05	

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.943	03/01/05	03/02/05	
Surrogate: <i>n</i> -Octacosane (40-125%)					66 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	
Surrogate: 4-BFB (FID) (65-140%)					87 %				
<b>Sample ID: IOB2064-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	
Surrogate: 4-BFB (FID) (65-140%)					86 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					106 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					100 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					97 %				
<b>Sample ID: IOB2064-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					105 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					98 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					96 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05	
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05	
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05	
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05	
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05	
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05	
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05	
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05	
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05	
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05	
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05	
<b>Methylene chloride</b>	EPA 624	5B26009	0.48	5.0	<b>1.1</b>	1	02/26/05	02/26/05	<b>J</b>
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05	
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05	
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05	
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05	
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05	
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05	
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05	
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)									106 %
Surrogate: Toluene-d8 (80-120%)									96 %
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5C03036	0.28	1.0	ND	1	03/03/05	03/03/05	
Bromodichloromethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05	
Bromoform	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05	
Bromomethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05	
Carbon tetrachloride	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05	
Chlorobenzene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05	
Chloroethane	EPA 624	5C03036	0.33	5.0	ND	1	03/03/05	03/03/05	
Chloroform	EPA 624	5C03036	0.33	2.0	ND	1	03/03/05	03/03/05	
Chloromethane	EPA 624	5C03036	0.30	5.0	ND	1	03/03/05	03/03/05	
Dibromochloromethane	EPA 624	5C03036	0.28	2.0	ND	1	03/03/05	03/03/05	
1,2-Dichlorobenzene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05	
1,3-Dichlorobenzene	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05	
1,4-Dichlorobenzene	EPA 624	5C03036	0.37	2.0	ND	1	03/03/05	03/03/05	
1,1-Dichloroethane	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05	
1,2-Dichloroethane	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05	
1,1-Dichloroethene	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05	
trans-1,2-Dichloroethene	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05	
1,2-Dichloropropane	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05	
cis-1,3-Dichloropropene	EPA 624	5C03036	0.22	2.0	ND	1	03/03/05	03/03/05	
trans-1,3-Dichloropropene	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05	
Ethylbenzene	EPA 624	5C03036	0.25	2.0	ND	1	03/03/05	03/03/05	
Methylene chloride	EPA 624	5C03036	0.48	5.0	ND	1	03/03/05	03/03/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05	
Tetrachloroethene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05	
Toluene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05	
1,1,1-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05	
1,1,2-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05	
Trichloroethene	EPA 624	5C03036	0.26	2.0	ND	1	03/03/05	03/03/05	
Trichlorofluoromethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05	
Vinyl chloride	EPA 624	5C03036	0.26	0.50	ND	1	03/03/05	03/03/05	
Xylenes, Total	EPA 624	5C03036	0.52	4.0	ND	1	03/03/05	03/03/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	
Surrogate: Dibromofluoromethane (80-120%)									105 %
Surrogate: Toluene-d8 (80-120%)									98 %
Surrogate: 4-Bromofluorobenzene (80-120%)									96 %

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	
Surrogate: Dibromofluoromethane (80-120%)					106 %				
Surrogate: Toluene-d8 (80-120%)					96 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	
<b>Sample ID: IOB2064-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05	
Cyclohexane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05	

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05	
Acenaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05	
Aniline	EPA 625	5B28001	2.9	10	ND	0.943	02/28/05	03/02/05	
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05	
Benzidine	EPA 625	5B28001	3.2	5.0	ND	0.943	02/28/05	03/03/05	
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.943	02/28/05	03/02/05	L2
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.943	02/28/05	03/02/05	
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.943	02/28/05	03/02/05	
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.943	02/28/05	03/02/05	
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.943	02/28/05	03/02/05	
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.943	02/28/05	03/02/05	
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.943	02/28/05	03/02/05	
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05	
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.943	02/28/05	03/02/05	
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.943	02/28/05	03/02/05	
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05	
<b>Butyl benzyl phthalate</b>	EPA 625	5B28001	0.34	5.0	<b>0.43</b>	0.943	02/28/05	03/02/05	
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.943	02/28/05	03/02/05	B, J
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05	
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.943	02/28/05	03/02/05	
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.943	02/28/05	03/02/05	
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05	
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05	
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05	
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05	
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.943	02/28/05	03/02/05	
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05	
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.943	02/28/05	03/02/05	
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.943	02/28/05	03/02/05	
3,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.943	02/28/05	03/02/05	
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.943	02/28/05	03/02/05	
<b>Diethyl phthalate</b>	EPA 625	5B28001	0.12	1.0	<b>0.13</b>	0.943	02/28/05	03/02/05	
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.943	02/28/05	03/02/05	B, J
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.943	02/28/05	03/02/05	
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.943	02/28/05	03/02/05	
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.943	02/28/05	03/02/05	
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.943	02/28/05	03/02/05	
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.943	02/28/05	03/02/05	
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.943	02/28/05	03/02/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.943	02/28/05	03/02/05	

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 Project Manager

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOB1004

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-composite	Outfall 011-composite	IOB1004-01	water	624/8260B
Trip Blank	Trip Blank	IOB1004-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of 4°C ±2°C. The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 11/03/04 (acrolein, acrylonitrile, and Freon 113 only) and 02/01/05 were associated with this SDG. The average RRFs were ≥0.05 for all compounds listed on the sample result summaries. The %RSDs were ≤35% for the target compounds analyzed by EPA Method 624, and the %RSD for trichlorotrifluoroethane (Freon 113) analyzed by EPA SW-846 Method 8260B was ≤15%. Two continuing calibrations associated with the sample analyses were analyzed 02/17/05 (14:08 and 15:09). The RRFs were ≥0.05 in all of the continuing calibrations, except for the RRF for acrolein. Acrolein was rejected, "R," in both of the samples of this SDG. The %Ds for acrolein and acrylonitrile exceeded 20% in the continuing calibration; therefore, the nondetect result for acrylonitrile were qualified as estimated, "UJ," in sample Outfall 011. No qualifications were required for the Trip blank. The %Ds were ≤20% for the remaining target compounds listed on the result summaries. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated

from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blanks (5B17014-BLK1 and 5B12011-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5B17014-BS1 and 5B12011-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

An MS/MSD analyses were not performed with the samples of this SDG. Method accuracy was based on LCS performance. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank was the trip blank associated with this SDG. There were no target compounds detected above the MDLs in the trip blank. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed trichlorotrifluoroethane by EPA SW-846 8260B and the remaining volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trichloroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in sample Outfall 011. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	QUAL CODE
<b>Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)</b>										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
<b>Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI

MP  
 4-1-05

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LEVEL TV

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Bocing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB1004  
 Attention: Bronwyn Kelly  
 Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Per Qual	Anal Code
<b>Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05		R	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05		U	C
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05		U	C
Surrogate: Dibromofluoromethane (80-120%)											
Surrogate: Toluene-d8 (80-120%)											
Surrogate: 4-Bromofluorobenzene (80-120%)											
					95 %						
					104 %						
					99 %						
<b>Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05		R	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05		U	C
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05		U	C
Surrogate: Dibromofluoromethane (80-120%)											
Surrogate: Toluene-d8 (80-120%)											
Surrogate: 4-Bromofluorobenzene (80-120%)											
					104 %						
					106 %						
					103 %						

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

*Raw Data*  
*Qual Code*

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	

Surrogate: Dibromofluoromethane (80-120%)

Surrogate: Toluene-d8 (80-120%)

Surrogate: 4-Bromofluorobenzene (80-120%)

108 %

101 %

98 %

*Handwritten:* Rev, Cool, Cool

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	U
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				
<b>Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	U
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

*Rev Qual*  
*Qual Code*

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LEVEL IV

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711WC100  
Task Order 313150010  
SDG No. IOB1004

No. of Analyses 1

Laboratory Del Mar Analytical  
Reviewer L. Jarusewic  
Analysis/Method General Minerals

Date: 03/30/05  
Reviewer's Signature  
*L. Jarusewic*

**ACTION ITEMS<sup>a</sup>**

1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications were applied for detects below the reporting limit.
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1004  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 1, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-composite	Outfall 011-composite	IOB1004-01	water	624/8260B
Trip Blank	Trip Blank	IOB1004-02	water	624



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at the laboratory within the temperature limits of 4°C ±2°C. The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 11/03/04 (acrolein, acrylonitrile, and Freon 113 only) and 02/01/05 were associated with this SDG. The average RRFs were ≥0.05 for all compounds listed on the sample result summaries. The %RSDs were ≤35% for the target compounds analyzed by EPA Method 624, and the %RSD for trichlorotrifluoroethane (Freon 113) analyzed by EPA SW-846 Method 8260B was ≤15%. Two continuing calibrations associated with the sample analyses were analyzed 02/17/05 (14:08 and 15:09). The RRFs were ≥0.05 in all of the continuing calibrations, except for the RRF for acrolein. Acrolein was rejected, "R," in both of the samples of this SDG. The %Ds for acrolein and acrylonitrile exceeded 20% in the continuing calibration; therefore, the nondetect result for acrylonitrile were qualified as estimated, "UJ," in sample Outfall 011. No qualifications were required for the Trip blank. The %Ds were ≤20% for the remaining target compounds listed on the result summaries. A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated

from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

Two water method blanks (5B17014-BLK1 and 5B12011-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5B17014-BS1 and 5B12011-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

An MS/MSD analyses were not performed with the samples of this SDG. Method accuracy was based on LCS performance. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank was the trip blank associated with this SDG. There were no target compounds detected above the MDLs in the trip blank. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with this SDG. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with this SDG. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards, of +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed trichlorotrifluoroethane by EPA SW-846 8260B and the remaining volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trichloroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in sample Outfall 011. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for this SDG. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	QUAL CODE
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI
Cyclohexane	EPA 624 (MOD.)	5B17014	N/A	2.5	ND	1	02/17/05	02/17/05	US	KLI

MP  
 4-1-05

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MWH-Pasadena/Bocing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB1004  
 Attention: Bronwyn Kelly  
 Sampled: 02/11/05  
 Received: 02/11/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Per Qual	Anal Code
<b>Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05		R	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05		U	C
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05		U	C
Surrogate: Dibromofluoromethane (80-120%)					95 %						
Surrogate: Toluene-d8 (80-120%)					104 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					99 %						
<b>Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)</b>											
Reporting Units: ug/l											
Acrolein	EPA 624	5B12011	4.6	50	ND	1	02/12/05	02/12/05		R	R
Acrylonitrile	EPA 624	5B12011	5.1	50	ND	1	02/12/05	02/12/05		U	C
2-Chloroethyl vinyl ether	EPA 624	5B12011	1.3	5.0	ND	1	02/12/05	02/12/05		U	C
Surrogate: Dibromofluoromethane (80-120%)					104 %						
Surrogate: Toluene-d8 (80-120%)					106 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					103 %						

AMEC Validation

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				

*Raw Data*  
*Qual Code*

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5B17014	0.28	1.0	ND	1	02/17/05	02/17/05	
Bromodichloromethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Bromoform	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
Bromomethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Carbon tetrachloride	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
Chlorobenzene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
Chloroethane	EPA 624	5B17014	0.33	5.0	ND	1	02/17/05	02/17/05	
Chloroform	EPA 624	5B17014	0.33	2.0	ND	1	02/17/05	02/17/05	
Chloromethane	EPA 624	5B17014	0.30	5.0	ND	1	02/17/05	02/17/05	
Dibromochloromethane	EPA 624	5B17014	0.28	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichlorobenzene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
1,3-Dichlorobenzene	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
1,4-Dichlorobenzene	EPA 624	5B17014	0.37	2.0	ND	1	02/17/05	02/17/05	
1,1-Dichloroethane	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloroethane	EPA 624	5B17014	0.28	0.50	ND	1	02/17/05	02/17/05	
1,1-Dichloroethene	EPA 624	5B17014	0.32	5.0	ND	1	02/17/05	02/17/05	
trans-1,2-Dichloroethene	EPA 624	5B17014	0.27	2.0	ND	1	02/17/05	02/17/05	
1,2-Dichloropropane	EPA 624	5B17014	0.35	2.0	ND	1	02/17/05	02/17/05	
cis-1,3-Dichloropropene	EPA 624	5B17014	0.22	2.0	ND	1	02/17/05	02/17/05	
trans-1,3-Dichloropropene	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Ethylbenzene	EPA 624	5B17014	0.25	2.0	ND	1	02/17/05	02/17/05	
Methylene chloride	EPA 624	5B17014	0.48	5.0	ND	1	02/17/05	02/17/05	
1,1,2,2-Tetrachloroethane	EPA 624	5B17014	0.24	2.0	ND	1	02/17/05	02/17/05	
Tetrachloroethene	EPA 624	5B17014	0.32	2.0	ND	1	02/17/05	02/17/05	
Toluene	EPA 624	5B17014	0.36	2.0	ND	1	02/17/05	02/17/05	
1,1,1-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
1,1,2-Trichloroethane	EPA 624	5B17014	0.30	2.0	ND	1	02/17/05	02/17/05	
Trichloroethene	EPA 624	5B17014	0.26	2.0	ND	1	02/17/05	02/17/05	
Trichlorofluoromethane	EPA 624	5B17014	0.34	5.0	ND	1	02/17/05	02/17/05	
Vinyl chloride	EPA 624	5B17014	0.26	0.50	ND	1	02/17/05	02/17/05	
Xylenes, Total	EPA 624	5B17014	0.52	4.0	ND	1	02/17/05	02/17/05	

Surrogate: Dibromofluoromethane (80-120%)

Surrogate: Toluene-d8 (80-120%)

Surrogate: 4-Bromofluorobenzene (80-120%)

108 %

101 %

98 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOB1004

Sampled: 02/11/05  
 Received: 02/11/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB1004-01 (DRAFT: Outfall 011-composite - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	U
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				
<b>Sample ID: IOB1004-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5B17014	1.2	5.0	ND	1	02/17/05	02/17/05	U
Surrogate: Dibromofluoromethane (80-120%)					108 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					98 %				

*Rev Qual*  
*Qual Code*

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LEVEL IV







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300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.943	02/28/05	03/02/05	
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05	
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05	
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.943	02/28/05	03/02/05	
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.943	02/28/05	03/02/05	
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.943	02/28/05	03/02/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.943	02/28/05	03/02/05	
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.943	02/28/05	03/02/05	
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05	
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.943	02/28/05	03/02/05	
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.943	02/28/05	03/02/05	
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05	
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.943	02/28/05	03/02/05	
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.943	02/28/05	03/02/05	
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.943	02/28/05	03/02/05	
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05	
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.943	02/28/05	03/02/05	
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.943	02/28/05	03/02/05	
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.943	02/28/05	03/02/05	
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.943	02/28/05	03/02/05	
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.943	02/28/05	03/02/05	
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.943	02/28/05	03/02/05	
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.943	02/28/05	03/02/05	
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.943	02/28/05	03/02/05	
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05	
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05	
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.943	02/28/05	03/02/05	
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05	
Surrogate: 2-Fluorophenol (30-120%)									77 %
Surrogate: Phenol-d6 (35-120%)									81 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									101 %
Surrogate: Nitrobenzene-d5 (45-120%)									80 %
Surrogate: 2-Fluorobiphenyl (45-120%)									80 %
Surrogate: Terphenyl-d14 (45-120%)									88 %

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05	
alpha-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05	
beta-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05	
delta-BHC	EPA 608	5C02052	0.020	0.20	ND	0.952	03/02/05	03/03/05	
gamma-BHC (Lindane)	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05	
Chlordane	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05	
4,4'-DDD	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05	
4,4'-DDE	EPA 608	5C02052	0.025	0.10	ND	0.952	03/02/05	03/03/05	
<b>4,4'-DDT</b>	EPA 608	5C02052	0.030	0.10	<b>0.036</b>	0.952	03/02/05	03/03/05	B, J
Dieldrin	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05	
Endosulfan I	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05	
Endosulfan II	EPA 608	5C02052	0.040	0.10	ND	0.952	03/02/05	03/03/05	
Endosulfan sulfate	EPA 608	5C02052	0.015	0.20	ND	0.952	03/02/05	03/03/05	
Endrin	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05	
Endrin aldehyde	EPA 608	5C02052	0.045	0.10	ND	0.952	03/02/05	03/03/05	
Endrin ketone	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05	
Heptachlor	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05	
Heptachlor epoxide	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05	
Methoxychlor	EPA 608	5C02052	0.035	0.10	ND	0.952	03/02/05	03/03/05	
Toxaphene	EPA 608	5C02052	1.5	5.0	ND	0.952	03/02/05	03/03/05	
Surrogate: Tetrachloro-m-xylene (35-120%)					54 %				
Surrogate: Decachlorobiphenyl (45-120%)					64 %				

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.952	03/02/05	03/03/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					59 %				

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 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
Barium	EPA 200.8	5C03085	0.00014	0.0010	<b>0.020</b>	1	03/03/05	03/03/05	
Boron	EPA 200.7	5C02083	0.0074	0.050	<b>0.065</b>	1	03/02/05	03/02/05	
Iron	EPA 200.8	5C03085	0.0032	0.010	<b>0.46</b>	1	03/03/05	03/03/05	

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Project ID: I3267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C03085	0.18	2.0	0.37	1	03/03/05	03/03/05	B, J
Arsenic	EPA 200.8	5C03085	0.49	1.0	2.1	1	03/03/05	03/07/05	
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05	
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.091	1	03/03/05	03/03/05	J
Chromium	EPA 200.8	5C03085	0.26	2.0	1.8	1	03/03/05	03/03/05	J
Cobalt	EPA 200.8	5C03085	0.10	1.0	0.19	1	03/03/05	03/03/05	J
Copper	EPA 200.8	5C03085	0.49	2.0	3.3	1	03/03/05	03/03/05	
Lead	EPA 200.8	5C03085	0.13	1.0	0.30	1	03/03/05	03/03/05	J
Manganese	EPA 200.8	5C03085	0.44	1.0	12	1	03/03/05	03/03/05	
Mercury	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05	
Nickel	EPA 200.8	5C03085	0.15	2.0	0.87	1	03/03/05	03/03/05	J
Selenium	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05	
Silver	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05	
Thallium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05	
Vanadium	EPA 200.8	5C03085	0.86	2.0	ND	1	03/03/05	03/03/05	
Zinc	EPA 200.8	5C03085	3.1	20	13	1	03/03/05	03/03/05	J

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Project ID: 13267 (Study 1)  
 Outfall 011  
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Sampled: 02/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03/07/05	
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	<b>0.76</b>	1	02/25/05	03/02/05	J
Chloride	EPA 300.0	5B25042	0.26	0.50	<b>5.1</b>	1	02/25/05	02/25/05	
Fluoride	EPA 300.0	5B25042	0.10	0.50	<b>0.15</b>	1	02/25/05	02/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	<b>0.38</b>	1	02/25/05	02/25/05	
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03/02/05	
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	
Sulfate	EPA 300.0	5B25042	0.18	0.50	<b>11</b>	1	02/25/05	02/25/05	
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	<b>0.051</b>	1	02/25/05	02/25/05	J
Total Dissolved Solids	SM2540C	5B28078	10	10	<b>110</b>	1	02/28/05	02/28/05	
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	<b>9.0</b>	1	03/01/05	03/01/05	
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03/03/05	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ml/hr</b>									
Total Settleable Solids	EPA 160.5	5B25097	0.10	0.10	ND	1	02/25/05	02/25/05	

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 Received: 02/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: NTU</b>									
Turbidity	EPA 180.1	5B26046	0.040	1.0	8.0	1	02/26/05	02/26/05	

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Sampled: 02/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B28080	1.0	1.0	150	1	02/28/05	02/28/05	

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Sampled: 02/25/05  
Received: 02/25/05

**1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
1,4-Dioxane	EPA 8260B	P5C0309	0.49	1.0	ND	1	03/03/05	03/03/05	
<i>Surrogate: Dibromofluoromethane (80-125%)</i>					<i>113 %</i>				

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Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

**SHORT HOLD TIME DETAIL REPORT**

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 Composite (IOB2064-01) - Water</b>					
EPA 160.5	2	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 22:15	02/25/2005 23:15
EPA 180.1	2	02/25/2005 13:40	02/25/2005 19:15	02/26/2005 12:00	02/26/2005 13:00
EPA 218.6	1	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 22:20	02/26/2005 00:01
EPA 300.0	2	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 20:15	02/25/2005 22:39
EPA 330.5	1	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 22:15	02/25/2005 22:30
EPA 405.1	2	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 21:00	03/02/2005 14:30
EPA 624	3	02/25/2005 13:40	02/25/2005 19:15	02/26/2005 00:00	02/26/2005 17:27
SM5540-C	2	02/25/2005 13:40	02/25/2005 19:15	02/25/2005 19:49	02/25/2005 23:14

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 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C24109 Extracted: 03/24/05</b>											
<b>Blank Analyzed: 03/24/2005 (5C24109-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 03/24/2005 (5C24109-BS1)</b>											
Total Recoverable Hydrocarbons	4.21	1.0	0.31	mg/l	5.00		84	65-120			M-NRI
<b>LCS Dup Analyzed: 03/24/2005 (5C24109-BSD1)</b>											
Total Recoverable Hydrocarbons	4.14	1.0	0.31	mg/l	5.00		83	65-120	2	20	

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Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

METHOD BLANK/QC DATA

EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C01045 Extracted: 03/01/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C01045-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.131			mg/l	0.200		66	40-125			
<b>LCS Analyzed: 03/02/2005 (5C01045-BS1)</b>											
EFH (C13 - C40)	0.586	0.50	0.082	mg/l	0.775		76	40-120			M-NRI
Surrogate: n-Octacosane	0.164			mg/l	0.200		82	40-125			
<b>LCS Dup Analyzed: 03/02/2005 (5C01045-BSD1)</b>											
EFH (C13 - C40)	0.503	0.50	0.082	mg/l	0.775		65	40-120	15	25	
Surrogate: n-Octacosane	0.146			mg/l	0.200		73	40-125			

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Sampled: 02/25/05  
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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03008 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03008-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00999			mg/l	0.0100		100	65-140			
<b>LCS Analyzed: 03/03/2005 (5C03008-BS1)</b>											
GRO (C4 - C12)	0.683	0.10	0.050	mg/l	0.800		85	70-140			
Surrogate: 4-BFB (FID)	0.0261			mg/l	0.0300		87	65-140			
<b>Matrix Spike Analyzed: 03/03/2005 (5C03008-MS1)</b>											
						<b>Source: IOB1956-11</b>					
GRO (C4 - C12)	0.201	0.10	0.050	mg/l	0.220	ND	91	60-140			
Surrogate: 4-BFB (FID)	0.00988			mg/l	0.0100		99	65-140			
<b>Matrix Spike Dup Analyzed: 03/03/2005 (5C03008-MSD1)</b>											
						<b>Source: IOB1956-11</b>					
GRO (C4 - C12)	0.197	0.10	0.050	mg/l	0.220	ND	90	60-140	2	20	
Surrogate: 4-BFB (FID)	0.00941			mg/l	0.0100		94	65-140			

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## METHOD BLANK/QC DATA

### FREON 113 (EPA 8260B)

Analyte	Result	Reporting			Spike Level	Source		%REC		RPD Limit	Data Qualifiers
		Limit	MDL	Units		Result	%REC	Limit	RPD		
<b>Batch: 5C03036 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03036-BLK1)</b>											
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l							
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120		
Surrogate: Toluene-d8	24.8			ug/l	25.0		99		80-120		
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96		80-120		

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>										
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	24.4			ug/l	25.0		98		80-120	
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98		80-120	

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>LCS Analyzed: 02/26/2005 (5B26009-BS1)</b>											
Benzene	28.2	1.0	0.28	ug/l	25.0		113	70-120			
Bromodichloromethane	27.2	2.0	0.30	ug/l	25.0		109	70-140			
Bromoform	22.4	5.0	0.32	ug/l	25.0		90	55-135			
Bromomethane	28.1	5.0	0.34	ug/l	25.0		112	60-140			
Carbon tetrachloride	26.7	0.50	0.28	ug/l	25.0		107	70-140			
Chlorobenzene	27.5	2.0	0.36	ug/l	25.0		110	80-125			
Chloroethane	27.7	5.0	0.33	ug/l	25.0		111	60-145			
Chloroform	30.0	2.0	0.33	ug/l	25.0		120	75-130			
Chloromethane	26.2	5.0	0.30	ug/l	25.0		105	40-145			
Dibromochloromethane	27.4	2.0	0.28	ug/l	25.0		110	65-145			
1,2-Dichlorobenzene	27.8	2.0	0.32	ug/l	25.0		111	80-120			
1,3-Dichlorobenzene	27.6	2.0	0.35	ug/l	25.0		110	80-120			
1,4-Dichlorobenzene	27.0	2.0	0.37	ug/l	25.0		108	80-120			
1,1-Dichloroethane	28.9	2.0	0.27	ug/l	25.0		116	70-135			
1,2-Dichloroethane	29.0	0.50	0.28	ug/l	25.0		116	60-150			
1,1-Dichloroethene	27.7	5.0	0.32	ug/l	25.0		111	75-135			
trans-1,2-Dichloroethene	29.0	2.0	0.27	ug/l	25.0		116	70-130			
1,2-Dichloropropane	28.1	2.0	0.35	ug/l	25.0		112	70-120			
cis-1,3-Dichloropropene	29.1	2.0	0.22	ug/l	25.0		116	75-130			
trans-1,3-Dichloropropene	29.1	2.0	0.24	ug/l	25.0		116	75-135			
Ethylbenzene	29.5	2.0	0.25	ug/l	25.0		118	80-120			
Methylene chloride	29.3	5.0	0.48	ug/l	25.0		117	60-135			
1,1,2,2-Tetrachloroethane	28.1	2.0	0.24	ug/l	25.0		112	60-135			
Tetrachloroethene	25.6	2.0	0.32	ug/l	25.0		102	75-125			
Toluene	27.8	2.0	0.36	ug/l	25.0		111	75-120			
1,1,1-Trichloroethane	28.5	2.0	0.30	ug/l	25.0		114	75-140			
1,1,2-Trichloroethane	28.2	2.0	0.30	ug/l	25.0		113	70-125			
Trichloroethene	26.2	2.0	0.26	ug/l	25.0		105	80-120			
Trichlorofluoromethane	29.0	5.0	0.34	ug/l	25.0		116	65-145			
Vinyl chloride	26.2	0.50	0.26	ug/l	25.0		105	50-130			
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102	80-120			

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 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Matrix Spike Analyzed: 02/26/2005 (5B26009-MS1)</b>						<b>Source: IOB2045-02</b>					
Benzene	26.6	1.0	0.28	ug/l	25.0	0.71	104	70-120			
Bromodichloromethane	25.4	2.0	0.30	ug/l	25.0	ND	102	70-140			
Bromoform	20.9	5.0	0.32	ug/l	25.0	ND	84	55-140			
Bromomethane	24.9	5.0	0.34	ug/l	25.0	ND	100	50-145			
Carbon tetrachloride	24.2	0.50	0.28	ug/l	25.0	ND	97	70-145			
Chlorobenzene	25.1	2.0	0.36	ug/l	25.0	ND	100	80-125			
Chloroethane	25.4	5.0	0.33	ug/l	25.0	ND	102	50-145			
Chloroform	79.4	2.0	0.33	ug/l	25.0	50	118	70-135			
Chloromethane	23.8	5.0	0.30	ug/l	25.0	ND	95	35-145			
Dibromochloromethane	25.2	2.0	0.28	ug/l	25.0	ND	101	65-145			
1,2-Dichlorobenzene	25.8	2.0	0.32	ug/l	25.0	ND	103	75-130			
1,3-Dichlorobenzene	25.2	2.0	0.35	ug/l	25.0	ND	101	75-130			
1,4-Dichlorobenzene	24.8	2.0	0.37	ug/l	25.0	ND	99	80-120			
1,1-Dichloroethane	26.8	2.0	0.27	ug/l	25.0	ND	107	65-135			
1,2-Dichloroethane	27.4	0.50	0.28	ug/l	25.0	0.30	108	60-150			
1,1-Dichloroethene	25.6	5.0	0.32	ug/l	25.0	ND	102	65-140			
trans-1,2-Dichloroethene	26.4	2.0	0.27	ug/l	25.0	ND	106	65-135			
1,2-Dichloropropane	26.0	2.0	0.35	ug/l	25.0	ND	104	65-130			
cis-1,3-Dichloropropene	26.7	2.0	0.22	ug/l	25.0	ND	107	70-140			
trans-1,3-Dichloropropene	27.2	2.0	0.24	ug/l	25.0	ND	109	70-140			
Ethylbenzene	27.0	2.0	0.25	ug/l	25.0	0.60	106	70-130			
Methylene chloride	38.7	5.0	0.48	ug/l	25.0	8.4	121	60-135			
1,1,2,2-Tetrachloroethane	27.2	2.0	0.24	ug/l	25.0	ND	109	60-145			
Tetrachloroethene	22.6	2.0	0.32	ug/l	25.0	ND	90	70-130			
Toluene	25.9	2.0	0.36	ug/l	25.0	ND	104	70-120			
1,1,1-Trichloroethane	26.6	2.0	0.30	ug/l	25.0	ND	106	75-140			
1,1,2-Trichloroethane	27.1	2.0	0.30	ug/l	25.0	ND	108	60-135			
Trichloroethene	25.2	2.0	0.26	ug/l	25.0	1.6	94	70-125			
Trichlorofluoromethane	64.8	5.0	0.34	ug/l	25.0	37	111	55-145			
Vinyl chloride	23.7	0.50	0.26	ug/l	25.0	ND	95	40-135			
Surrogate: Dibromofluoromethane	26.5			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	24.3			ug/l	25.0		97	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Matrix Spike Dup Analyzed: 02/26/2005 (5B26009-MSD1)</b>						<b>Source: IOB2045-02</b>					
Benzene	25.5	1.0	0.28	ug/l	25.0	0.71	99	70-120	4	20	
Bromodichloromethane	24.3	2.0	0.30	ug/l	25.0	ND	97	70-140	4	20	
Bromoform	20.8	5.0	0.32	ug/l	25.0	ND	83	55-140	1	25	
Bromomethane	23.6	5.0	0.34	ug/l	25.0	ND	94	50-145	5	25	
Carbon tetrachloride	23.5	0.50	0.28	ug/l	25.0	ND	94	70-145	3	25	
Chlorobenzene	24.5	2.0	0.36	ug/l	25.0	ND	98	80-125	2	20	
Chloroethane	24.0	5.0	0.33	ug/l	25.0	ND	96	50-145	6	25	
Chloroform	72.4	2.0	0.33	ug/l	25.0	50	90	70-135	9	20	
Chloromethane	22.1	5.0	0.30	ug/l	25.0	ND	88	35-145	7	25	
Dibromochloromethane	24.6	2.0	0.28	ug/l	25.0	ND	98	65-145	2	25	
1,2-Dichlorobenzene	25.0	2.0	0.32	ug/l	25.0	ND	100	75-130	3	20	
1,3-Dichlorobenzene	24.3	2.0	0.35	ug/l	25.0	ND	97	75-130	4	20	
1,4-Dichlorobenzene	24.0	2.0	0.37	ug/l	25.0	ND	96	80-120	3	20	
1,1-Dichloroethane	25.5	2.0	0.27	ug/l	25.0	ND	102	65-135	5	20	
1,2-Dichloroethane	26.2	0.50	0.28	ug/l	25.0	0.30	104	60-150	4	20	
1,1-Dichloroethene	23.9	5.0	0.32	ug/l	25.0	ND	96	65-140	7	20	
trans-1,2-Dichloroethene	25.4	2.0	0.27	ug/l	25.0	ND	102	65-135	4	20	
1,2-Dichloropropane	25.2	2.0	0.35	ug/l	25.0	ND	101	65-130	3	20	
cis-1,3-Dichloropropene	26.0	2.0	0.22	ug/l	25.0	ND	104	70-140	3	20	
trans-1,3-Dichloropropene	26.1	2.0	0.24	ug/l	25.0	ND	104	70-140	4	25	
Ethylbenzene	26.0	2.0	0.25	ug/l	25.0	0.60	102	70-130	4	20	
Methylene chloride	34.7	5.0	0.48	ug/l	25.0	8.4	105	60-135	11	20	
1,1,2,2-Tetrachloroethane	26.0	2.0	0.24	ug/l	25.0	ND	104	60-145	5	30	
Tetrachloroethene	22.2	2.0	0.32	ug/l	25.0	ND	89	70-130	2	20	
Toluene	24.8	2.0	0.36	ug/l	25.0	ND	99	70-120	4	20	
1,1,1-Trichloroethane	25.2	2.0	0.30	ug/l	25.0	ND	101	75-140	5	20	
1,1,2-Trichloroethane	25.5	2.0	0.30	ug/l	25.0	ND	102	60-135	6	25	
Trichloroethene	24.7	2.0	0.26	ug/l	25.0	1.6	92	70-125	2	20	
Trichlorofluoromethane	59.0	5.0	0.34	ug/l	25.0	37	88	55-145	9	25	
Vinyl chloride	22.3	0.50	0.26	ug/l	25.0	ND	89	40-135	6	30	
Surrogate: Dibromofluoromethane	25.6			ug/l	25.0		102	80-120			
Surrogate: Toluene-d8	24.1			ug/l	25.0		96	80-120			
Surrogate: 4-Bromofluorobenzene	24.9			ug/l	25.0		100	80-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03036 Extracted: 03/03/05</b>										
<b>Blank Analyzed: 03/03/2005 (5C03036-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	24.8			ug/l	25.0		99		80-120	
Surrogate: 4-Bromofluorobenzene	24.1			ug/l	25.0		96		80-120	

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 Report Number: IOB2064

Sampled: 02/25/05  
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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03036 Extracted: 03/03/05</b>											
<b>LCS Analyzed: 03/03/2005 (5C03036-BS1)</b>											
Benzene	26.4	1.0	0.28	ug/l	25.0		106	70-120			
Bromodichloromethane	27.3	2.0	0.30	ug/l	25.0		109	70-140			
Bromoform	27.8	5.0	0.32	ug/l	25.0		111	55-135			
Bromomethane	31.9	5.0	0.34	ug/l	25.0		128	60-140			
Carbon tetrachloride	27.8	0.50	0.28	ug/l	25.0		111	70-140			
Chlorobenzene	24.7	2.0	0.36	ug/l	25.0		99	80-125			
Chloroethane	29.6	5.0	0.33	ug/l	25.0		118	60-145			
Chloroform	27.9	2.0	0.33	ug/l	25.0		112	75-130			
Chloromethane	27.0	5.0	0.30	ug/l	25.0		108	40-145			
Dibromochloromethane	27.4	2.0	0.28	ug/l	25.0		110	65-145			
1,2-Dichlorobenzene	25.8	2.0	0.32	ug/l	25.0		103	80-120			
1,3-Dichlorobenzene	25.2	2.0	0.35	ug/l	25.0		101	80-120			
1,4-Dichlorobenzene	25.0	2.0	0.37	ug/l	25.0		100	80-120			
1,1-Dichloroethane	27.4	2.0	0.27	ug/l	25.0		110	70-135			
1,2-Dichloroethane	28.7	0.50	0.28	ug/l	25.0		115	60-150			
1,1-Dichloroethene	27.2	5.0	0.32	ug/l	25.0		109	75-135			
trans-1,2-Dichloroethene	27.4	2.0	0.27	ug/l	25.0		110	70-130			
1,2-Dichloropropane	26.9	2.0	0.35	ug/l	25.0		108	70-120			
cis-1,3-Dichloropropene	28.2	2.0	0.22	ug/l	25.0		113	75-130			
trans-1,3-Dichloropropene	28.9	2.0	0.24	ug/l	25.0		116	75-135			
Ethylbenzene	27.5	2.0	0.25	ug/l	25.0		110	80-120			
Methylene chloride	28.7	5.0	0.48	ug/l	25.0		115	60-135			
1,1,2,2-Tetrachloroethane	27.1	2.0	0.24	ug/l	25.0		108	60-135			
Tetrachloroethene	24.3	2.0	0.32	ug/l	25.0		97	75-125			
Toluene	26.3	2.0	0.36	ug/l	25.0		105	75-120			
1,1,1-Trichloroethane	28.8	2.0	0.30	ug/l	25.0		115	75-140			
1,1,2-Trichloroethane	28.0	2.0	0.30	ug/l	25.0		112	70-125			
Trichloroethene	25.2	2.0	0.26	ug/l	25.0		101	80-120			
Trichlorofluoromethane	29.1	5.0	0.34	ug/l	25.0		116	65-145			
Vinyl chloride	28.8	0.50	0.26	ug/l	25.0		115	50-130			
Surrogate: Dibromofluoromethane	26.8			ug/l	25.0		107	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	26.6			ug/l	25.0		106	80-120			

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300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)
Outfall 011
Report Number: IOB2064

Sampled: 02/25/05
Received: 02/25/05

METHOD BLANK/QC DATA

PURGEABLES BY GC/MS (EPA 624)

Table with columns: Analyte, Result, Reporting Limit, MDL, Units, Spike Level, Source Result, %REC, %REC Limits, RPD, RPD Limit, Data Qualifiers. Includes sub-headers for Batch: 5C03036 and Matrix Spike Analyzed: 03/03/2005 (5C03036-MS1).

Del Mar Analytical, Irvine
Michele Harper
Project Manager





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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
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 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03036 Extracted: 03/03/05</b>											
<b>Matrix Spike Dup Analyzed: 03/03/2005 (5C03036-MSD1)</b>						<b>Source: IOB2064-01</b>					
Benzene	26.4	1.0	0.28	ug/l	25.0	ND	106	70-120	4	20	
Bromodichloromethane	27.1	2.0	0.30	ug/l	25.0	ND	108	70-140	4	20	
Bromoform	27.8	5.0	0.32	ug/l	25.0	ND	111	55-140	8	25	
Bromomethane	32.5	5.0	0.34	ug/l	25.0	ND	130	50-145	7	25	
Carbon tetrachloride	27.2	0.50	0.28	ug/l	25.0	ND	109	70-145	1	25	
Chlorobenzene	25.0	2.0	0.36	ug/l	25.0	ND	100	80-125	1	20	
Chloroethane	29.9	5.0	0.33	ug/l	25.0	ND	120	50-145	6	25	
Chloroform	28.1	2.0	0.33	ug/l	25.0	ND	112	70-135	3	20	
Chloromethane	27.8	5.0	0.30	ug/l	25.0	ND	111	35-145	11	25	
Dibromochloromethane	27.7	2.0	0.28	ug/l	25.0	ND	111	65-145	6	25	
1,2-Dichlorobenzene	26.2	2.0	0.32	ug/l	25.0	ND	105	75-130	4	20	
1,3-Dichlorobenzene	26.1	2.0	0.35	ug/l	25.0	ND	104	75-130	4	20	
1,4-Dichlorobenzene	25.5	2.0	0.37	ug/l	25.0	ND	102	80-120	1	20	
1,1-Dichloroethane	27.2	2.0	0.27	ug/l	25.0	ND	109	65-135	1	20	
1,2-Dichloroethane	28.2	0.50	0.28	ug/l	25.0	ND	113	60-150	6	20	
1,1-Dichloroethene	26.8	5.0	0.32	ug/l	25.0	ND	107	65-140	2	20	
trans-1,2-Dichloroethene	27.6	2.0	0.27	ug/l	25.0	ND	110	65-135	4	20	
1,2-Dichloropropane	27.1	2.0	0.35	ug/l	25.0	ND	108	65-130	5	20	
cis-1,3-Dichloropropene	27.7	2.0	0.22	ug/l	25.0	ND	111	70-140	6	20	
trans-1,3-Dichloropropene	29.1	2.0	0.24	ug/l	25.0	ND	116	70-140	9	25	
Ethylbenzene	27.8	2.0	0.25	ug/l	25.0	ND	111	70-130	0	20	
Methylene chloride	28.2	5.0	0.48	ug/l	25.0	1,1	108	60-135	3	20	
1,1,1,2-Tetrachloroethane	28.0	2.0	0.24	ug/l	25.0	ND	112	60-145	9	30	
Tetrachloroethene	24.4	2.0	0.32	ug/l	25.0	ND	98	70-130	2	20	
Toluene	26.0	2.0	0.36	ug/l	25.0	ND	104	70-120	3	20	
1,1,1-Trichloroethane	28.3	2.0	0.30	ug/l	25.0	ND	113	75-140	0	20	
1,1,2-Trichloroethane	27.5	2.0	0.30	ug/l	25.0	ND	110	60-135	5	25	
Trichloroethene	24.5	2.0	0.26	ug/l	25.0	ND	98	70-125	4	20	
Trichlorofluoromethane	28.2	5.0	0.34	ug/l	25.0	ND	113	55-145	1	25	
Vinyl chloride	29.4	0.50	0.26	ug/l	25.0	ND	118	40-135	10	30	
Surrogate: Dibromofluoromethane	27.1			ug/l	25.0		108	80-120			
Surrogate: Toluene-d8	24.4			ug/l	25.0		98	80-120			
Surrogate: 4-Bromofluorobenzene	26.2			ug/l	25.0		105	80-120			

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 Project Manager

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>											
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	24.4			ug/l	25.0		98	80-120			
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98	80-120			
<b>LCS Analyzed: 02/26/2005 (5B26009-BS1)</b>											
2-Chloroethyl vinyl ether	27.6	5.0	1.3	ug/l	25.0		110	20-175			
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	24.9			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	25.5			ug/l	25.0		102	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B26009 Extracted: 02/26/05</b>										
<b>Blank Analyzed: 02/26/2005 (5B26009-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						
<b>Batch: 5C03036 Extracted: 03/03/05</b>										
<b>Blank Analyzed: 03/03/2005 (5C03036-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>										
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>										
Acenaphthene	ND	0.50	0.10	ug/l						
Acenaphthylene	ND	0.50	0.10	ug/l						
Aniline	ND	10	2.9	ug/l						
Anthracene	ND	0.50	0.083	ug/l						
Benzidine	ND	5.0	3.2	ug/l						
Benzoic acid	ND	20	3.7	ug/l						
Benzo(a)anthracene	ND	5.0	0.038	ug/l						
Benzo(a)pyrene	ND	2.0	0.14	ug/l						
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l						
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l						
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l						
Benzyl alcohol	ND	5.0	0.21	ug/l						
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l						
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l						
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l						
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l						
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l						
Butyl benzyl phthalate	1.00	5.0	0.34	ug/l						
4-Chloroaniline	ND	2.0	0.20	ug/l						J
2-Chloronaphthalene	ND	0.50	0.059	ug/l						
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l						
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l						
2-Chlorophenol	ND	1.0	0.12	ug/l						
Chrysene	ND	0.50	0.072	ug/l						
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l						
Dibenzofuran	ND	0.50	0.075	ug/l						
Di-n-butyl phthalate	0.380	2.0	0.26	ug/l						J
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l						
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l						
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l						
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l						
2,4-Dichlorophenol	ND	2.0	0.21	ug/l						
Diethyl phthalate	0.140	1.0	0.12	ug/l						J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l						
Dimethyl phthalate	ND	0.50	0.081	ug/l						

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	ND	0.50	0.075	ug/l							
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	ND	1.0	0.13	ug/l							
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	ND	1.0	0.13	ug/l							
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	ND	0.50	0.071	ug/l							
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	14.4			ug/l	20.0		72	35-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>										
<b>Blank Analyzed: 03/02/2005 (5B28001-BLK1)</b>										
Surrogate: Phenol-d6	14.6			ug/l	20.0		73 45-120			
Surrogate: 2,4,6-Tribromophenol	19.1			ug/l	20.0		96 50-125			
Surrogate: Nitrobenzene-d5	7.80			ug/l	10.0		78 45-120			
Surrogate: 2-Fluorobiphenyl	7.90			ug/l	10.0		79 45-120			
Surrogate: Terphenyl-d14	8.86			ug/l	10.0		89 45-135			
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>										
Acenaphthene	8.22	0.50	0.10	ug/l	10.0		82 55-120			M-NR1
Acenaphthylene	8.76	0.50	0.10	ug/l	10.0		88 55-120			
Aniline	7.52	10	2.9	ug/l	10.0		75 30-120			J
Anthracene	8.80	0.50	0.083	ug/l	10.0		88 60-120			
Benzidine	ND	5.0	3.2	ug/l	10.0		20-180			L2
Benzoic acid	9.08	20	3.7	ug/l	10.0		91 30-125			J
Benzo(a)anthracene	8.64	5.0	0.038	ug/l	10.0		86 65-120			
Benzo(a)pyrene	9.26	2.0	0.14	ug/l	10.0		93 55-125			
Benzo(b)fluoranthene	8.54	2.0	0.050	ug/l	10.0		85 50-125			
Benzo(g,h,i)perylene	9.52	5.0	0.059	ug/l	10.0		95 35-160			
Benzo(k)fluoranthene	8.30	0.50	0.053	ug/l	10.0		83 50-125			
Benzyl alcohol	7.10	5.0	0.21	ug/l	10.0		71 40-130			
Bis(2-chloroethoxy)methane	8.10	0.50	0.072	ug/l	10.0		81 55-120			
Bis(2-chloroethyl)ether	7.30	0.50	0.084	ug/l	10.0		73 50-120			
Bis(2-chloroisopropyl)ether	7.94	0.50	0.11	ug/l	10.0		79 50-120			
Bis(2-ethylhexyl)phthalate	8.90	5.0	1.1	ug/l	10.0		89 65-125			
4-Bromophenyl phenyl ether	8.52	1.0	0.12	ug/l	10.0		85 55-125			
Butyl benzyl phthalate	9.04	5.0	0.34	ug/l	10.0		90 60-125			
4-Chloroaniline	6.48	2.0	0.20	ug/l	10.0		65 55-120			
2-Chloronaphthalene	8.36	0.50	0.059	ug/l	10.0		84 60-120			
4-Chloro-3-methylphenol	9.10	2.0	0.34	ug/l	10.0		91 60-120			
4-Chlorophenyl phenyl ether	8.74	0.50	0.056	ug/l	10.0		87 55-120			
2-Chlorophenol	7.64	1.0	0.12	ug/l	10.0		76 45-120			
Chrysene	8.52	0.50	0.072	ug/l	10.0		85 65-120			
Dibenz(a,h)anthracene	9.66	0.50	0.083	ug/l	10.0		97 40-160			
Dibenzofuran	8.48	0.50	0.075	ug/l	10.0		85 60-120			
Di-n-butyl phthalate	8.90	2.0	0.26	ug/l	10.0		89 65-125			
1,2-Dichlorobenzene	6.42	0.50	0.11	ug/l	10.0		64 40-120			
1,3-Dichlorobenzene	6.10	0.50	0.13	ug/l	10.0		61 40-120			

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>										
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>										
1,4-Dichlorobenzene	6.00	0.50	0.050	ug/l	10.0	60	40-120			M-NR1
3,3-Dichlorobenzidine	6.60	5.0	0.93	ug/l	10.0	66	50-170			
2,4-Dichlorophenol	7.48	2.0	0.21	ug/l	10.0	75	55-120			
Diethyl phthalate	8.42	1.0	0.12	ug/l	10.0	84	60-120			
2,4-Dimethylphenol	6.90	2.0	0.31	ug/l	10.0	69	35-120			
Dimethyl phthalate	7.86	0.50	0.081	ug/l	10.0	79	60-120			
4,6-Dinitro-2-methylphenol	8.12	5.0	0.38	ug/l	10.0	81	55-120			
2,4-Dinitrophenol	7.80	5.0	2.7	ug/l	10.0	78	40-140			
2,4-Dinitrotoluene	7.92	5.0	0.23	ug/l	10.0	79	60-140			
2,6-Dinitrotoluene	7.94	5.0	0.24	ug/l	10.0	79	65-125			
Di-n-octyl phthalate	9.08	5.0	0.17	ug/l	10.0	91	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.78	1.0	0.087	ug/l	10.0	88	60-120			
Fluoranthene	8.96	0.50	0.089	ug/l	10.0	90	55-125			
Fluorene	8.80	0.50	0.075	ug/l	10.0	88	60-120			
Hexachlorobenzene	9.14	1.0	0.13	ug/l	10.0	91	50-120			
Hexachlorobutadiene	6.76	2.0	0.38	ug/l	10.0	68	45-120			
Hexachlorocyclopentadiene	7.22	5.0	1.8	ug/l	10.0	72	10-130			
Hexachloroethane	6.00	3.0	0.51	ug/l	10.0	60	40-120			
Indeno(1,2,3-cd)pyrene	10.1	2.0	0.19	ug/l	10.0	101	35-150			
Isophorone	7.50	1.0	0.059	ug/l	10.0	75	55-120			
2-Methylnaphthalene	8.66	1.0	0.13	ug/l	10.0	87	50-120			
2-Methylphenol	7.66	2.0	0.28	ug/l	10.0	77	45-120			
4-Methylphenol	7.30	5.0	0.20	ug/l	10.0	73	45-120			
Naphthalene	8.08	1.0	0.13	ug/l	10.0	81	50-120			
2-Nitroaniline	8.22	5.0	0.18	ug/l	10.0	82	60-130			
3-Nitroaniline	8.00	5.0	0.35	ug/l	10.0	80	50-140			
4-Nitroaniline	7.86	5.0	0.49	ug/l	10.0	79	45-160			
Nitrobenzene	7.38	1.0	0.10	ug/l	10.0	74	50-120			
2-Nitrophenol	7.76	2.0	0.23	ug/l	10.0	78	55-120			
4-Nitrophenol	7.28	5.0	0.73	ug/l	10.0	73	50-135			
N-Nitrosodimethylamine	6.94	2.0	0.22	ug/l	10.0	69	40-120			
N-Nitroso-di-n-propylamine	6.80	2.0	0.18	ug/l	10.0	68	50-120			
N-Nitrosodiphenylamine	7.84	1.0	0.077	ug/l	10.0	78	60-120			
Pentachlorophenol	8.46	2.0	0.78	ug/l	10.0	85	50-125			
Phenanthrene	8.38	0.50	0.071	ug/l	10.0	84	55-120			

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting		MDL	Units	Spike Level	Source		%REC		RPD	RPD Limit	Data Qualifiers
		Limit	MDL				Result	%REC	Limits	RPD			
<b>Batch: 5B28001 Extracted: 02/28/05</b>													
<b>LCS Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>													
Phenol	7.48	1.0	0.14	ug/l	10.0		75	45-120					M-NR1
Pyrene	8.86	0.50	0.059	ug/l	10.0		89	50-120					
1,2,4-Trichlorobenzene	7.18	1.0	0.10	ug/l	10.0		72	50-120					
2,4,5-Trichlorophenol	8.50	2.0	0.075	ug/l	10.0		85	60-120					
2,4,6-Trichlorophenol	8.80	1.0	0.10	ug/l	10.0		88	60-120					
Surrogate: 2-Fluorophenol	15.0			ug/l	20.0		75	35-120					
Surrogate: Phenol-d6	14.6			ug/l	20.0		73	45-120					
Surrogate: 2,4,6-Tribromophenol	19.3			ug/l	20.0		96	50-125					
Surrogate: Nitrobenzene-d5	7.94			ug/l	10.0		79	45-120					
Surrogate: 2-Fluorobiphenyl	8.42			ug/l	10.0		84	45-120					
Surrogate: Terphenyl-d14	8.96			ug/l	10.0		90	45-135					
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-BS1)</b>													
Acenaphthene	8.34	0.50	0.10	ug/l	10.0		83	55-120	1		20		
Acenaphthylene	8.44	0.50	0.10	ug/l	10.0		84	55-120	4		20		
Aniline	7.86	1.0	2.9	ug/l	10.0		79	30-120	4		25		J
Anthracene	8.50	0.50	0.083	ug/l	10.0		85	60-120	3		20		
Benzidine	3.62	5.0	3.2	ug/l	10.0		36	20-180			35		J
Benzoic acid	6.72	2.0	3.7	ug/l	10.0		67	30-125	30		30		J
Benzo(a)anthracene	8.82	5.0	0.038	ug/l	10.0		88	65-120	2		20		
Benzo(a)pyrene	9.32	2.0	0.14	ug/l	10.0		93	55-125	1		25		
Benzo(b)fluoranthene	8.78	2.0	0.050	ug/l	10.0		88	50-125	3		25		
Benzo(g,h,i)perylene	9.94	5.0	0.059	ug/l	10.0		99	35-160	4		25		
Benzo(k)fluoranthene	8.56	0.50	0.053	ug/l	10.0		86	50-125	3		20		
Benzyl alcohol	8.08	5.0	0.21	ug/l	10.0		81	40-130	13		20		
Bis(2-chloroethoxy)methane	8.02	0.50	0.072	ug/l	10.0		80	55-120	1		20		
Bis(2-chloroethyl)ether	7.44	0.50	0.084	ug/l	10.0		74	50-120	2		20		
Bis(2-chloroisopropyl)ether	8.36	0.50	0.11	ug/l	10.0		84	50-120	5		20		
Bis(2-ethylhexyl)phthalate	9.44	5.0	1.1	ug/l	10.0		94	65-125	6		20		
4-Bromophenyl phenyl ether	8.02	1.0	0.12	ug/l	10.0		80	55-125	6		25		
Butyl benzyl phthalate	9.50	5.0	0.34	ug/l	10.0		95	60-125	5		20		
4-Chloroaniline	7.58	2.0	0.20	ug/l	10.0		76	55-120	16		25		
2-Chloronaphthalene	8.14	0.50	0.059	ug/l	10.0		81	60-120	3		20		
4-Chloro-3-methylphenol	8.74	2.0	0.34	ug/l	10.0		87	60-120	4		25		
4-Chlorophenyl phenyl ether	8.36	0.50	0.056	ug/l	10.0		84	55-120	4		20		
2-Chlorophenol	7.84	1.0	0.12	ug/l	10.0		78	45-120	3		25		

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-BSD1)</b>											
Chrysene	8.44	0.50	0.072	ug/l	10.0		84	65-120	1	20	
Dibenz(a,h)anthracene	10.0	0.50	0.083	ug/l	10.0		100	40-160	3	25	
Dibenzofuran	8.06	0.50	0.075	ug/l	10.0		81	60-120	5	20	
Di-n-butyl phthalate	8.74	2.0	0.26	ug/l	10.0		87	65-125	2	20	
1,2-Dichlorobenzene	6.26	0.50	0.11	ug/l	10.0		63	40-120	3	25	
1,3-Dichlorobenzene	6.00	0.50	0.13	ug/l	10.0		60	40-120	2	25	
1,4-Dichlorobenzene	6.10	0.50	0.050	ug/l	10.0		61	40-120	2	25	
3,3-Dichlorobenzidine	8.02	5.0	0.93	ug/l	10.0		80	50-170	19	25	
2,4-Dichlorophenol	7.58	2.0	0.21	ug/l	10.0		76	55-120	1	20	
Diethyl phthalate	8.02	1.0	0.12	ug/l	10.0		80	60-120	5	20	
2,4-Dimethylphenol	6.62	2.0	0.31	ug/l	10.0		66	35-120	4	25	
Dimethyl phthalate	7.74	0.50	0.081	ug/l	10.0		77	60-120	2	20	
4,6-Dinitro-2-methylphenol	7.88	5.0	0.38	ug/l	10.0		79	55-120	3	25	
2,4-Dinitrophenol	7.12	5.0	2.7	ug/l	10.0		71	40-140	9	25	
2,4-Dinitrotoluene	7.70	5.0	0.23	ug/l	10.0		77	60-140	3	20	
2,6-Dinitrotoluene	7.78	5.0	0.24	ug/l	10.0		78	65-125	2	20	
Di-n-octyl phthalate	9.70	5.0	0.17	ug/l	10.0		97	60-130	7	20	
1,2-Diphenylhydrazine/Azobenzene	8.30	1.0	0.087	ug/l	10.0		83	60-120	6	25	
Fluoranthene	8.94	0.50	0.089	ug/l	10.0		89	55-125	0	20	
Fluorene	8.56	0.50	0.075	ug/l	10.0		86	60-120	3	20	
Hexachlorobenzene	9.26	1.0	0.13	ug/l	10.0		93	50-120	1	20	
Hexachlorobutadiene	6.24	2.0	0.38	ug/l	10.0		62	45-120	8	25	
Hexachlorocyclopentadiene	7.08	5.0	1.8	ug/l	10.0		71	10-130	2	30	
Hexachloroethane	5.86	3.0	0.51	ug/l	10.0		59	40-120	2	25	
Indeno(1,2,3-cd)pyrene	10.3	2.0	0.19	ug/l	10.0		103	35-150	2	25	
Isophorone	7.42	1.0	0.059	ug/l	10.0		74	55-120	1	20	
2-Methylnaphthalene	8.06	1.0	0.13	ug/l	10.0		81	50-120	7	20	
2-Methylphenol	7.98	2.0	0.28	ug/l	10.0		80	45-120	4	20	
4-Methylphenol	7.60	5.0	0.20	ug/l	10.0		76	45-120	4	20	
Naphthalene	7.68	1.0	0.13	ug/l	10.0		77	50-120	5	20	
2-Nitroaniline	8.24	5.0	0.18	ug/l	10.0		82	60-130	0	20	
3-Nitroaniline	7.84	5.0	0.35	ug/l	10.0		78	50-140	2	25	
4-Nitroaniline	7.96	5.0	0.49	ug/l	10.0		80	45-160	1	20	
Nitrobenzene	7.00	1.0	0.10	ug/l	10.0		70	50-120	5	25	
2-Nitrophenol	8.10	2.0	0.23	ug/l	10.0		81	55-120	4	25	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5B28001 Extracted: 02/28/05</b>											
<b>LCS Dup Analyzed: 03/02/2005-03/03/2005 (5B28001-BSD1)</b>											
4-Nitrophenol	8.16	5.0	0.73	ug/l	10.0		82	50-135	11		25
N-Nitrosodimethylamine	7.90	2.0	0.22	ug/l	10.0		79	40-120	13		20
N-Nitroso-di-n-propylamine	7.56	2.0	0.18	ug/l	10.0		76	50-120	11		20
N-Nitrosodiphenylamine	7.92	1.0	0.077	ug/l	10.0		79	60-120	1		20
Pentachlorophenol	8.76	2.0	0.78	ug/l	10.0		88	50-125	3		25
Phenanthrene	8.70	0.50	0.071	ug/l	10.0		87	55-120	4		20
Phenol	7.60	1.0	0.14	ug/l	10.0		76	45-120	2		25
Pyrene	8.74	0.50	0.059	ug/l	10.0		87	50-120	1		25
1,2,4-Trichlorobenzene	6.58	1.0	0.10	ug/l	10.0		66	50-120	9		20
2,4,5-Trichlorophenol	8.30	2.0	0.075	ug/l	10.0		83	60-120	2		20
2,4,6-Trichlorophenol	8.64	1.0	0.10	ug/l	10.0		86	60-120	2		20
Surrogate: 2-Fluorophenol	14.4			ug/l	20.0		72	35-120			
Surrogate: Phenol-d6	15.0			ug/l	20.0		75	45-120			
Surrogate: 2,4,6-Tribromophenol	19.8			ug/l	20.0		99	50-125			
Surrogate: Nitrobenzene-d5	7.80			ug/l	10.0		78	45-120			
Surrogate: 2-Fluorobiphenyl	7.90			ug/l	10.0		79	45-120			
Surrogate: Terphenyl-d14	8.80			ug/l	10.0		88	45-135			

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 Outfall 011  
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Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
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**Batch: 5C02052 Extracted: 03/02/05**

#### Blank Analyzed: 03/03/2005 (5C02052-BLK1)

Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.020	ug/l						
4,4'-DDE	ND	0.10	0.025	ug/l						
4,4'-DDT	0.0332	0.10	0.030	ug/l						J
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.020	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.322			ug/l	0.500		64	35-120		
Surrogate: Decachlorobiphenyl	0.394			ug/l	0.500		79	45-120		

#### LCS Analyzed: 03/03/2005 (5C02052-BS1)

M-NRI

Aldrin	0.314	0.10	0.030	ug/l	0.500		63	45-115		
alpha-BHC	0.392	0.10	0.015	ug/l	0.500		78	45-115		
beta-BHC	0.357	0.10	0.015	ug/l	0.500		71	50-115		
delta-BHC	0.379	0.20	0.020	ug/l	0.500		76	55-120		
gamma-BHC (Lindane)	0.392	0.10	0.020	ug/l	0.500		78	45-115		
4,4'-DDD	0.417	0.10	0.020	ug/l	0.500		83	60-120		
4,4'-DDE	0.398	0.10	0.025	ug/l	0.500		80	55-120		
4,4'-DDT	0.604	0.10	0.030	ug/l	0.500		121	60-130		
Dieldrin	0.392	0.10	0.015	ug/l	0.500		78	55-120		
Endosulfan I	0.376	0.10	0.015	ug/l	0.500		75	50-115		
Endosulfan II	0.376	0.10	0.040	ug/l	0.500		75	60-125		
Endosulfan sulfate	0.381	0.20	0.015	ug/l	0.500		76	60-120		

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 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
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## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
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Batch: **SC02052** Extracted: 03/02/05

LCS Analyzed: 03/03/2005 (SC02052-BS1)

M-NR1

Endrin	0.393	0.10	0.020	ug/l	0.500		79	55-125			
Endrin aldehyde	0.356	0.10	0.045	ug/l	0.500		71	55-115			
Endrin ketone	0.396	0.10	0.020	ug/l	0.500		79	60-120			
Heptachlor	0.405	0.10	0.030	ug/l	0.500		81	45-115			
Heptachlor epoxide	0.376	0.10	0.020	ug/l	0.500		75	50-120			
Methoxychlor	0.391	0.10	0.035	ug/l	0.500		78	60-135			
Surrogate: Tetrachloro-m-xylene	0.334			ug/l	0.500		67	35-120			
Surrogate: Decachlorobiphenyl	0.380			ug/l	0.500		76	45-120			

LCS Dup Analyzed: 03/03/2005 (SC02052-BSD1)

Aldrin	0.318	0.10	0.030	ug/l	0.500		64	45-115	1	30	
alpha-BHC	0.395	0.10	0.015	ug/l	0.500		79	45-115	1	30	
beta-BHC	0.372	0.10	0.015	ug/l	0.500		74	50-115	4	30	
delta-BHC	0.381	0.20	0.020	ug/l	0.500		76	55-120	1	30	
gamma-BHC (Lindane)	0.400	0.10	0.020	ug/l	0.500		80	45-115	2	30	
4,4'-DDD	0.423	0.10	0.020	ug/l	0.500		85	60-120	1	30	
4,4'-DDE	0.402	0.10	0.025	ug/l	0.500		80	55-120	1	30	
4,4'-DDT	0.420	0.10	0.030	ug/l	0.500		84	60-130	36	30	R-7
Dieldrin	0.398	0.10	0.015	ug/l	0.500		80	55-120	2	30	
Endosulfan I	0.378	0.10	0.015	ug/l	0.500		76	50-115	1	30	
Endosulfan II	0.383	0.10	0.040	ug/l	0.500		77	60-125	2	30	
Endosulfan sulfate	0.377	0.20	0.015	ug/l	0.500		75	60-120	1	30	
Endrin	0.399	0.10	0.020	ug/l	0.500		80	55-125	2	30	
Endrin aldehyde	0.361	0.10	0.045	ug/l	0.500		72	55-115	1	30	
Endrin ketone	0.391	0.10	0.020	ug/l	0.500		78	60-120	1	30	
Heptachlor	0.401	0.10	0.030	ug/l	0.500		80	45-115	1	30	
Heptachlor epoxide	0.376	0.10	0.020	ug/l	0.500		75	50-120	0	30	
Methoxychlor	0.388	0.10	0.035	ug/l	0.500		78	60-135	1	30	
Surrogate: Tetrachloro-m-xylene	0.333			ug/l	0.500		67	35-120			
Surrogate: Decachlorobiphenyl	0.374			ug/l	0.500		75	45-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C02052 Extracted: 03/02/05</b>										
<b>Blank Analyzed: 03/03/2005 (5C02052-BLK1)</b>										
Aroclor 1016	ND	1.0	0.20	ug/l						
Aroclor 1221	ND	1.0	0.10	ug/l						
Aroclor 1232	ND	1.0	0.15	ug/l						
Aroclor 1242	ND	1.0	0.15	ug/l						
Aroclor 1248	ND	1.0	0.25	ug/l						
Aroclor 1254	ND	1.0	0.25	ug/l						
Aroclor 1260	ND	1.0	0.40	ug/l						
Surrogate: Decachlorobiphenyl	0.344			ug/l	0.500		69 45-120			
<b>LCS Analyzed: 03/03/2005 (5C02052-BS2)</b>										
Aroclor 1016	2.93	1.0	0.20	ug/l	4.00		73 50-115			M-NR1
Aroclor 1260	2.73	1.0	0.40	ug/l	4.00		68 60-115			
Surrogate: Decachlorobiphenyl	0.349			ug/l	0.500		70 45-120			
<b>LCS Dup Analyzed: 03/03/2005 (5C02052-BSD2)</b>										
Aroclor 1016	3.27	1.0	0.20	ug/l	4.00		82 50-115	11	30	
Aroclor 1260	3.05	1.0	0.40	ug/l	4.00		76 60-115	11	25	
Surrogate: Decachlorobiphenyl	0.383			ug/l	0.500		77 45-120			

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C02083 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C02083-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 03/02/2005 (5C02083-BS1)</b>											
Boron	0.468	0.050	0.0074	mg/l	0.500		94	85-115			
<b>Matrix Spike Analyzed: 03/02/2005 (5C02083-MS1)</b>											
						<b>Source: IOB1981-05</b>					
Boron	0.679	0.050	0.0074	mg/l	0.500	0.20	96	70-130			
<b>Matrix Spike Dup Analyzed: 03/02/2005 (5C02083-MSD1)</b>											
						<b>Source: IOB1981-05</b>					
Boron	0.698	0.050	0.0074	mg/l	0.500	0.20	100	70-130	3	20	
<b>Batch: 5C02089 Extracted: 03/02/05</b>											
<b>Blank Analyzed: 03/02/2005 (5C02089-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 03/02/2005 (5C02089-BS1)</b>											
Mercury	8.06	0.20	0.063	ug/l	8.00		101	85-115			
<b>Matrix Spike Analyzed: 03/02/2005 (5C02089-MS1)</b>											
						<b>Source: IOB1993-06</b>					
Mercury	8.30	0.20	0.063	ug/l	8.00	ND	104	70-130			
<b>Matrix Spike Dup Analyzed: 03/02/2005 (5C02089-MSD1)</b>											
						<b>Source: IOB1993-06</b>					
Mercury	8.18	0.20	0.063	ug/l	8.00	ND	102	70-130	1	20	
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Blank Analyzed: 03/03/2005 (5C03085-BLK1)</b>											
Antimony	1.28	2.0	0.18	ug/l							J
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	ND	2.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.00553	0.010	0.0032	mg/l							J
Lead	ND	1.0	0.13	ug/l							

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
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#### Batch: 5C03085 Extracted: 03/03/05

#### Blank Analyzed: 03/03/2005 (5C03085-BLK1)

Manganese	ND	1.0	0.44	ug/l							
Nickel	ND	2.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

#### LCS Analyzed: 03/03/2005 (5C03085-BS1)

Antimony	90.2	2.0	0.18	ug/l	80.0		113	85-115			
Arsenic	83.8	1.0	0.49	ug/l	80.0		105	85-115			
Barium	0.0861	0.0010	0.00014	mg/l	0.0800		108	85-115			
Beryllium	86.8	0.50	0.037	ug/l	80.0		108	85-115			
Cadmium	83.1	1.0	0.015	ug/l	80.0		104	85-115			
Chromium	81.1	2.0	0.26	ug/l	80.0		101	85-115			
Cobalt	80.3	1.0	0.10	ug/l	80.0		100	85-115			
Copper	78.5	2.0	0.49	ug/l	80.0		98	85-115			
Iron	0.878	0.010	0.0032	mg/l	0.800		110	85-115			
Lead	82.6	1.0	0.13	ug/l	80.0		103	85-115			
Manganese	85.7	1.0	0.44	ug/l	80.0		107	85-115			
Nickel	80.0	2.0	0.15	ug/l	80.0		100	85-115			
Selenium	87.9	2.0	0.36	ug/l	80.0		110	85-115			
Silver	81.3	1.0	0.089	ug/l	80.0		102	85-115			
Thallium	85.6	1.0	0.075	ug/l	80.0		107	85-115			
Vanadium	77.4	2.0	0.86	ug/l	80.0		97	85-115			
Zinc	81.5	20	3.1	ug/l	80.0		102	85-115			

#### Matrix Spike Analyzed: 03/03/2005 (5C03085-MS1)

Source: IOB2069-01

Antimony	92.7	2.0	0.18	ug/l	80.0	0.58	115	70-130			
Arsenic	87.9	1.0	0.49	ug/l	80.0	0.89	109	70-130			
Barium	0.155	0.0010	0.00014	mg/l	0.0800	0.066	111	70-130			
Beryllium	83.7	0.50	0.037	ug/l	80.0	ND	105	70-130			
Cadmium	83.5	1.0	0.015	ug/l	80.0	ND	104	70-130			
Chromium	84.3	2.0	0.26	ug/l	80.0	1.2	104	70-130			
Cobalt	81.4	1.0	0.10	ug/l	80.0	0.18	102	70-130			
Copper	78.8	2.0	0.49	ug/l	80.0	1.2	97	70-130			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Matrix Spike Analyzed: 03/03/2005 (5C03085-MS1)</b>						<b>Source: IOB2069-01</b>					
Iron	0.832	0.010	0.0032	mg/l	0.800	0.052	98	70-130			
Lead	82.3	1.0	0.13	ug/l	80.0	ND	103	70-130			
Manganese	101	1.0	0.44	ug/l	80.0	15	108	70-130			
Nickel	79.5	2.0	0.15	ug/l	80.0	0.36	99	70-130			
Selenium	90.6	2.0	0.36	ug/l	80.0	1.8	111	70-130			
Silver	80.4	1.0	0.089	ug/l	80.0	ND	100	70-130			
Thallium	86.2	1.0	0.075	ug/l	80.0	ND	108	70-130			
Vanadium	82.5	2.0	0.86	ug/l	80.0	ND	103	70-130			
Zinc	103	20	3.1	ug/l	80.0	25	98	70-130			
<b>Matrix Spike Analyzed: 03/03/2005 (5C03085-MS2)</b>						<b>Source: IOB2149-04</b>					
Antimony	96.1	2.0	0.18	ug/l	80.0	0.53	119	70-130			
Arsenic	100	1.0	0.49	ug/l	80.0	13	109	70-130			
Barium	0.284	0.0010	0.00014	mg/l	0.0800	0.18	130	70-130			
Beryllium	78.8	0.50	0.037	ug/l	80.0	0.048	98	70-130			
Cadmium	80.9	1.0	0.015	ug/l	80.0	0.053	101	70-130			
Chromium	85.0	2.0	0.26	ug/l	80.0	0.67	105	70-130			
Cobalt	81.6	1.0	0.10	ug/l	80.0	0.59	101	70-130			
Copper	75.9	2.0	0.49	ug/l	80.0	2.9	91	70-130			
Iron	0.746	0.010	0.0032	mg/l	0.800	0.022	90	70-130			
Lead	78.9	1.0	0.13	ug/l	80.0	0.20	98	70-130			
Manganese	1470	10	4.4	ug/l	80.0	1300	212	70-130			M-HA
Nickel	77.3	2.0	0.15	ug/l	80.0	0.93	95	70-130			
Selenium	97.5	2.0	0.36	ug/l	80.0	6.5	114	70-130			
Silver	77.1	1.0	0.089	ug/l	80.0	ND	96	70-130			
Thallium	81.5	1.0	0.075	ug/l	80.0	ND	102	70-130			
Vanadium	91.7	2.0	0.86	ug/l	80.0	4.5	109	70-130			
Zinc	101	20	3.1	ug/l	80.0	28	91	70-130			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
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 Report Number: IOB2064

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**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03085 Extracted: 03/03/05</b>											
<b>Matrix Spike Dup Analyzed: 03/03/2005 (5C03085-MSD1)</b>						<b>Source: IOB2069-01</b>					
Antimony	88.4	2.0	0.18	ug/l	80.0	0.58	110	70-130	5	20	
Arsenic	84.3	1.0	0.49	ug/l	80.0	0.89	104	70-130	4	20	
Barium	0.151	0.0010	0.00014	mg/l	0.0800	0.066	106	70-130	3	20	
Beryllium	80.3	0.50	0.037	ug/l	80.0	ND	100	70-130	4	20	
Cadmium	81.5	1.0	0.015	ug/l	80.0	ND	102	70-130	2	20	
Chromium	82.0	2.0	0.26	ug/l	80.0	1.2	101	70-130	3	20	
Cobalt	78.6	1.0	0.10	ug/l	80.0	0.18	98	70-130	4	20	
Copper	76.4	2.0	0.49	ug/l	80.0	1.2	94	70-130	3	20	
Iron	0.807	0.010	0.0032	mg/l	0.800	0.052	94	70-130	3	20	
Lead	80.0	1.0	0.13	ug/l	80.0	ND	100	70-130	3	20	
Manganese	101	1.0	0.44	ug/l	80.0	15	108	70-130	0	20	
Nickel	77.6	2.0	0.15	ug/l	80.0	0.36	97	70-130	2	20	
Selenium	87.1	2.0	0.36	ug/l	80.0	1.8	107	70-130	4	20	
Silver	78.7	1.0	0.089	ug/l	80.0	ND	98	70-130	2	20	
Thallium	83.7	1.0	0.075	ug/l	80.0	ND	105	70-130	3	20	
Vanadium	81.0	2.0	0.86	ug/l	80.0	ND	101	70-130	2	20	
Zinc	99.9	20	3.1	ug/l	80.0	25	94	70-130	3	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
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**Batch: 5B25042 Extracted: 02/25/05**

**Blank Analyzed: 02/25/2005 (5B25042-BLK1)**

Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.10	mg/l							
Nitrate/Nitrite-N	ND	0.26	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							

**LCS Analyzed: 02/25/2005 (5B25042-BS1)**

Chloride	5.13	0.50	0.26	mg/l	5.00		103	90-110			
Fluoride	5.07	0.50	0.10	mg/l	5.00		101	90-110			
Sulfate	10.5	0.50	0.18	mg/l	10.0		105	90-110			

**Matrix Spike Analyzed: 02/25/2005 (5B25042-MS1)**

**Source: IOB1979-01**

Chloride	13.9	0.50	0.26	mg/l	5.00	9.6	86	80-120			
Fluoride	5.02	0.50	0.10	mg/l	5.00	0.36	93	80-120			
Sulfate	57.0	0.50	0.18	mg/l	10.0	49	80	80-120			

**Matrix Spike Dup Analyzed: 02/25/2005 (5B25042-MSD1)**

**Source: IOB1979-01**

Chloride	14.3	0.50	0.26	mg/l	5.00	9.6	94	80-120	3	20	
Fluoride	5.13	0.50	0.10	mg/l	5.00	0.36	95	80-120	2	20	
Sulfate	58.2	0.50	0.18	mg/l	10.0	49	92	80-120	2	20	

**Batch: 5B25118 Extracted: 02/25/05**

**Blank Analyzed: 02/25/2005 (5B25118-BLK1)**

Surfactants (MBAS)	ND	0.10	0.044	mg/l							
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**LCS Analyzed: 02/25/2005 (5B25118-BS1)**

Surfactants (MBAS)	0.247	0.10	0.044	mg/l	0.250		99	90-110			
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25118 Extracted: 02/25/05</b>											
<b>Matrix Spike Analyzed: 02/25/2005 (5B25118-MS1)</b>						<b>Source: IOB1984-01</b>					
Surfactants (MBAS)	0.278	0.10	0.044	mg/l	0.250	ND	111	50-125			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B25118-MSD1)</b>						<b>Source: IOB1984-01</b>					
Surfactants (MBAS)	0.267	0.10	0.044	mg/l	0.250	ND	107	50-125	4	20	
<b>Batch: 5B25120 Extracted: 02/25/05</b>											
<b>Duplicate Analyzed: 02/25/2005 (5B25120-DUP1)</b>						<b>Source: IOB1977-01</b>					
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	
<b>Batch: 5B25125 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 02/25/2005 (5B25125-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 02/25/2005 (5B25125-BS1)</b>											
Chromium VI	48.6	1.0	0.10	ug/l	50.0		97	90-110			
<b>Matrix Spike Analyzed: 02/25/2005 (5B25125-MS1)</b>						<b>Source: IOB2067-07</b>					
Chromium VI	65.8	1.0	0.10	ug/l	50.0	20	92	90-110			
<b>Matrix Spike Dup Analyzed: 02/25/2005 (5B25125-MSD1)</b>						<b>Source: IOB2067-07</b>					
Chromium VI	65.0	1.0	0.10	ug/l	50.0	20	90	90-110	1	10	
<b>Batch: 5B25128 Extracted: 02/25/05</b>											
<b>Blank Analyzed: 03/02/2005 (5B25128-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							

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Sampled: 02/25/05  
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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B25128 Extracted: 02/25/05</b>											
<b>LCS Analyzed: 03/02/2005 (5B25128-BS1)</b>											
Biochemical Oxygen Demand	203	100	30	mg/l	198		103	85-115			
<b>LCS Dup Analyzed: 03/02/2005 (5B25128-BSD1)</b>											
Biochemical Oxygen Demand	202	100	30	mg/l	198		102	85-115	1	20	
<b>Batch: 5B26046 Extracted: 02/26/05</b>											
<b>Blank Analyzed: 02/26/2005 (5B26046-BLK1)</b>											
Turbidity	0.0500	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 02/26/2005 (5B26046-DUP1)</b>											
Turbidity	1.80	1.0	0.040	NTU		Source: IOB2071-01 1.8			0	20	
<b>Batch: 5B28078 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 02/28/2005 (5B28078-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 02/28/2005 (5B28078-BS1)</b>											
Total Dissolved Solids	1010	10	10	mg/l	1000		101	90-110			
<b>Duplicate Analyzed: 02/28/2005 (5B28078-DUP1)</b>											
Total Dissolved Solids	124	10	10	mg/l		Source: IOB2066-01 120			3	10	
<b>Batch: 5B28080 Extracted: 02/28/05</b>											
<b>Duplicate Analyzed: 02/28/2005 (5B28080-DUP1)</b>											
Specific Conductance	950	1.0	1.0	umhos/cm		Source: IOB1874-01 950			0	5	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5B28103 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 02/28/2005 (5B28103-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 02/28/2005 (5B28103-BS1)</b>											
Perchlorate	51.9	4.0	0.80	ug/l	50.0		104	85-115			
<b>Matrix Spike Analyzed: 03/01/2005 (5B28103-MS1)</b>											
Perchlorate	53.1	4.0	0.80	ug/l	50.0	5.7	95	80-120			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5B28103-MSD1)</b>											
Perchlorate	53.7	4.0	0.80	ug/l	50.0	5.7	96	80-120	1	20	
<b>Batch: 5B28115 Extracted: 02/28/05</b>											
<b>Blank Analyzed: 03/01/2005 (5B28115-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 03/01/2005 (5B28115-BS1)</b>											
Total Cyanide	197	5.0	2.2	ug/l	200		98	90-110			
<b>Matrix Spike Analyzed: 03/01/2005 (5B28115-MS1)</b>											
Total Cyanide	202	5.0	2.2	ug/l	200	ND	101	70-115			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5B28115-MSD1)</b>											
Total Cyanide	210	5.0	2.2	ug/l	200	ND	105	70-115	4	15	
<b>Batch: 5C01065 Extracted: 03/01/05</b>											
<b>Blank Analyzed: 03/01/2005 (5C01065-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b><u>Batch: 5C01065 Extracted: 03/01/05</u></b>											
<b>LCS Analyzed: 03/01/2005 (5C01065-BS1)</b>											
Total Organic Carbon	10.7	1.0	0.25	mg/l	10.0		107	90-110			
<b>Matrix Spike Analyzed: 03/01/2005 (5C01065-MS1)</b>											
						<b>Source: IOB2047-09</b>					
Total Organic Carbon	6.25	1.0	0.25	mg/l	5.00	0.94	106	80-120			
<b>Matrix Spike Dup Analyzed: 03/01/2005 (5C01065-MSD1)</b>											
						<b>Source: IOB2047-09</b>					
Total Organic Carbon	6.26	1.0	0.25	mg/l	5.00	0.94	106	80-120	0	20	
<b><u>Batch: 5C02094 Extracted: 03/02/05</u></b>											
<b>Blank Analyzed: 03/02/2005 (5C02094-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/02/2005 (5C02094-BS1)</b>											
Oil & Grease	18.5	5.0	0.94	mg/l	20.0		92	65-120			M-NR1
<b>LCS Dup Analyzed: 03/02/2005 (5C02094-BSD1)</b>											
Oil & Grease	17.2	5.0	0.94	mg/l	20.0		86	65-120	7	20	
<b><u>Batch: 5C03074 Extracted: 03/03/05</u></b>											
<b>Blank Analyzed: 03/03/2005 (5C03074-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/03/2005 (5C03074-BS1)</b>											
Total Suspended Solids	983	10	10	mg/l	1000		98	85-115			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C03074 Extracted: 03/03/05</b>											
<b>Duplicate Analyzed: 03/03/2005 (5C03074-DUP1)</b>											
Total Suspended Solids	21.0	10	10	mg/l		ND				10	
<b>Batch: 5C07070 Extracted: 03/07/05</b>											
<b>Blank Analyzed: 03/07/2005 (5C07070-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 03/07/2005 (5C07070-BS1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0		95	80-115			
<b>Matrix Spike Analyzed: 03/07/2005 (5C07070-MS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0	ND	98	70-120			
<b>Matrix Spike Dup Analyzed: 03/07/2005 (5C07070-MSD1)</b>											
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	ND	95	70-120	3	15	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: P5C0309 Extracted: 03/03/05</b>										
<b>Blank Analyzed: 03/03/2005 (P5C0309-BLK1)</b>										
1,4-Dioxane	ND	1.0	0.49	ug/l						
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105 80-125			
<b>LCS Analyzed: 03/03/2005 (P5C0309-BS1)</b>										
1,4-Dioxane	11.3	1.0	0.49	ug/l	10.0		113 70-130			
Surrogate: Dibromofluoromethane	1.06			ug/l	1.00		106 80-125			
<b>LCS Dup Analyzed: 03/03/2005 (P5C0309-BSD1)</b>										
1,4-Dioxane	10.2	1.0	0.49	ug/l	10.0		102 70-130	10	20	
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105 80-125			
<b>Matrix Spike Analyzed: 03/03/2005 (P5C0309-MS1)</b>										
					<b>Source: POC0043-01</b>					
1,4-Dioxane	11.7	1.0	0.49	ug/l	10.0	0.59	111 70-150			
Surrogate: Dibromofluoromethane	1.05			ug/l	1.00		105 80-125			
<b>Matrix Spike Dup Analyzed: 03/03/2005 (P5C0309-MSD1)</b>										
					<b>Source: POC0043-01</b>					
1,4-Dioxane	13.4	1.0	0.49	ug/l	10.0	0.59	128 70-150	14	25	
Surrogate: Dibromofluoromethane	1.04			ug/l	1.00		104 80-125			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-HA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOB2064

Sampled: 02/25/05  
Received: 02/25/05

## **Aquatic Testing Laboratories-SUB** California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003  
Samples: IOB2064-01  
Analysis Performed: Bioassay-Acute 96hr  
Samples: IOB2064-01

## **Del Mar Analytical - Phoenix** NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044  
Method Performed: EPA 8260B  
Samples: IOB2064-01

## **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804  
Analysis Performed: EDD + Level 4  
Samples: IOB2064-01  
Analysis Performed: Gross Alpha  
Samples: IOB2064-01  
Analysis Performed: Gross Beta  
Samples: IOB2064-01  
Analysis Performed: Radium, Combined  
Samples: IOB2064-01  
Analysis Performed: Strontium 90  
Samples: IOB2064-01  
Analysis Performed: Tritium  
Samples: IOB2064-01

## **Truesdail Laboratories-SUB** California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680  
Analysis Performed: Hydrazine  
Samples: IOB2064-01  
Analysis Performed: Level 4 Data Package  
Samples: IOB2064-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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**IOB2064 <Page 61 of 61>**

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED												Field readings:	
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 - 13267 Perimeter Pond		Settleable Solids	VOCS 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl-, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PcBs	2,4,6 Trichlorophenol, 2,4 Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + PP list	Temp = 55.4 pH = 7.0	
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	Total Recoverable Metals: Pb, Cu, Pd, B, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Tl, Zn, Co, V, Cr, Hg	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl-, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PcBs	2,4,6 Trichlorophenol, 2,4 Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + PP list	Comments	
Outfall 011	W	1G Poly	2	None	2/25/05 11:00	X	X	X	X	X	X	X	X	X	39502800 Flow (gpm) = 378 Total Flow (gals) = 378	**Continued Analysis required on Page 2 of 2	
Outfall 011	W	1G Poly	2	None	11:20	X	X	X	X	X	X	X	X	X	39508300 Flow (gpm) = 281 Total Flow (gals) = 281		
Outfall 011	W	1G Poly	2	None	11:40	X	X	X	X	X	X	X	X	X	39515000 Flow (gpm) = 281 Total Flow (gals) = 281		
Outfall 011	W	1G Poly	2	None	12:00	X	X	X	X	X	X	X	X	X	39519700 Flow (gpm) = 281 Total Flow (gals) = 281		
Outfall 011	W	1G Poly	2	None	12:20	X	X	X	X	X	X	X	X	X	39525300 Flow (gpm) = 316 Total Flow (gals) = 316		
Outfall 011	W	1G Poly	2	None	12:40	X	X	X	X	X	X	X	X	X	39532800 Flow (gpm) = 296 Total Flow (gals) = 296		
Outfall 011	W	1G Poly	2	None	13:00	X	X	X	X	X	X	X	X	X	39543200 Flow (gpm) = 272 Total Flow (gals) = 272		
Outfall 011	W	1G Poly	2	None	13:40	X	X	X	X	X	X	X	X	X	39548900 Flow (gpm) = 276 Total Flow (gals) = 276		
Outfall 011	W	1G Poly	2	None	2/25/05	X	X	X	X	X	X	X	X	X			
Trip Blank	W	VOAs	7	HCL													
Relinquished By					Date/Time:	Received By: <i>[Signature]</i> Date/Time: 2/25/05 15:30										Turn around Time: (check) 24 Hours ___ 48 Hours ___ 72 Hours ___	
Relinquished By					Date/Time:	Received By: <i>[Signature]</i> Date/Time: 2/25/05 19:15										Perchlorate Only 72 Hours ___	
Relinquished By					Date/Time:	Received By: <i>[Signature]</i> Date/Time: 2/25/05 19:15										Metals Only 72 Hours ___	

Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.

MWH





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March 31, 2005

MWH-Pasadena/ Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)  
 Sampled: 02/25/05  
 Del Mar Analytical Number: IOB2064

Dear Ms. Kelly:

Alta Analytical Laboratory performed the EPA Method 1613 for Dioxin, Aquatic Testing Laboratories tested Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0) & *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Eberline Services performed gross alpha/ gross beta (EPA 900.0), tritium (H-3, EPA 906.0), and strontium-90 (Sr-90, EPA 905.0) and Truesdail Laboratories tested Hydrazines by EPA 8315 M for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ALTA ID	ATL ID	EBERLINE ID	TRUESDAIL ID
Outfall 011 Composite	IOB2064-01	25816-001	A-05022602-001/002	R-503011-8306	940177-1

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022 at extension 215.

Sincerely yours,  
 DEL MAR ANALYTICAL



Michele Harper  
 Project Manager



March 10, 2005

**Alta Project I.D.: 25816**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 01, 2005 under your Project Name "IOB2064". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in black ink that reads "Martha M. Maier".

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762

FAX (916) 673-0106  
(916) 933-1640

**Section I: Sample Inventory Report**

**Date Received: 3/1/2005**

Alta Lab. ID

Client Sample ID

25816-001

IOB2064-01

**SECTION II**





Method Blank		EPA Method 1613					
Matrix:	Aqueous	QC Batch No.:	6571	Lab Sample:	0-MB001		
Sample Size:	1.000 L	Date Extracted:	4-Mar-05	Date Analyzed DB-5:	9-Mar-05		
				Date Analyzed DB-225:	NA		
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	3.17		13C-2,3,7,8-TCDD	79.8	25 - 164	
1,2,3,7,8-PeCDD	ND	2.85		13C-1,2,3,7,8-PeCDD	67.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	7.88		13C-1,2,3,4,7,8-HxCDD	77.9	32 - 141	
1,2,3,6,7,8-HxCDD	ND	7.76		13C-1,2,3,6,7,8-HxCDD	88.2	28 - 130	
1,2,3,7,8,9-HxCDD	ND	7.78		13C-1,2,3,4,6,7,8-HpCDD	63.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	6.25		13C-OCDD	44.4	17 - 157	
OCDD	ND	15.4		13C-2,3,7,8-TCDF	79.2	24 - 169	
2,3,7,8-TCDF	ND	4.50		13C-1,2,3,7,8-PeCDF	66.2	24 - 185	
1,2,3,7,8-PeCDF	ND	5.76		13C-2,3,4,7,8-PeCDF	67.5	21 - 178	
2,3,4,7,8-PeCDF	ND	4.98		13C-1,2,3,4,7,8-HxCDF	72.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	3.01		13C-1,2,3,6,7,8-HxCDF	81.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	2.73		13C-2,3,4,6,7,8-HxCDF	80.3	28 - 136	
2,3,4,6,7,8-HxCDF	ND	3.11		13C-1,2,3,7,8,9-HxCDF	74.3	29 - 147	
1,2,3,7,8,9-HxCDF	ND	5.02		13C-1,2,3,4,6,7,8-HpCDF	65.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	4.70		13C-1,2,3,4,7,8,9-HpCDF	64.1	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	5.90		13C-OCDF	51.8	17 - 157	
OCDF	ND	15.0		CRS 37Cl-2,3,7,8-TCDD	84.6	35 - 197	
<b>Totals</b>							
Total TCDD	ND	3.17					
Total PeCDD	ND	2.85					
Total HxCDD	ND	7.80					
Total HpCDD	ND	6.25					
Total TCDF	ND	4.50					
Total PeCDF	ND	5.36					
Total HxCDF	ND	3.36					
Total HpCDF	ND	5.21					
<b>Footnotes</b>							
a. Sample specific estimated detection limit.							
b. Estimated maximum possible concentration.							
c. Method detection limit.							
d. Lower control limit - upper control limit.							

Analyst: JMH

Approved By: Martha M. Maier 10-Mar-2005 10:37



**EPA Method 1613**

OPR Results		Lab Sample: 0-OPR001		Date Analyzed DB-5: 8-Mar-05		Date Analyzed DB-225: NA	
Matrix:	Aqueous	QC Batch No.:	6571	Sample Size:	1.000 L	Date Analyzed DB-5:	8-Mar-05
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL	
2,3,7,8-TCDD	10.0	9.19	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	67.1	25 - 164	
1,2,3,7,8-PeCDD	50.0	45.5	35 - 71	13C-1,2,3,7,8-PeCDD	61.4	25 - 181	
1,2,3,4,7,8-HxCDD	50.0	47.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	60.9	32 - 141	
1,2,3,6,7,8-HxCDD	50.0	45.2	38 - 67	13C-1,2,3,6,7,8-HxCDD	67.6	28 - 130	
1,2,3,7,8,9-HxCDD	50.0	47.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	66.0	23 - 140	
1,2,3,4,6,7,8-HpCDD	50.0	49.1	35 - 70	13C-OCDD	64.3	17 - 157	
OCDD	100	98.3	78 - 144	13C-2,3,7,8-TCDF	72.7	24 - 169	
2,3,7,8-TCDF	10.0	9.57	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	58.0	24 - 185	
1,2,3,7,8-PeCDF	50.0	49.9	40 - 67	13C-2,3,4,7,8-PeCDF	60.4	21 - 178	
2,3,4,7,8-PeCDF	50.0	50.3	34 - 80	13C-1,2,3,4,7,8-HxCDF	46.8	26 - 152	
1,2,3,4,7,8-HxCDF	50.0	51.5	36 - 67	13C-1,2,3,6,7,8-HxCDF	52.4	26 - 123	
1,2,3,6,7,8-HxCDF	50.0	51.4	42 - 65	13C-2,3,4,6,7,8-HxCDF	53.1	28 - 136	
2,3,4,6,7,8-HxCDF	50.0	50.4	35 - 78	13C-1,2,3,7,8,9-HxCDF	55.3	29 - 147	
1,2,3,7,8,9-HxCDF	50.0	49.8	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	57.2	28 - 143	
1,2,3,4,6,7,8-HpCDF	50.0	51.7	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	60.2	26 - 138	
1,2,3,4,7,8,9-HpCDF	50.0	52.5	39 - 69	13C-OCDF	66.3	17 - 157	
OCDF	100	103	63 - 170	CRS 37Cl-2,3,7,8-TCDD	80.8	35 - 197	

Analyst: JMH  
 Approved By: Martha M. Maier  
 10-Mar-2005 10:37



Sample ID: <b>IOB2064-01</b>		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25816-001
Project:	IOB2064	Sample Size:	1.028 L	QC Batch No.:	6571
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05
Time Collected:	1340			Date Analyzed DB-225:	NA
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.958		IS 13C-2,3,7,8-TCDD	68.7 25 - 164
1,2,3,7,8-PeCDD	ND	1.11		13C-1,2,3,7,8-PeCDD	57.9 25 - 181
1,2,3,4,7,8-HxCDD	ND	3.06		13C-1,2,3,4,7,8-HxCDD	55.7 32 - 141
1,2,3,6,7,8-HxCDD	ND	3.12		13C-1,2,3,6,7,8-HxCDD	57.2 28 - 130
1,2,3,7,8,9-HxCDD	ND	3.08		13C-1,2,3,4,6,7,8-HpCDD	57.4 23 - 140
1,2,3,4,6,7,8-HpCDD	6.35			13C-OCDD	52.0 17 - 157
OCDD	62.1		J	13C-2,3,7,8-TCDF	68.1 24 - 169
2,3,7,8-TCDF	ND	1.25		13C-1,2,3,7,8-PeCDF	55.9 24 - 185
1,2,3,7,8-PeCDF	ND	1.88		13C-2,3,4,7,8-PeCDF	55.6 21 - 178
2,3,4,7,8-PeCDF	ND	1.79		13C-1,2,3,4,7,8-HxCDF	44.0 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.822		13C-1,2,3,6,7,8-HxCDF	48.8 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.751		13C-2,3,4,7,8-HxCDF	47.1 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.905		13C-1,2,3,7,8,9-HxCDF	49.5 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.25		13C-1,2,3,4,6,7,8-HpCDF	47.5 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	2.11		13C-1,2,3,4,7,8,9-HpCDF	52.2 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	2.23		13C-OCDF	56.4 17 - 157
OCDF	ND	4.47		CRS 37Cl-2,3,7,8-TCDD	78.8 35 - 197
Totals				Footnotes	
Total TCDD	ND	0.958		a. Sample specific estimated detection limit.	
Total PeCDD	ND	1.11		b. Estimated maximum possible concentration.	
Total HxCDD	ND	3.09		c. Method detection limit.	
Total HpCDD	15.0			d. Lower control limit - upper control limit.	
Total TCDF	ND	1.25			
Total PeCDF	ND	1.83			
Total HxCDF	ND	0.914			
Total HpCDF	ND	2.16			

Analyst: JMH

Approved By: Martha M. Maier 10-Mar-2005 10:37

**APPENDIX**

## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that corresponds to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.



## **CURRENT CERTIFICATIONS**

---

**NELAP** — (Primary AA: California, Certificate No. 02102CA)

**Department of the Navy**

**U.S. Army Corps of Engineers**

**U.S. EPA Region 5**

**Bureau of Reclamation — Mid-Pacific Region** — (MP-470, Res-1.10)

**Commonwealth of Kentucky** — (Certificate No. 90063)

**Commonwealth of Virginia** — (Certificate No. 00013)

**State of Alaska, Department of Environmental Conservation** — (Certificate No. OS-00197)

**State of Arizona** — (Certificate No. AZ0639)

**State of Arkansas, Department of Health** — (Approval granted through CA certification)

**State of Arkansas, Department of Environmental Quality**

**State of California** — (Certificate No. 1640)

**State of Colorado**

**State of Connecticut** — (Certificate No. PH-0182)

**State of Florida** — (Certificate No. 87456)

**State of Louisiana, Department of Health and Hospitals** — (Certificate No. LA000014)

**State of Louisiana, Department of Environmental Quality**

**State of Maine**

**State of Michigan** (Certificate No. 81178087)

**State of Mississippi** — (Approval granted through CA certification)

**State of Nevada** — (Certificate No. CA413)

**State of New Jersey** — (Certificate No. CA003)

**State of New York, Department of Health** — (Certificate No. 11411)

**State of North Carolina** — (Certification No. 06700)

**State of North Dakota, Department of Health** — (Certificate No. R-078)

**State of New Mexico**

**State of Oklahoma** — (D9919)

**State of Oregon** — (Certificate No. CA413)

**State of Pennsylvania** — (Certificate No. 68-490)

**State of South Carolina** — (Certificate No. 87002001)

**State of Tennessee** — (Certificate No. 02996)

**State of Texas** — (Certificate No. TX247-1000A)

**State of Utah** — (Certificate No. E-201)

**State of Washington** — (Certification No. C091)

**State of Wisconsin** — (Certificate No. 998036160)

**State of Wyoming** — (USEPA Region 8 Ref: 8TMS-Q)



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 506-9996 Fax (619) 506-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #8, Las Vegas, NV 89120 Ph (702) 798-3520 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOB2064**

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 933-0940  <i>25816 0.1°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB2064-01</b> Water 1613-Dioxin-HR EDD + Level 4	Sampled: 02/25/05 13:40 03/04/05 13:40 03/25/05 13:40	Instant Notification J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b> 1 L Amber (IOB2064-01G) 1 L Amber (IOB2064-01H)		

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No     
 Sample labels/COC agree:  Yes  No     
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No     
 Samples Preserved Properly:  Yes  No     
 Samples Received at (temp): \_\_\_\_\_

*Michele Harper*      *Brittany J. Benedict*      *3/1/05*      *0853*  
 Released By      Date      Time      Received By      Date      Time

Released By      Date      Time      Received By      Date      Time

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25816

1. Date Samples Arrived: <u>3/1/05 0853</u> Initials: <u>ASB</u> Location: <u>WR-2</u>			
2. Time / Date logged in: <u>1425 3/1/05</u> Initials: <u>ASB</u> Location: <u>WR-2</u>			
3. Samples Arrived By: (circle) <u>FedEx</u> UPS World Courier Other:			
4. Shipping Preservation: (circle) <u>Ice</u> <u>Blue Ice</u> Dry Ice / None Temp °C <u>0.1</u>			
	YES	NO	NA
5. Shipping Container(s) Intact? If not, describe condition in comment section.	✓		
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.	✓		
7. Shipping Documentation Present? (circle) Shipping Label <u>Airbill</u> Tracking Number <u>7909 3312 2387</u>	✓		
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. _____ Intact? If not intact, describe condition in comment section.		✓	✓
9. Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10. Chain of Custody (COC) or other Sample Documentation Present?	✓		
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.		✓	
12. Shipping Container (circle): ALTA <u>Cilent</u> Retain or <u>Return</u> or Disposed			
13. Container(s) and/or Bottle(s) Requested?		✓	
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted			✓

Comments:

ALTA Analytical Laboratory  
El Dorado Hills, CA 95762





17461 Deegan Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Corona, CA 92726 Ph (909) 270-4087 Fax (909) 370-1068  
 3904 Chippewa Drive, Suite 808, San Diego, CA 92123 Ph (619) 605-0086 Fax (619) 565-2520  
 1039 Green Street, Suite B-120, Phoenix, AZ 85041 Ph (480) 705-0043 Fax (480) 785-0831  
 2520 E. Street, P.O. Box 913, Las Vegas, NV 89120 Ph (702) 796-3880 Fax (702) 796-3821

### SUBCONTRACT ORDER - PROJECT # IOB2064

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Deegan Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Alta Analytical  
 1104 Windfield Way *25816* *0.1°C*  
 El Dorado Hills, CA 95762  
 Phone: (916) 933-1640  
 Fax: (916) 933-0940

Standard TAT is requested unless specific due date is requested => Due Date: *2 weeks* Initials: *MH*

Analysis	Expiration	Comments
Sample ID: IOB2064-01 Water 1613-Dioxin-HR EDD + Level 4	Sampled: 02/25/05 13:40 03/04/05 13:40 03/25/05 13:40	Instant Notification J flags, 17 congeners, no TEQ, sub to Pace-MN Excel EDD email to pm, include Std logs for Lvl IV
Containers Supplied: 1 L Amber (IOB2064-01G) 1 L Amber (IOB2064-01H)		

*Sampler = P.P.  
 MH 3/2/05*

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/CDC agree:  Yes  No  
 Samples Received On Inst:  Yes  No  
 Corody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received at (atrop): \_\_\_\_\_

Released By: *Michele Harper* Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received By: *Katherine O. Benedict* Date: *3/1/05* Time: *0853*

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

STANDARD OPERATING PROCEDURE

Attachment 10.B.4

Client: Del Mar Analytical Chain of Custody Anomaly / Sample Acceptance Form  
 Project Number: 25816  
 Contact: Michele Harper  
 Date Received: 3/01/05  
 Fax Number: 949/261-1228  
 Documented by/date: CSB 3/01/05

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis. Thank You. (Fax #916-673-0106)

The following information or item is needed to proceed with the analysis:

- Completed Chain-of-Custody
- Test Method Requested
- Analyte List Requested
- Preservative
- Sample Identification
- Sample Collection Date /Time
- Collector's Name
- Sample Type
- Sample Location

The following anomalies were noted. Authorization is needed to proceed with the analysis:

Temperature outside  $\pm 2^{\circ}\text{C}$  range Samples Affected: \_\_\_\_\_  
 Temp \_\_\_\_\_  $^{\circ}\text{C}$  Ice Present? Yes No

Sample ID Discrepancy Samples Affected: \_\_\_\_\_

Sample holding time missed Samples Affected: \_\_\_\_\_

Custody seals broken Samples Affected: \_\_\_\_\_

Insufficient Sample Size Samples Affected: \_\_\_\_\_

Sample Container(s) Broken Samples Affected: \_\_\_\_\_

Incorrect Container Type Samples Affected: \_\_\_\_\_

Other \_\_\_\_\_

**Client Authorization:**  
 Proceed With Analysis: YES NO Signature and Date: Michele Harper 3/2/05  
 Client Comments/Instructions: sample = P.P.

# LABORATORY REPORT

**Aquatic  
Testing  
Laboratories**



*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003

(805) 650-0546 FAX (805) 650-0756

CA DOHS ELAP Cert. No.: 1775

**Date:** March 5, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05022602-001/002  
**Sample I.D.:** IOB2064-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 02/25/05  
Date Received: 02/26/05  
Date Tested: 02/26/05 to 03/04/05

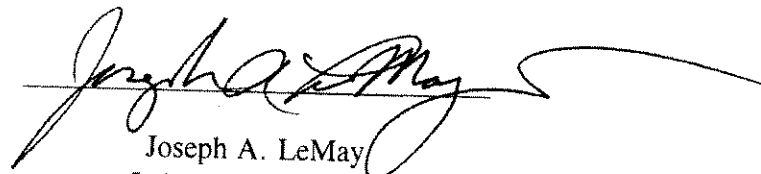
**Sample Analysis:** The following analyses were performed on your sample:  
Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TUa</b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TUc</b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

  
Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05022602-001  
 Client/ID: Del Mar IOB2064-01

Start Date: 02/26/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 9 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050208.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.2	9.1	7.8	0	0	RM 1030
	100%	20.1	10.2	7.2	0	0	
24 Hr	Control	19.5	7.8	7.6	0	0	RM 1000
	100%	19.4	7.5	7.3	0	0	
48 Hr	Control	19.4	6.9	7.6	0	0	RM 1100
	100%	19.5	6.1	7.1	0	0	
Renewal	Control	19.4	8.2	7.7	0	0	RM 1100
	100%	19.6	9.1	7.4	0	0	
72 Hr	Control	19.1	7.8	7.5	0	0	RM 1030
	100%	19.1	7.8	7.2	0	0	
96 Hr	Control	19.3	8.2	7.5	0	0	RM 1030
	100%	19.1	8.1	7.2	0	0	

### Comments:

Sample as received: Chlorine: 0 mg/l; pH: 7.2; Conductivity: 130 umho; Temp: 4°C;  
 DO: 10.2 mg/l; Alkalinity: 41 mg/l; Hardness: 55 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No  
 Control: Alkalinity: 55 mg/l; Hardness: 93 mg/l; Conductivity: 275 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes / No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 % 100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05022602  
Client/ID: Del Mar IOB2064-01

Date Tested: 02/26/05 to 03/04/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050225.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	28.2
6.25%	100%	28.4
12.5%	100%	27.5
25%	100%	28.5
50%	100%	27.2
100%	100%	25.0

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥ 80%	Pass (100% survival)
≥ 15 young per surviving control female	Pass (28.2 young)
≥ 60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD < 47% for reproduction; if > 47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 15.3%)
Statistically significantly different concentrations relative difference > 13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight response at conc. tested)



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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOB2064

<b>SENDING LABORATORY:</b> Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	<b>RECEIVING LABORATORY:</b> Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone : (805) 650-0546 Fax: (805) 650-0756
---	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOB2064-01 Water	Sampled: 02/25/05 13:40	Instant Notification
Bioassay-7 dy Chrnrc	02/27/05 01:40	ceriodaphnia, 13267
Bioassay-Acute 96hr	02/27/05 01:40	fathead minnow, 13267
<b>Containers Supplied:</b>		
1 gal Poly (IOB2064-01AZ)		
1 gal Poly (IOB2064-01BA)		

SAMPLE INTEGRITY:			
All containers intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Custody Seals Present: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Samples Preserved Properly: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): <u>4°C</u>	

<i>Michael Hepp</i> 2/26      0530 Released By                      Date                      Time	<i>L. DeLong</i> 2/26/05      0530 Received By                      Date                      Time
<i>L. DeLong</i> 2/26/05      0745 Released By                      Date                      Time	<i>[Signature]</i> 2-26-05      0745 Received By                      Date                      Time



March 24, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOB2064  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503011-8306

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 1, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), and strontium-90 (Sr-90, EPA905.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

Melissa Mannion  
Senior Program Manager

MCM/njv

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

**Eberline Services**  
**ANALYSIS RESULTS**

SDG <u>8306</u> Work Order <u>R503011-01</u> Received Date <u>03/01/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB2064</u> Matrix <u>WATER</u>
--	---

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
IOB2064-01		8306-001	02/25/05	03/15/05	GrossAlpha	1.29 ± 0.80	pCi/L	0.947
				03/15/05	Gross Beta	2.12 ± 1.2	pCi/L	1.89
				03/17/05	H3	-7.08 ± 150	pCi/L	261
				03/18/05	Sr90	-0.059 ± 0.24	pCi/L	0.459

Certified by <u><i>[Signature]</i></u> Report Date <u>03/24/05</u> Page <u>1</u>
--



# Eberline Services

## QC RESULTS

SDG <u>8306</u> Work Order <u>R503011-01</u> Received Date <u>03/01/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOB2064</u> Matrix <u>WATER</u>
--	---

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8305-002	GrossAlpha	10.5 ± 1.2	pCi/Smpl	11.2	0.436	94% recovery
		Gross Beta	11.2 ± 0.81	pCi/Smpl	12.1	0.584	93% recovery
		H3	266 ± 25	pCi/Smpl	258	26.2	103% recovery
		Sr90	12.2 ± 0.57	pCi/Smpl	11.1	0.236	110% recovery
<u>BLANK</u>							
	8305-003	GrossAlpha	-0.070 ± 0.17	pCi/Smpl	NA	0.417	<MDA
		Gross Beta	-0.046 ± 0.31	pCi/Smpl	NA	0.545	<MDA
		H3	1.77 ± 15	pCi/Smpl	NA	26.0	<MDA
		Sr90	-0.098 ± 0.12	pCi/Smpl	NA	0.224	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8305-004	GrossAlpha	0.325 ± 0.53	0.874
	Gross Beta	2.92 ± 1.2	1.82
	H3	-91.7 ± 150	260
	Sr90	-0.070 ± 0.21	0.441

<u>ORIGINALS</u>					
Sample ID	Results ± 2σ	MDA	RPD (Tot)	3σ	Eval
8305-001	1.50 ± 0.89	1.05	129	178	satis.
	2.27 ± 1.2	1.77	25	103	satis.
	-45.7 ± 150	259	-	0	satis.
	0.206 ± 0.25	0.451	-	0	satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8305-005	GrossAlpha	74.5 ± 5.1	0.951
	Gross Beta	82.2 ± 3.8	1.89
	H3	31400 ± 690	263

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8305-001	1.50 ± 0.89	1.05	76.6	95	
	2.27 ± 1.2	1.77	73.8	108	
	-45.7 ± 150	259	31400	100	

Certified by [Signature]  
 Report Date 03/24/05  
 Page 2



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3620 Fax (702) 796-3621

## SUBCONTRACT ORDER - PROJECT # IOB2064

<b>SENDING LABORATORY:</b> Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	<b>RECEIVING LABORATORY:</b> Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone: (510) 235-2633 Fax: (510) 235-0438
---	---

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOB2064-01 Water      Sampled: 02/25/05 13:40</b>		
EDD + Level 4-OUT	03/25/05 13:40	<b>Instant Notification</b>
Gross Alpha-O	02/25/06 13:40	**LEVEL IV QC, ACCESS 7 EDD**
Gross Beta-O	02/25/06 13:40	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Radium, Combined-O	02/25/06 13:40	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Strontium 90-O	02/25/06 13:40	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Tritium-O	02/25/06 13:40	905.0
		906

- Containers Supplied:**
- 40 ml Voa Vial (IOB2064-01AD) B
  - 40 ml Voa Vial (IOB2064-01AE)
  - 40 ml Voa Vial (IOB2064-01AF)
  - 1 L Amber (IOB2064-01AT) w/HNO<sub>3</sub>
  - 1 L Amber (IOB2064-01AU) ✓
  - 1 L Amber (IOB2064-01AV) ✓
  - 1 L Amber (IOB2064-01AW) ✓

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seats Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

Released By: Michele Harper      Date: 2/28/05      Time: 17:00      Received By: Alex Leung      Date: 3/1/05      Time: 10:00

Released By: \_\_\_\_\_      Date: \_\_\_\_\_      Time: \_\_\_\_\_      Received By: \_\_\_\_\_      Date: \_\_\_\_\_      Time: \_\_\_\_\_



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: DEL. MAR ANALYT City IRVINE State CA

Date/Time received 3/1/05 10:00 CoC No. 1082064

Container I.D. No. DEL MAR COLTON Requested TAT (Days) STAND P.D. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [ ] N/A [✓]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [ ] N/A [✓]
- 5. Packing material is: Wet [✓] Dry [ ]
- 6. Number of samples in shipping container: 1 Sample Matrix WATER
- 7. Number of containers per sample: 7 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [✓] No [ ]
- 9. Paperwork agrees with samples? Yes [✓] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
- 11. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [✓] Not preserved [ ] pH 2 Preservative HNO3
- 13. Describe any anomalies: \_\_\_\_\_
- 14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
- 15. Inspected by AK Date: 3/1/05 Time: 10:00

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 8, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOB2064

**Truesdail Project:** 940177

**Date Received:** 02/28/05

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
940177-1	IOB2064-01	Water	02/25/05	1340	Hydrazines by EPA 8315M

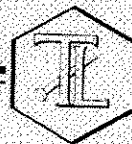
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

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www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOB2064  
**Date Received:** 02/28/05

**Truesdail Project:** 940177

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.


**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB2064  
**P.O. Number:** IOB2064  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940177  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 4, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

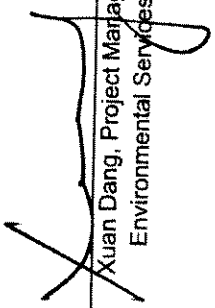
## Analytical Results

Sample ID	Sample Description	Unsymmetrical Dimethyl		Hydrazine
		Monomethyl Hydrazine	Hydrazine	
704807-MB	Method Blank	ND	ND	ND
940177	IOB2064-01	ND	ND	ND
MDL		1.2	0.27	0.39
PQL		5.0	5.0	1.0

Page 1 of 1

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOB2064  
**P.O. Number:** IOB2064  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 2994; Analysis: 372  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704807  
**Project Lab. No.:** 940177  
**Spiked Sample ID:** 940178  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 3-4, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	26.3	105	85-115	PASS
u-Dimethyl Hydrazine	25.0	23.2	93.0	85-115	PASS
Hydrazine	5.0	5.10	102	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)		Measured Value (ug/L)		% Rec.		Control Limits	Flag
	Value	MSD	Value	MSD	%	D		
Monomethyl Hydrazine	50.0	19.8	47.4	19.8	94.7	2.93%	85-115	PASS
u-Dimethyl Hydrazine	50.0	38.2	48.3	38.2	96.6	0.24%	85-115	PASS
Hydrazine	10.0	8.21	8.62	8.21	86.2	1.36%	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

#### LCS/LCSD

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		LCS/LCSD		Control Limits		Flag
	ug/L	MSD	ug/L	MSD	LCS	LCSD	%D	%D	%D	%D	
Monomethyl Hydrazine	50.0	54.5	58.7	0.0	109	117	7.54%	PASS	20	70-130	PASS
u-Dimethyl Hydrazine	50.0	50.1	50.4	0.0	100	101	0.58%	PASS	20	70-130	PASS
Hydrazine	10.0	10.2	10.3	0.0	102	103	1.08%	PASS	20	70-130	PASS

#### MS/MSD

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		MS/MSD		Control Limits	
	ug/L	MSD	ug/L	MSD	MS	MSD	%D	%D	%D	%D
Monomethyl Hydrazine	50.0	20.4	19.8	0.0	40.8	39.6	2.93%	PASS	20	0-150
u-Dimethyl Hydrazine	50.0	38.2	38.3	0.0	76.4	76.6	0.24%	PASS	20	0-150
Hydrazine	10.0	8.21	8.32	0.0	82.1	83.2	1.36%	PASS	20	0-150

ICV: Initial Calibration Verification

QCS: Quality Control Standard

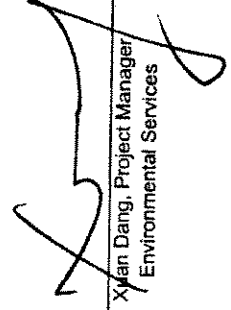
LCS: Laboratory Control Spike

MS: Matrix Spike

%D: Percent Difference

Flag: "Pass" if within Control Limits; otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

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**Del Mar Analytical**  
**940177**

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9586 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SUBCONTRACT ORDER - PROJECT # IOB2064**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone: (714) 730-6239  
 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => **Due Date:** \_\_\_\_\_ **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOB2064-01 Water	Sampled: 02/25/05 13:40	Instant Notification
Hydrazine-OUT	02/28/05 13:40	Sub Truesdail for Monomethylhydrazine, 13267
Level 4 Data Package	03/25/05 13:40	

**Containers Supplied:**  
 1 L Amber (IOB2064-01AX)  
 1 L Amber (IOB2064-01AY)

Rec'd 02/28/05  
 s2b 940177

**ALERT!!**  
**Level IV QC**

**For Sample Conditions  
 See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Custody Seals Present:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Samples Received at (temp): \_\_\_\_\_

Released By: Michele Harper Date: 2/28/05 Time: 0900  
 Received By: [Signature] Date: 2/28/05 Time: 0900  
 Released By: [Signature] Date: 2/28/05 Time: 0925  
 Received By: Jacqueline Brown Date: 2/28/05 Time: 9:25





TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analy

Lab # 940177

Date Delivered: 2/28/05 Time: 9:25 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc..)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by  Truesdail  Client  N/A
12. Were samples pH checked? pH = 7.0  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: J Brower

**ALERT!!!**  
 Level **IV** QC



TRUESDAIL LABORATORIES, INC.

# Internal Chain of Custody Logbook

Lab Number: 940174  
Client Name: Del Mar

Storage Temperature: 4.0C

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				2/28/05	09:50			
	Hydrazine	022805	1230	022805	1400	100mL	no text	[Signature]

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials

Discharge Date	Printed Name	Initial

## **APPENDIX A**

### **Section 42**

Outfall 011, February 25, 2005


MEC<sup>X</sup> Data Validation Reports

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF32  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 6

Laboratory Alta  
 Reviewer K. Shadowlight  
 Analysis/Method Dioxins

Date: March 16, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	  
2. <b>Out of Scope Analyses</b>	  
3. <b>Analyses Not Conducted</b>	  
4. <b>Missing Hardcopy Deliverables</b>	  
5. <b>Incorrect Hardcopy Deliverables</b>	  
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were assigned for the following: * Detects below the lower method calibration level
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple SDGs  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 6  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: March 16, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 001	IOB2098-01	25812-001	water	1613
Outfall 002	IOB2063-01	25811-001	water	1613
Outfall 011	IOB2066-01	25815-001	water	1613
Outfall 011 Composite	IOB2064-01	25816-001	water	1613
Outfall 011 Grab	IOB2065-01	25814-001	water	1613
Outfall 018	IOB2099-01	25813-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All of the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were shipped to Alta for dioxin/furan analyses and the samples were received below the temperature limits at  $0.8^{\circ}\text{C}$  and  $1.1^{\circ}\text{C}$ ; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. The sample collector's name is not routinely provided on the transfer COC; however, the name of the sample collector was provided in the Sample Acceptance Form dated 03/01/05 for sample Outfall 011 Composite. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

## 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 08/30/04. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 15 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (6571-MB001) was extracted and analyzed with the samples in these SDGs. There were no detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6571-OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the lower method calibration level (MCL) were qualified as estimated, "J;" however, as Alta analyzed an additional calibration standard, not all results below the method calibration level were appropriately qualified by the laboratory. These results were qualified as estimated, "J," by the reviewer. No further qualifications were required.



Sample ID: IOB2064-01 Outfall oil Composite

EPA Method 1613

Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25816-001
Project:	IOB2064	Sample Size:	1.028 L	QC Batch No.:	6571
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05
Time Collected:	1340			Date Analyzed DB-225:	NA
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.958		IS 13C-2,3,7,8-TCDD	68.7 25 - 164
1,2,3,7,8-PeCDD	ND	1.11		13C-1,2,3,7,8-PeCDD	57.9 25 - 181
1,2,3,4,7,8-HxCDD	ND	3.06		13C-1,2,3,4,7,8-HxCDD	55.7 32 - 141
1,2,3,6,7,8-HxCDD	ND	3.12		13C-1,2,3,6,7,8-HxCDD	57.2 28 - 130
1,2,3,7,8,9-HxCDD	ND	3.08		13C-1,2,3,4,6,7,8-HpCDD	57.4 23 - 140
1,2,3,4,6,7,8-HpCDD	6.35			13C-OCDD	52.0 17 - 157
OCDD	62.1		J	13C-2,3,7,8-TCDF	68.1 24 - 169
2,3,7,8-TCDF	ND	1.25		13C-1,2,3,7,8-PeCDF	55.9 24 - 185
1,2,3,7,8-PeCDF	ND	1.88		13C-2,3,4,7,8-PeCDF	55.6 21 - 178
2,3,4,7,8-PeCDF	ND	1.79		13C-1,2,3,4,7,8-HxCDF	44.0 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.822		13C-1,2,3,6,7,8-HxCDF	48.8 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.751		13C-2,3,4,6,7,8-HxCDF	47.1 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.905		13C-1,2,3,7,8,9-HxCDF	49.5 29 - 147
1,2,3,7,8,9-HxCDF	ND	1.25		13C-1,2,3,4,6,7,8-HpCDF	47.5 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	2.11		13C-1,2,3,4,7,8,9-HpCDF	52.2 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	2.23		13C-OCDF	56.4 17 - 157
OCDF	ND	4.47		CRS 37Cl-2,3,7,8-TCDD	78.8 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.958			
Total PeCDD	ND	1.11			
Total HxCDD	ND	3.09			
Total HpCDD	15.0				
Total TCDF	ND	1.25			
Total PeCDF	ND	1.83			
Total HxCDF	ND	0.914			
Total HpCDF	ND	2.16			

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH

low 1 Kb out 10/05

AMEC VALIDATED

LEVEL IV

Approved By: Martha M. Maier 10-Mar-2005 10:37



**EPA Method 1613**

Sample ID: **IOB2065-01** *Outfall off Grab*

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOB2065  
 Date Collected: 25-Feb-05  
 Time Collected: 1042

**Laboratory Data**  
 Lab Sample: 25814-001  
 QC Batch No.: 6571  
 Date Analyzed DB-5: 8-Mar-05  
 Date Analyzed DB-225: NA

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 1.030 L

Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.921			13C-2,3,7,8-TCDD	74.9	25 - 164	
1,2,3,7,8-PeCDD	ND	1.26			13C-1,2,3,7,8-PeCDD	64.1	25 - 181	
1,2,3,4,7,8-HxCDD	ND	2.84			13C-1,2,3,4,7,8-HxCDD	65.1	32 - 141	
1,2,3,6,7,8-HxCDD	ND	2.65			13C-1,2,3,6,7,8-HxCDD	67.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	2.73			13C-1,2,3,4,6,7,8-HpCDD	67.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	9.15			J	13C-OCDD	60.5	17 - 157	
OCDD	81.2				13C-2,3,7,8-TCDF	77.3	24 - 169	
2,3,7,8-TCDF	ND	1.46			13C-1,2,3,7,8-PeCDF	61.6	24 - 185	
1,2,3,7,8-PeCDF	ND	1.91			13C-2,3,4,7,8-PeCDF	62.0	21 - 178	
2,3,4,7,8-PeCDF	ND	1.74			13C-1,2,3,4,7,8-HxCDF	52.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	1.18			13C-1,2,3,6,7,8-HxCDF	59.7	26 - 123	
1,2,3,6,7,8-HxCDF	ND	1.11			13C-2,3,4,6,7,8-HxCDF	57.4	28 - 136	
2,3,4,6,7,8-HxCDF	ND	1.27			13C-1,2,3,7,8,9-HxCDF	58.7	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.81			13C-1,2,3,4,6,7,8-HpCDF	55.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	2.06			13C-1,2,3,4,7,8,9-HpCDF	62.9	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	2.09			13C-OCDF	63.2	17 - 157	
OCDF	3.94			J	CRS 37C1-2,3,7,8-TCDD	91.9	35 - 197	

**Totals**

Total TCDD	ND	0.921		
Total PeCDD	ND	1.26		
Total HxCDD	ND	2.73		
Total HpCDD	20.8			
Total TCDF	ND	1.46		
Total PeCDF	ND	1.82		
Total HxCDF	ND	1.31		
Total HpCDF	ND	2.07		

**Footnotes**  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Approved By: **Martha M. Maier** 10-Mar-2005 10:14

Analyst: **JMH**  
 4/8/05

**AMEC VALIDATED LEVEL IV**



**EPA Method 1613**

**Sample ID:** IOB2098-01 *Outfall 001*

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOB2098  
 Date Collected: 26-Feb-05  
 Time Collected: 1010

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 1.015 L

**Laboratory Data**  
 Lab Sample: 25812-001  
 QC Batch No.: 6571  
 Date Analyzed DB-5: 8-Mar-05  
 Date Analyzed DB-225: NA

Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.873			13C-2,3,7,8-TCDD	62.6	25 - 164	
1,2,3,7,8-PeCDD	ND	0.921			13C-1,2,3,7,8-PeCDD	55.9	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.50			13C-1,2,3,4,7,8-HxCDD	58.3	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.59			13C-1,2,3,6,7,8-HxCDD	59.7	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.54			13C-1,2,3,4,6,7,8-HpCDD	58.5	23 - 140	
1,2,3,4,6,7,8-HpCDD	4.28			J	13C-OCDD	53.8	17 - 157	
OCDD	34.4			J				
2,3,7,8-TCDF	ND	1.04			13C-2,3,7,8-TCDF	65.7	24 - 169	
1,2,3,7,8-PeCDF	ND	1.73			13C-1,2,3,7,8-PeCDF	54.8	24 - 185	
2,3,4,7,8-PeCDF	ND	1.59			13C-2,3,4,7,8-PeCDF	56.1	21 - 178	
1,2,3,4,7,8-HxCDF	ND	0.742			13C-1,2,3,4,7,8-HxCDF	43.4	26 - 152	
1,2,3,6,7,8-HxCDF	ND	0.690			13C-1,2,3,6,7,8-HxCDF	47.8	26 - 123	
2,3,4,6,7,8-HxCDF	ND	0.778			13C-2,3,4,6,7,8-HxCDF	48.9	28 - 136	
1,2,3,7,8,9-HxCDF	ND	1.12			13C-1,2,3,7,8,9-HxCDF	50.5	29 - 147	
1,2,3,4,6,7,8-HpCDF	ND	1.59			13C-1,2,3,4,6,7,8-HpCDF	48.0	28 - 143	
1,2,3,4,7,8,9-HpCDF	ND	1.62			13C-1,2,3,4,7,8,9-HpCDF	53.3	26 - 138	
OCDF	ND	2.71			13C-OCDF	58.5	17 - 157	
<b>Totals</b>					<b>CRS 37Cl-2,3,7,8-TCDD</b>	<b>82.0</b>	<b>35 - 197</b>	

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH

*pm 4/12/05*

Approved By: Martha M. Maier 10-Mar-2005 08:12

**AMEC VALIDATED**

**LEVEL IV**

Project 25812





**EPA Method 1613**

**Sample ID:** IOB2099-01  
**Del Mar Analytical, Irvine**  
 IOB2099  
 26-Feb-05  
 0930

**Laboratory Data**  
 Lab Sample: 25813-001  
 QC Batch No.: 6571  
 Date Analyzed DB-5: 8-Mar-05  
 Date Received: 1-Mar-05  
 Date Extracted: 4-Mar-05  
 Date Analyzed DB-225: NA

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 1.009 L

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOB2099  
 Date Collected: 26-Feb-05  
 Time Collected: 0930

Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.958			IS 13C-2,3,7,8-TCDD	76.5	25 - 164	
1,2,3,7,8-PeCDD	ND	1.02			13C-1,2,3,7,8-PeCDD	63.0	25 - 181	
1,2,3,4,7,8-HxCDD	ND	3.47			13C-1,2,3,4,7,8-HxCDD	64.7	32 - 141	
1,2,3,6,7,8-HxCDD	ND	3.48			13C-1,2,3,6,7,8-HxCDD	62.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	3.47			13C-1,2,3,4,6,7,8-HpCDD	62.6	23 - 140	
1,2,3,4,6,7,8-HpCDD	13.7			J	13C-OCDD	55.0	17 - 157	
OCDD	146				13C-2,3,7,8-TCDF	80.4	24 - 169	
2,3,7,8-TCDF	ND	1.30			13C-1,2,3,7,8-PeCDF	61.1	24 - 185	
1,2,3,7,8-PeCDF	ND	1.89			13C-2,3,4,7,8-PeCDF	64.1	21 - 178	
2,3,4,7,8-PeCDF	ND	1.64			13C-1,2,3,4,7,8-HxCDF	49.7	26 - 152	
1,2,3,4,7,8-HxCDF	ND	1.37			13C-1,2,3,6,7,8-HxCDF	55.4	26 - 123	
1,2,3,6,7,8-HxCDF	ND	1.26			13C-2,3,4,6,7,8-HxCDF	54.2	28 - 136	
2,3,4,6,7,8-HxCDF	ND	1.49			13C-1,2,3,7,8,9-HxCDF	54.2	29 - 147	
1,2,3,7,8,9-HxCDF	ND	2.11			13C-1,2,3,4,6,7,8-HpCDF	51.2	28 - 143	
1,2,3,4,6,7,8-HpCDF	2.74			J	13C-1,2,3,4,7,8,9-HpCDF	56.1	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	2.07			13C-OCDF	58.2	17 - 157	
OCDF	8.35			J	CRS 37Cl-2,3,7,8-TCDD	87.9	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.958						
Total PeCDD	ND	1.02						
Total HxCDD	ND	3.48						
Total HpCDD	28.4							
Total TCDF	2.63							
Total PeCDF	ND	1.76						
Total HxCDF	ND	1.53						
Total HpCDF	2.74		7.18					

**Footnotes**

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detector limit.
- d. Lower control limit - upper control limit.

Analyst: JMH

*m 4/2005*

Project 25813

Approved By: Martha M. Maier 10-Mar-2005 09:31

**AMEC VALIDATED**  
**J. DWYER IV**



**EPA Method 1613**

**Sample ID:** IOB2063-01 *Outfall 002*

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOB2063  
 Date Collected: 25-Feb-05  
 Time Collected: 1016

**Laboratory Data**  
 Lab Sample: 25811-001  
 QC Batch No.: 6571  
 Date Analyzed DB-5: 8-Mar-05

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 1.008 L

**Date Received:** 1-Mar-05  
**Date Extracted:** 4-Mar-05  
**Date Analyzed DB-225:** NA

Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.953			IS 13C-2,3,7,8-TCDD	65.8	25 - 164	
1,2,3,7,8-PeCDD	ND	1.05			13C-1,2,3,7,8-PeCDD	61.7	25 - 181	
1,2,3,4,7,8-HxCDD	ND	2.33			13C-1,2,3,4,7,8-HxCDD	64.3	32 - 141	
1,2,3,6,7,8-HxCDD	ND	2.28			13C-1,2,3,6,7,8-HxCDD	64.4	28 - 130	
1,2,3,7,8,9-HxCDD	ND	2.30			13C-1,2,3,4,6,7,8-HpCDD	65.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	2.99				13C-OCDD	62.8	17 - 157	
OCDD	8.97			J	13C-2,3,7,8-TCDF	69.1	24 - 169	
2,3,7,8-TCDF	ND	1.32			13C-1,2,3,7,8-PeCDF	58.2	24 - 185	
1,2,3,7,8-PeCDF	ND	1.45			13C-2,3,4,7,8-PeCDF	60.2	21 - 178	
2,3,4,7,8-PeCDF	ND	1.24			13C-1,2,3,4,7,8-HxCDF	46.3	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.597			13C-1,2,3,6,7,8-HxCDF	52.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.535			13C-2,3,4,6,7,8-HxCDF	51.5	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.637			13C-1,2,3,7,8,9-HxCDF	52.8	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.891			13C-1,2,3,4,6,7,8-HpCDF	54.5	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	1.22			13C-1,2,3,4,7,8,9-HpCDF	58.4	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.34			13C-OCDF	64.6	17 - 157	
OCDF	ND	2.80			CRS 37Cl-2,3,7,8-TCDD	78.2	35 - 197	
<b>Totals</b>								
Total TCDD	5.07							
Total PeCDD	6.12							
Total HxCDD	3.64							
Total HpCDD	2.99							
Total TCDF	ND	1.32						
Total PeCDF	ND	1.34						
Total HxCDF	ND	0.653						
Total HpCDF	ND	1.27						
<b>Footnotes</b>								
a. Sample specific estimated detection limit.								
b. Estimated maximum possible concentration.								
c. Method detection limit.								
d. Lower control limit - upper control limit.								

Analyst: JMH Pm 4/1/05

Approved By: Martha M. Mater 10-Mar-2005 08:05

Project 25811 **AMEC VALIDATED**

**LEVEL IV**



Sample ID: IOB2066-01		Outfall oil		EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25815-001	Date Received:	1-Mar-05
Project:	IOB2066	Sample Size:	1.033 L	QC Batch No.:	6571	Date Extracted:	4-Mar-05
Date Collected:	25-Feb-05			Date Analyzed DB-5:	8-Mar-05	Date Analyzed DB-225:	NA
Time Collected:	1510						
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.905		IS 13C-2,3,7,8-TCDD	74.2	25 - 164	
1,2,3,7,8-PeCDD	ND	1.03		13C-1,2,3,7,8-PeCDD	63.7	25 - 181	
1,2,3,4,7,8-HxCDD	ND	2.32		13C-1,2,3,4,7,8-HxCDD	63.2	32 - 141	
1,2,3,6,7,8-HxCDD	ND	2.20		13C-1,2,3,6,7,8-HxCDD	65.0	28 - 130	
1,2,3,7,8,9-HxCDD	ND	2.25		13C-1,2,3,4,6,7,8-HpCDD	66.4	23 - 140	
1,2,3,4,6,7,8-HpCDD	8.02			13C-OCDD	55.5	17 - 157	
OCDD	65.3			13C-2,3,7,8-TCDF	76.7	24 - 169	
2,3,7,8-TCDF	ND	1.15		13C-1,2,3,7,8-PeCDF	62.4	24 - 185	
1,2,3,7,8-PeCDF	ND	1.53		13C-2,3,4,7,8-PeCDF	63.9	21 - 178	
2,3,4,7,8-PeCDF	ND	1.41		13C-1,2,3,4,7,8-HxCDF	47.5	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.891		13C-1,2,3,6,7,8-HxCDF	53.7	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.854		13C-2,3,4,6,7,8-HxCDF	53.8	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.939		13C-1,2,3,7,8,9-HxCDF	56.1	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.32		13C-1,2,3,4,6,7,8-HpCDF	53.3	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	2.10		13C-1,2,3,4,7,8,9-HpCDF	59.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	2.01		13C-OCDF	61.9	17 - 157	
OCDF	ND	5.26		CRS 37Cl-2,3,7,8-TCDD	96.2	35 - 197	
Totals							
Total TCDD	ND	0.905					
Total PeCDD	ND	1.03					
Total HxCDD	ND	2.25					
Total HpCDD	17.1						
Total TCDF	ND	1.15					
Total PeCDF	ND	1.47					
Total HxCDF	ND	0.987					
Total HpCDF	ND	2.05					

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: JMH  
10/4/05

Approved By: Martha M. Maier 10-Mar-2005 10:26

**VALIDATED**

**MEC VALIDATED**

Project 25815

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
550 South Wadsworth Boulevard  
Suite 500  
Lakewood, CO 80226

Package ID T711HZ5  
Task Order 313150010  
SDG No. IOB2064, IOB2065

No. of Analyses 2

Laboratory Truesdail  
Reviewer P. Meeks  
Analysis/Method Hydrazines

Date: 03/30/05  
Reviewer's Signature  
P. Meeks

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Results qualified for exceeded analytical holding time.
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: March 30, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Composite	IOB2064-01	940177	water	Hydrazines by 8315
Outfall 011 Grab	IOB2065-01	940178	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the date of collection with the date of analysis. The three-day extraction holding time for the hydrazine analysis was met. The samples were analyzed one day beyond the three-day analytical holding time; therefore, nondetected results in both samples were qualified as estimated, "UJ." No further qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibrations were analyzed 03/03/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.



## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPD was within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Grab. The recoveries for the hydrazines were within the laboratory QC limits of 0-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the QC limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** JOB2064

**P.O. Number:** JOB2064

**Method Number:** 8315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940177

**Report Date:** March 8, 2005

**Sampling Date:** February 25, 2005

**Receiving Date:** February 28, 2005

**Extraction Date:** February 28, 2005

**Analysis Date:** March 4, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
704807-MB	Method Blank	ND	*	ND	*	ND	*
940177	Outfall oil Composite JOB2064-01	ND	UJ	ND	UJ	ND	H
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

pm 3/30/05

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantification Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

# AMEC VALIDATED

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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14201 FRANKLIN AVENUE, TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 FAX (714) 730 6462 www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derrian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOB2065  
**P.O. Number:** IOB2065  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940178  
**Report Date:** March 8, 2005  
**Sampling Date:** February 25, 2005  
**Receiving Date:** February 28, 2005  
**Extraction Date:** February 28, 2005  
**Analysis Date:** March 4, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

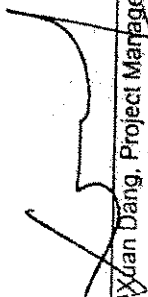
### Analytical Results

Sample ID	Sample Description	Monomethyl Dimethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		ND	Y	ND	Y	ND	Y
704807-MB	Method Blank	ND	Y	ND	Y	ND	Y
940178	outfall oil Grab	ND	Y	ND	Y	ND	Y
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

pm 3/20/05

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantification Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

## AMEC VALIDATED

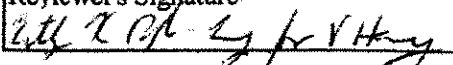
2275

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT58  
 Task Order 313150010  
 SDG No. IOB2065, IOB2064

No. of Analyses 2  
 Date: 4/04/05  
 Reviewer's Signature  


Laboratory Del Mar Analytical  
 Reviewer V. Henry  
 Analysis/Method Metals

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications applied for: Analytes detected below the reporting limit was qualified as estimated, "J." Detects and negative results in the associated method and calibration blanks. Reporting limit check standard recoveries outside of control limits.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: V. Henry  
Date of Review: March 31, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: Multiple  
Analysis: MET

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Comp	Outfall 011 Comp	IOB2064-01	water	ILM04
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. A duplicate sample was submitted for sample Outfall 011 Grab; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.



### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP/MS metals and 80-120% for mercury. The ICP reporting limit check standard was recovered within the AMEC control limits of 70-130%. Silver was recovered below the control limit in the ICP/MS 0.1 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, nondetected silver in both samples was qualified as estimated, "UJ." Arsenic from the 3/3/05 run was recovered above the control limit in the ICP/MS 1.0 ppb reporting limit check standard associated with Outfall 011 Grab and arsenic from the 3/7/05 run was recovered above the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp. Consequently, arsenic detected in both samples was qualified as estimated, "J." Vanadium was recovered above the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, the detect in Outfall 011 Grab was qualified as estimated, "J." Zinc was recovered below the control limit in the ICP/MS 2.0 ppb reporting limit check standard associated with Outfall 011 Comp and Outfall 011 Grab; therefore, zinc detected in both samples was qualified as estimated, "J." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130% and no further sample qualifications were required.

### 2.4 BLANKS

Boron was detected in a bracketing CCB at 0.013 mg/L; therefore, boron detected in Outfall 011 Composite and Outfall 011 Grab was qualified as estimated, "UJ." Antimony was detected in method blank 5C03085-BLK1 at 1.28 µg/L; therefore, antimony detected in Outfall 011 Grab and Outfall 011 Comp was qualified as estimated, "UJ," at a raised MDL of 1.3 µg/L. Chromium was detected in the CCBs bracketing Outfall 011 Grab and Outfall 011 Comp at approximately 1.4 µg/L; therefore, chromium detected in Outfall 011 Grab and Outfall 011 Composite was qualified as estimated, "UJ." Lead, nickel, and vanadium were reported in the CCB bracketing Outfall 011 Grab and Outfall 011 Comp at concentrations of -0.14, -0.6, and -0.9 µg/L, respectively. Consequently, the lead, nickel, and vanadium detects in Outfall 011 Grab were qualified as estimated, "J," the lead and nickel detects in Outfall 011 Comp were qualified as estimated, "J," and the vanadium nondetect in Outfall 011 Comp was qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferences sulfur, phosphorus, carbon, and chloride. Vanadium, manganese, cobalt, and cadmium were detected above the applicable reporting limit in the ICSA associated with Outfall 011 Grab and Outfall 011 Comp. The results for potassium were above the calibration range of the instrument in all the ICSA and ICSAB analyses associated with Outfall 011 Grab and Outfall 011 Comp; however, as potassium was found in the site samples at very low levels, no qualifications were required. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferences, Al, Ca, Fe, and Mg, and determined that the level of reported interferences were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferences and the other spiked analytes were within the control limits of 80-120%. In the ICSA analyses there were no positive or negative results that were above the applicable reporting limits. The validator reviewed the raw data for the site sample ICP analyses for the level of reported interferences, Al, Ca, Fe, and Mg, and determined that the level of reported interferences were not high enough to cause matrix effects. No qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5C03085-BS1, the ICP LCS sample was identified as 5C02083-BS1, and the mercury LCS sample was identified as 5C02089-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD or laboratory duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." Antimony was detected in the method blank, 5C03085-BLK1, at 1.28  $\mu\text{g/L}$ , which is a detect at approximately 3.5 $\times$  the level of antimony detected in the samples: therefore, the antimony detected in samples Outfall 011 Composite and Outfall 011 Grab was qualified as estimated "UJ" at a raised MDL of 1.3  $\mu\text{g/L}$ . No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



1761 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3497  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 570-4467 FAX (909) 570-1036  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 585-8596 FAX (619) 585-4629  
 5830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0042 FAX (480) 785-1451  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-5021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: METALS**

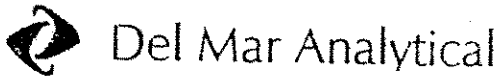
Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: mg/l											
Barium	EPA 200.8	SC03085	0.00014	0.0010	0.020	1	03/03/05	03/03/05			
Boron	EPA 200.7	SC02083	0.0074	0.050	0.065	1	03/02/05	03/02/05			
Iron	EPA 200.3	SC03085	0.0032	0.010	0.46	1	03/03/05	03/03/05		UJ	B

**AMEC VALIDATED**

Level IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

Amec Validated  
 Level 4



17461 Dorian Ave., Suite 105, Irvine, CA 92614 (949) 261-1122 FAX (949) 266-3247  
 1074 E. Coker Dr., Suite A, Culton, CA 92324 (951) 370-4167 FAX (951) 370-4169  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 305-8336 FAX (619) 505-0829  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0031  
 2520 E. Sunset Rd. #2, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Bocing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Qual
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5C03085	2.0	1.3	0.3713	1	03/03/05	03/03/05	B, J	UJ	B, S
Arsenic	EPA 200.8	5C03085	0.49	1.0	2.1	1	03/03/05	03/07/05		J	#3
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05		U	#3
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.091	1	03/03/05	03/03/05	J	J	DNQ
Chromium	EPA 200.8	5C03085	0.26	2.0	1.8	1	03/03/05	03/03/05	J	UJ	DNQ
Cobalt	EPA 200.8	5C03085	0.10	1.0	0.19	1	03/03/05	03/03/05	J	J	DNQ
Copper	EPA 200.8	5C03085	0.49	2.0	3.3	1	03/03/05	03/03/05	J	J	DNQ
Lead	EPA 200.8	5C03085	0.13	1.0	0.30	1	03/03/05	03/03/05	J	J	B, DN
Manganese	EPA 200.8	5C03085	0.44	1.0	12	1	03/03/05	03/03/05		U	
Mercury	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05		J	B, DN
Nickel	EPA 200.8	5C03085	0.15	2.0	0.87	1	03/03/05	03/03/05	J	U	
Selenium	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05		UJ	#3
Silver	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05		U	
Thallium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05		UJ	B
Vanadium	EPA 200.8	5C03085	0.86	2.0	ND	1	03/03/05	03/03/05		J	#3, D
Zinc	EPA 200.8	5C03085	3.1	20	13	1	03/03/05	03/03/05		J	

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Level IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: mg/l										
Barium	EPA 200.8	5C03085	0.00014	0.0010	0.020	1	03/03/05	03/03/05		
Boron	EPA 200.7	5C02083	0.0074	0.050	0.062	1	03/02/05	03/02/05		
Iron	EPA 200.8	5C03085	0.0032	0.010	0.56	1	03/03/05	03/03/05		UJ B

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Qual
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Antimony	EPA 200.8	5C03085	0.48	1.3	0.38	1.3	03/03/05	03/03/05	B, J	UJ	B, J
Arsenic	EPA 200.8	5C03085	0.49	1.0	1.3	1	03/03/05	03/03/05		J	*3
Beryllium	EPA 200.8	5C03085	0.037	0.50	ND	1	03/03/05	03/03/05		U	
Cadmium	EPA 200.8	5C03085	0.015	1.0	0.10	1	03/03/05	03/03/05		J	DNQ
Chromium	EPA 200.8	5C03085	0.26	2.0	0.90	1	03/03/05	03/03/05		J	B
Cobalt	EPA 200.8	5C03085	0.10	1.0	0.23	1	03/03/05	03/03/05		J	DNQ
Copper	EPA 200.8	5C03085	0.49	2.0	3.2	1	03/03/05	03/03/05		J	
Lead	EPA 200.8	5C03085	0.13	1.0	0.57	1	03/03/05	03/03/05		J	B, DNQ
Manganese	EPA 200.8	5C03085	0.44	1.0	13	1	03/03/05	03/03/05		J	
Mercury	EPA 245.1	5C02089	0.063	0.20	ND	1	03/02/05	03/02/05		U	
Nickel	EPA 200.8	5C03085	0.15	2.0	1.0	1	03/03/05	03/03/05		J	B, DNQ
Selenium	EPA 200.8	5C03085	0.36	2.0	ND	1	03/03/05	03/03/05		U	
Silver	EPA 200.8	5C03085	0.089	1.0	ND	1	03/03/05	03/03/05		U	*3
Thallium	EPA 200.8	5C03085	0.075	1.0	ND	1	03/03/05	03/03/05		J	B, DNQ
Vanadium	EPA 200.8	5C03085	0.86	2.0	1.5	1	03/03/05	03/03/05		J	DNQ
Zinc	EPA 200.8	5C03085	3.1	20	16	1	03/03/05	03/03/05		J	

**AMEC VALIDATED**

Level IV

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DATA VALIDATION

# DATA VALIDATION REPORT

NPDES Monitoring

## NPDES Monitoring

ANALYSIS: PESTICIDES

### ANALYSIS: PESTICIDES/PCBs

PEOPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

Prepared by

AMEC Denver  
230 South Wadsworth Blvd  
Lakewood, Colorado

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	608
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The coolers were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 03/02/05 associated with the pesticide analyses of the samples in these SDGs, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. One initial calibration dated 02/11/05 was associated with the PCB analyses of the samples in these SDGs which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

The %Ds for beta-BHC in the continuing calibration analyzed 03/04/05 (exceeded 15% on the primary channel; therefore, beta-BHC was qualified as estimated, "UJ," in sample Outfall 011 Grab. The remaining applicable %Ds were within the Method QC limit of  $\pm 15\%$  for the remaining calibrations. Each of the PCB analyses for the samples in these SDGs was bracketed by two CCVs. The %D for Aroclor 1260 exceeded 15% in one of the continuing calibrations bracketing the sample analyses of these SDGs; therefore, the nondetect results for associated target compounds Aroclor 1248, Aroclor 1254, and Aroclor 1260 were qualified as estimated, "UJ," in samples Outfall 011 Composite and Outfall 011 Grab. The remaining %Ds for Aroclor 1016 and Aroclor 1260 were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

Two water method blanks (5C02052-BLK1 and 5C04051-BLK1) were extracted and analyzed with these SDGs. Both samples were originally extracted with method blank 5C02052-BLK1; however, sample Outfall 011 Grab was reextracted with method blank 5C0404051-BLK1. A notation by the analyst indicated that sample Outfall 011 Grab was reextracted to confirm the 4,4'-DDT detect in the sample. Target compound 4,4'-DDT was reported below the reporting limit in method blank 5C02052-BLK1 at a concentration of 0.0332ug/l and in sample Outfall 011 Composite at 0.036ug/l. The result for 4,4'-DDT was therefore qualified as an estimated nondetect, "UJ," at the reporting limit in sample Outfall 011 Composite. There were no other pesticide target compounds or Aroclors detected in the above the MDL in the method blanks; however, it should be noted that target compound 4,4'-DDT was also present at a concentration below the MDL in method blank 5C0404051-BLK1. Review of the chromatograms showed no false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C02052-BS1/BSD1) and one blank spike (5C04051-BS1) were extracted and analyzed with these SDGs. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits. The RPD for 4,4'-DDT exceeded 30% in the blank spike/blank spike duplicate pair; therefore, the nondetect (see section 2.4) was qualified as estimated, "UJ," in sample Outfall 011 Composite. The remaining RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of the samples were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with these SDGs. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs and quantitation was verified by recalculating any sample detect and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volumes extracted. Results were reported in ug/L (ppb). Any reported detect between the MDL and the reporting limit was qualified as estimated, "J," by the laboratory. No further qualifications were required.



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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02-25/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05	Raw Data
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.952	03/02/05	03/03/05	U
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	U
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.952	03/02/05	03/03/05	U
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	U
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.952	03/02/05	03/03/05	U
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.952	03/02/05	03/03/05	U
Surrogate: Decachlorobiphenyl (45-120%)					59 %				U

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### LEVEL IV

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Data	Anal Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Aldrin	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
alpha-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
beta-BHC	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
delta-BHC	EPA 608	5C02052	0.020	0.20	ND	0.952	03/02/05	03/03/05			
gamma-BHC (Lindane)	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Chlordane	EPA 608	5C02052	0.20	1.0	ND	0.952	03/02/05	03/03/05			
4,4'-DDD	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
4,4'-DDE	EPA 608	5C02052	0.025	0.10	ND	0.952	03/02/05	03/03/05			
4,4'-DDT	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
Dieldrin	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan I	EPA 608	5C02052	0.015	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan II	EPA 608	5C02052	0.040	0.10	ND	0.952	03/02/05	03/03/05			
Endosulfan sulfate	EPA 608	5C02052	0.015	0.20	ND	0.952	03/02/05	03/03/05			
Endrin	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Endrin aldehyde	EPA 608	5C02052	0.045	0.10	ND	0.952	03/02/05	03/03/05			
Endrin ketone	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Heptachlor	EPA 608	5C02052	0.030	0.10	ND	0.952	03/02/05	03/03/05			
Heptachlor epoxide	EPA 608	5C02052	0.020	0.10	ND	0.952	03/02/05	03/03/05			
Methoxychlor	EPA 608	5C02052	0.035	0.10	ND	0.952	03/02/05	03/03/05			
Toxaphene	EPA 608	5C02052	1.5	5.0	ND	0.952	03/02/05	03/03/05			
Surrogate: Tetrachloro-m-xylene (35-120%)					54 %						
Surrogate: Decachlorobiphenyl (45-120%)					64 %						

Raw Data  
 Anal Code  
 B.J.  
 UJ  
 B7A5

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13 01/04/05





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Raw Qual	Final Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Aldrin	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05			
alpha-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05			
beta-BHC	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05			
delta-BHC	EPA 608	5C04051	0.020	0.20	ND	1	03/04/05	03/05/05			
gamma-BHC (Lindane)	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05			
Chlordane	EPA 608	5C04051	0.20	1.0	ND	1	03/04/05	03/05/05			
4,4'-DDD	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05			
4,4'-DDE	EPA 608	5C04051	0.025	0.10	ND	1	03/04/05	03/05/05			
4,4'-DDT	EPA 608	5C04051	0.030	0.10	0.038	1	03/04/05	03/05/05			
Dieldrin	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05			
Endosulfan I	EPA 608	5C04051	0.015	0.10	ND	1	03/04/05	03/05/05			
Endosulfan II	EPA 608	5C04051	0.040	0.10	ND	1	03/04/05	03/05/05			
Endosulfan sulfate	EPA 608	5C04051	0.015	0.20	ND	1	03/04/05	03/05/05			
Endrin	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05			
Endrin aldehyde	EPA 608	5C04051	0.045	0.10	ND	1	03/04/05	03/05/05			
Endrin ketone	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05			
Heptachlor	EPA 608	5C04051	0.030	0.10	ND	1	03/04/05	03/05/05			
Heptachlor epoxide	EPA 608	5C04051	0.020	0.10	ND	1	03/04/05	03/05/05			
Methoxychlor	EPA 608	5C04051	0.035	0.10	ND	1	03/04/05	03/05/05			
Toxaphene	EPA 608	5C04051	1.5	5.0	ND	1	03/04/05	03/05/05			
Surrogate: Tetrachloro-m-xylene (35-120%)											61 %
Surrogate: Decachlorobiphenyl (45-120%)											76 %

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Per Qual	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Aroclor 1016	EPA 608	5C02052	0.20	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1221	EPA 608	5C02052	0.10	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1232	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1242	EPA 608	5C02052	0.15	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1248	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1254	EPA 608	5C02052	0.25	1.0	ND	0.962	03/02/05	03/03/05		u	
Aroclor 1260	EPA 608	5C02052	0.40	1.0	ND	0.962	03/02/05	03/03/05		u	
Surrogate: Decachlorobiphenyl (45-120%)					65 %						

**REC VALIDATED  
 LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE


The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA6  
 Task Order 313150010  
 SDG No. IOB2064, 65, 69  
 No. of Analyses 3

Laboratory Eberline  
 Reviewer P. Meeks  
 Analysis/Method Radionuclides

Date: 03/31/05  
 Reviewer's Signature  


**ACTION ITEMS\***

1. Case Narrative Deficiencies
2. Out of Scope Analyses
3. Analyses Not Conducted
4. Missing Hardcopy Deliverables
5. Incorrect Hardcopy Deliverables
6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

Qualifications were applied for:  
 1) ~~Exceed~~ detector efficiencies < 20%  
 2) Preservation beyond the holding time

**COMMENTS<sup>b</sup>**      Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOB2064, IOB2065 & IOB2069

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065, IOB2069  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: March 31, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Composite	IOB2064-01	8306-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab Unfiltered	IOB2065-01	8305-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab Filtered	IOB2065-03	8345-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003	IOB2069-01	8307-001	water	900.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All the samples in these SDGs were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . No temperature information was provided by Eberline, the subcontract laboratory; however, as it is not necessary to chill radiological samples, no qualifications were required. The samples were noted to have been received intact and in good condition. All tritium samples were received unpreserved in glass containers. All gross alpha, gross beta, radium-226, radium-228, and strontium samples were received preserved, except for sample Outfall 011 Grab Unfiltered. Outfall 011 Grab Unfiltered was collected on 2/25/05 and received unpreserved on 3/22/05. Upon receipt, the laboratory filtered and then preserved the gross alpha, gross beta, radium-226, radium-228, and strontium aliquots. As sample Outfall 011 Grab Unfiltered was preserved beyond the five-day holding time, the gross alpha, gross beta, radium-226, radium-228, and strontium results were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel. The transfer COCs were signed by personnel from both laboratories. Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

The tritium samples and preserved gross alpha, gross beta, radium-226, radium-228, and strontium samples were analyzed within 180 days of collection. No qualifications were necessary.

### 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

#### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. The gross alpha detector efficiencies were all less than 20%; therefore, these results were qualified as estimated, "UJ," for nondetects and, "J," for detects. The remaining detector efficiencies were above 20%.

#### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1995. All strontium chemical yields were at least 75% and were considered acceptable. The strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in May 2004. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-288 and was verified in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 70%. And the actinium chemical yields were greater than 50%. No qualifications were necessary.

## **2.3 BLANKS**

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Aqueous blank spikes were analyzed in association with the samples in these SDGs. One strontium and one radium-228 recovery exceeded the 3-sigma limits; however, these recoveries, 110% and 125%, were deemed acceptable. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## **2.5 LABORATORY DUPLICATES**

The laboratory performed duplicate analyses on Outfall 011 Grab Unfiltered. The gross alpha and gross beta RPDs exceeded 20%; however, as the results were within the 3-sigma limits, they were deemed acceptable. The strontium and tritium results were within the 3-sigma limits and their RPDs were  $\leq 20\%$ . No qualifications were necessary.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

The laboratory performed matrix spike analyses on Outfall 011 Grab Unfiltered for gross alpha, gross beta, and tritium. The recovery for gross beta was above 3-sigma; however, the recovery of 108% was considered acceptable. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## **2.7 SAMPLE RESULT VERIFICATION**

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.



## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### **2.8.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8305</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503010-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Grab	Unfiltered	8305-001	02/25/05	03/15/05	GrossAlpha	1.50 ± 0.89	pCi/L	1.05
				03/15/05	Gross Beta	2.27 ± 1.2	pCi/L	1.77
				04/22/05	Ra228	0.250 ± 0.23	pCi/L	0.595
				03/17/05	H3	-45.7 ± 150	pCi/L	259
				05/06/05	Ra226	0.081 ± 0.021	pCi/L	0.026
				03/18/05	Sr90	0.206 ± 0.25	pCi/L	0.451

Am 5/15/05

Qual	Code
J	R
U	
U	
U	

AMEC VALIDATED

LEVEL 1

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

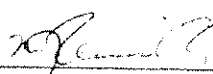
ANALYSIS RESULTS

SDG <u>8345</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503155-01</u>	Contract <u>PROJECT# IOB2065</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
IOB2065-03	8345-001	Outfall Oil Grab Defiltered	02/25/05	04/02/05	GrossAlpha	0.662 ± 0.67	pCi/L	0.986	5	#1, R
				04/02/05	Gross Beta	2.27 ± 1.2	pCi/L	1.88	5	*1
				05/09/05	Ra-228	0.823 ± 0.32	pCi/L	0.666	5	*1
				04/07/05	Tritium	-22.3 ± 99	pCi/L	169	5	*1
				05/17/05	Ra-226	0.107 ± 0.036	pCi/L	0.047	5	*1
				04/05/05	Sr-90	-0.075 ± 0.26	pCi/L	0.514	5	*1

PM 7/15/05

**AMEC VALIDATED**

Certified by 
Report Date <u>05/20/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8306</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501011-01</u>	Contract <u>PROJECT# IOB2064</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall #011 Composite		8306-001	02/25/05	03/15/05	GrossAlpha	1.29 ± 0.80	pCi/L	0.947
				03/15/05	Gross Beta	2.12 ± 1.2	pCi/L	1.89
				04/22/05	Ra228	0.494 ± 0.29	pCi/L	0.658
				03/17/05	H3	-7.08 ± 150	pCi/L	261
				05/06/05	Ra226	0.010 ± 0.014	pCi/L	0.024
				03/18/05	Sr90	-0.059 ± 0.24	pCi/L	0.459

Raw Qual	Qual Code
J	R
C	
C	
C	
C	

S/15/05

IEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8307</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503012-01</u>	Contract <u>PROJECT# IOB2069</u>
Received Date <u>03/01/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 IOB2069-01  PM 3/31/05		8307-001	02/25/05	03/15/05	GrossAlpha	1.11 ± 1.5	pCi/L	2.46
				03/15/05	Gross Beta	8.61 ± 1.7	pCi/L	2.06
				03/17/05	H3	-14.1 ± 150	pCi/L	260
				03/18/05	Sr90	2.53 ± 0.40	pCi/L	0.404

Pass	Qual
03	R
U	

**AMEC VALIDATED**

Certified by <u>[Signature]</u>
Report Date <u>03/24/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV37  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065  
 No. of Analyses 2  
 Date: April 4, 2005  
 Reviewer's Signature *M. Pokorny*

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Qualifications were required for calibration outliers and blank contamination.
COMMENTS <sup>b</sup>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-composite	Outfall 011-composite	IOB2064-01	water	625
Outfall 011-grab	Outfall 011-grab	IOB2065-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibrations associated with this SDG were dated 02/15/05 and 02/24/05. For the initial calibration dated 02/15/05, the average RRF for benzidine was  $\geq 0.05$  and the %RSD for benzidine was  $\leq 35\%$  or  $r^2 \geq 0.995$ . For the initial calibration dated 02/24/05, the average RRFs for benzidine were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds except for the  $r^2$  values for benzoic acid and 4-nitroaniline. Benzoic acid and 4-nitroaniline were qualified as estimated nondetects, "UJ," in the samples of these SDGs. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted.

The continuing calibration associated with the sample analyses were analyzed 03/02/05 (10:35 and 15:11). For the continuing calibration dated 03/02/05 (10:35), the RRF and %D for benzidine were within the QC limits. For the continuing calibration dated 03/02/05 (15:11) the RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20$ . A representative number of RRFs and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.4 BLANKS

One method blank (5B28001-BLK1) was extracted and analyzed with these SDGs. Butylbenzylphthalate, di-n-butylphthalate, and diethylphthalate were reported in the method blank. The butylbenzylphthalate and di-n-butylphthalate detects for sample Outfall 011-composite were qualified as nondetects, "U." Review of the raw data indicated no reportable false negatives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/ blank spike duplicate pair (5B28001-BS1/BSD1) was extracted and analyzed with these SDGs. For blank spike/blank spike duplicate pairs, qualifications are applied, if necessary, to the associated samples based on those recoveries consistently outside of the laboratory-established QC limits in both the blank spike and blank spike duplicate. Results for those compounds with recoveries not consistent within the pair, with RPDs above the QC limit, are qualified as estimated, "UJ" for nondetects and "J" for detects, in the associated samples.

For the 5B28001-BS1/BSD1 pair, all percent recoveries and RPDs were within the laboratory QC limits except for benzidine which was not recovered in the BS and the RPD for benzidine. Both of the samples of these SDGs had benzidine qualified as estimated nondetects, "UJ."

A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples.

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### **2.8.2 Field Duplicates**

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## **2.9 INTERNAL STANDARDS PERFORMANCE**

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for the semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



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 9414 Chesapeake Dr., Suite 803, San Diego, CA 92123 (619) 505-8346 FAX (619) 505-9089  
 1830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 735-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Analyzed	Data Qualifiers	Peak Area	Area Count
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) Reporting Units: ug/l											
Acenaphthene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05			
Acenaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.943	02/28/05	03/02/05			
Aniline	EPA 625	5B28001	2.9	10	ND	0.943	02/28/05	03/02/05			
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05			
Benzidine	EPA 625	5B28001	3.2	5.0	ND	0.943	02/28/05	03/03/05			
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.943	02/28/05	03/02/05			
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.943	02/28/05	03/02/05			
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.943	02/28/05	03/02/05			
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.943	02/28/05	03/02/05			
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.943	02/28/05	03/02/05			
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.943	02/28/05	03/02/05			
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05			
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.943	02/28/05	03/02/05			
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05			
Butyl benzyl phthalate	EPA 625	5B28001	0.34	5.0	ND	0.943	02/28/05	03/02/05			
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.943	02/28/05	03/02/05			
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05			
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.943	02/28/05	03/02/05			
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.943	02/28/05	03/02/05			
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05			
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.943	02/28/05	03/02/05			
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.943	02/28/05	03/02/05			
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05			
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.943	02/28/05	03/02/05			
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.943	02/28/05	03/02/05			
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.943	02/28/05	03/02/05			
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.943	02/28/05	03/02/05			
3,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.943	02/28/05	03/02/05			
Diethyl phthalate	EPA 625	5B28001	0.12	1.0	ND	0.943	02/28/05	03/02/05			
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.943	02/28/05	03/02/05			
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.943	02/28/05	03/02/05			
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.943	02/28/05	03/02/05			
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.943	02/28/05	03/02/05			
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.943	02/28/05	03/02/05			
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.943	02/28/05	03/02/05			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.943	02/28/05	03/02/05			

Handwritten notes and arrows on the right side of the table, including 'Peak Area', 'Area Count', and various symbols like 'L2', 'L3', 'L4', 'L5', 'B', 'J', 'C', 'U', 'D', 'E', 'F', 'G', 'H', 'I', 'K', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'V', 'W', 'X', 'Y', 'Z'.

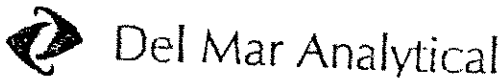
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LEVEL IV

MMP 4.5.05



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 9485 Chesapeake Dr., Suite 803, San Diego, CA 92123 (619) 567-8396 FAX (619) 565-9689  
 5830 South 51st St., Suite 6-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0051  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3610 FAX (702) 798-3621

MWH-Pasadena Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real Qual	Qual Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.943	02/28/05	03/02/05			
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.943	02/28/05	03/02/05			
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.943	02/28/05	03/02/05			
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.943	02/28/05	03/02/05			
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.943	02/28/05	03/02/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.943	02/28/05	03/02/05			
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.943	02/28/05	03/02/05			
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.943	02/28/05	03/02/05			
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.943	02/28/05	03/02/05			
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.943	02/28/05	03/02/05			
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.943	02/28/05	03/02/05			
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.943	02/28/05	03/02/05			
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.943	02/28/05	03/02/05			
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.943	02/28/05	03/02/05			
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.943	02/28/05	03/02/05			
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.943	02/28/05	03/02/05			
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.943	02/28/05	03/02/05			
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.943	02/28/05	03/02/05			
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.943	02/28/05	03/02/05			
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.943	02/28/05	03/02/05			
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.943	02/28/05	03/02/05			
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.943	02/28/05	03/02/05			
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.943	02/28/05	03/02/05			
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.943	02/28/05	03/02/05			
Surrogate: 2-Fluorophenol (30-120%)											
Surrogate: Phenol-d6 (35-120%)											77 %
Surrogate: 2,4,6-Tribromophenol (45-120%)											81 %
Surrogate: Nitrobenzene-d5 (45-120%)											101 %
Surrogate: 2-Fluorobiphenyl (45-120%)											80 %
Surrogate: Terphenyl-d14 (45-120%)											80 %
											88 %

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LEVEL IV



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8598 FAX (619) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05		
Acenaphthylene	EPA 625	5B28001	0.10	0.50	ND	0.971	02/28/05	03/02/05		
Aniline	EPA 625	5B28001	2.9	10	ND	0.971	02/28/05	03/02/05		
Anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05		
Benzenidine	EPA 625	5B28001	3.2	5.0	ND	0.971	02/28/05	03/03/05	12	UJ #5
Benzoic acid	EPA 625	5B28001	3.7	20	ND	0.971	02/28/05	03/02/05		
Benzo(a)anthracene	EPA 625	5B28001	0.038	5.0	ND	0.971	02/28/05	03/02/05		
Benzo(a)pyrene	EPA 625	5B28001	0.14	2.0	ND	0.971	02/28/05	03/02/05		
Benzo(b)fluoranthene	EPA 625	5B28001	0.050	2.0	ND	0.971	02/28/05	03/02/05		
Benzo(g,h,i)perylene	EPA 625	5B28001	0.059	5.0	ND	0.971	02/28/05	03/02/05		
Benzo(k)fluoranthene	EPA 625	5B28001	0.053	0.50	ND	0.971	02/28/05	03/02/05		
Benzyl alcohol	EPA 625	5B28001	0.21	5.0	ND	0.971	02/28/05	03/02/05		
Bis(2-chloroethoxy)methane	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05		
Bis(2-chloroethyl)ether	EPA 625	5B28001	0.084	0.50	ND	0.971	02/28/05	03/02/05		
Bis(2-chloroisopropyl)ether	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05		
Bis(2-ethylhexyl)phthalate	EPA 625	5B28001	1.1	5.0	ND	0.971	02/28/05	03/02/05		
4-Bromophenyl phenyl ether	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05		
Butyl benzyl phthalate	EPA 625	5B28001	0.34	5.0	ND	0.971	02/28/05	03/02/05		
4-Chloroaniline	EPA 625	5B28001	0.20	2.0	ND	0.971	02/28/05	03/02/05		
2-Chloronaphthalene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05		
4-Chloro-3-methylphenol	EPA 625	5B28001	0.34	2.0	ND	0.971	02/28/05	03/02/05		
4-Chlorophenyl phenyl ether	EPA 625	5B28001	0.056	0.50	ND	0.971	02/28/05	03/02/05		
2-Chlorophenol	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05		
Chrysene	EPA 625	5B28001	0.072	0.50	ND	0.971	02/28/05	03/02/05		
Dibenz(a,h)anthracene	EPA 625	5B28001	0.083	0.50	ND	0.971	02/28/05	03/02/05		
Dibenzofuran	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05		
Di-n-butyl phthalate	EPA 625	5B28001	0.26	2.0	ND	0.971	02/28/05	03/02/05		
1,2-Dichlorobenzene	EPA 625	5B28001	0.11	0.50	ND	0.971	02/28/05	03/02/05		
1,3-Dichlorobenzene	EPA 625	5B28001	0.13	0.50	ND	0.971	02/28/05	03/02/05		
1,4-Dichlorobenzene	EPA 625	5B28001	0.050	0.50	ND	0.971	02/28/05	03/02/05		
3,3-Dichlorobenzidine	EPA 625	5B28001	0.93	5.0	ND	0.971	02/28/05	03/02/05		
2,4-Dichlorophenol	EPA 625	5B28001	0.21	2.0	ND	0.971	02/28/05	03/02/05		
Diethyl phthalate	EPA 625	5B28001	0.12	1.0	ND	0.971	02/28/05	03/02/05		
2,4-Dimethylphenol	EPA 625	5B28001	0.31	2.0	ND	0.971	02/28/05	03/02/05		
Dimethyl phthalate	EPA 625	5B28001	0.081	0.50	ND	0.971	02/28/05	03/02/05		
4,6-Dinitro-2-methylphenol	EPA 625	5B28001	0.38	5.0	ND	0.971	02/28/05	03/02/05		
2,4-Dinitrophenol	EPA 625	5B28001	2.7	5.0	ND	0.971	02/28/05	03/02/05		
2,4-Dinitrotoluene	EPA 625	5B28001	0.23	5.0	ND	0.971	02/28/05	03/02/05		
2,6-Dinitrotoluene	EPA 625	5B28001	0.24	5.0	ND	0.971	02/28/05	03/02/05		
Di-n-octyl phthalate	EPA 625	5B28001	0.17	5.0	ND	0.971	02/28/05	03/02/05		
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5B28001	0.087	1.0	ND	0.971	02/28/05	03/02/05		

Handwritten notes: "Qual Code" with a vertical arrow pointing down, "UJ #5", and "C".

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LEVEL IV



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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing Project ID: 13267 (Study 1)  
 300 North Lake Avenue, Suite 1200 Outfall 011  
 Pasadena, CA 91101 Report Number: IOB2065  
 Attention: Bronwyn Kelly Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5B28001	0.089	0.50	ND	0.971	02/28/05	03/02/05			
Fluorene	EPA 625	5B28001	0.075	0.50	ND	0.971	02/28/05	03/02/05			
Hexachlorobenzene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
Hexachlorobutadiene	EPA 625	5B28001	0.38	2.0	ND	0.971	02/28/05	03/02/05			
Hexachlorocyclopentadiene	EPA 625	5B28001	1.8	5.0	ND	0.971	02/28/05	03/02/05			
Hexachloroethane	EPA 625	5B28001	0.51	3.0	ND	0.971	02/28/05	03/02/05			
Indeno(1,2,3-cd)pyrene	EPA 625	5B28001	0.19	2.0	ND	0.971	02/28/05	03/02/05			
Isophorone	EPA 625	5B28001	0.059	1.0	ND	0.971	02/28/05	03/02/05			
2-Methylnaphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
2-Methylphenol	EPA 625	5B28001	0.28	2.0	ND	0.971	02/28/05	03/02/05			
4-Methylphenol	EPA 625	5B28001	0.20	5.0	ND	0.971	02/28/05	03/02/05			
Naphthalene	EPA 625	5B28001	0.13	1.0	ND	0.971	02/28/05	03/02/05			
2-Nitroaniline	EPA 625	5B28001	0.18	5.0	ND	0.971	02/28/05	03/02/05			
3-Nitroaniline	EPA 625	5B28001	0.35	5.0	ND	0.971	02/28/05	03/02/05			
4-Nitroaniline	EPA 625	5B28001	0.49	5.0	ND	0.971	02/28/05	03/02/05			
Nitrobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
2-Nitrophenol	EPA 625	5B28001	0.23	2.0	ND	0.971	02/28/05	03/02/05			
4-Nitrophenol	EPA 625	5B28001	0.73	5.0	ND	0.971	02/28/05	03/02/05			
N-Nitrosodimethylamine	EPA 625	5B28001	0.22	2.0	ND	0.971	02/28/05	03/02/05			
N-Nitroso-di-n-propylamine	EPA 625	5B28001	0.18	2.0	ND	0.971	02/28/05	03/02/05			
N-Nitrosodiphenylamine	EPA 625	5B28001	0.077	1.0	ND	0.971	02/28/05	03/02/05			
Pentachlorophenol	EPA 625	5B28001	0.78	2.0	ND	0.971	02/28/05	03/02/05			
Phenanthrene	EPA 625	5B28001	0.071	0.50	ND	0.971	02/28/05	03/02/05			
Phenol	EPA 625	5B28001	0.14	1.0	ND	0.971	02/28/05	03/02/05			
Pyrene	EPA 625	5B28001	0.059	0.50	ND	0.971	02/28/05	03/02/05			
1,2,4-Trichlorobenzene	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
2,4,5-Trichlorophenol	EPA 625	5B28001	0.075	2.0	ND	0.971	02/28/05	03/02/05			
2,4,6-Trichlorophenol	EPA 625	5B28001	0.10	1.0	ND	0.971	02/28/05	03/02/05			
Surrogate: 2-Fluorophenol (30-120%)											75 %
Surrogate: Phenol-d6 (35-120%)											69 %
Surrogate: 2,4,6-Tribromophenol (45-120%)											97 %
Surrogate: Nitrobenzene-d5 (45-120%)											77 %
Surrogate: 2-Fluorobiphenyl (45-120%)											78 %
Surrogate: Terphenyl-d14 (45-120%)											83 %

*Raw Qual*  
*Anal Code*

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**DATA SUBJECT TO CHANGE**

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LEVEL III

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF40  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 4

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Purgeable

Date April 6, 2005  
 Reviewer's Signature [Signature]

ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/PURGEABLE

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB2065-02	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	8015M/GRO
Trip Blank	Trip Blank	IOB2064-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COC indicated the samples were properly preserved; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. The trip blank associated with Outfall 011 Composite (IOB2064) was not requested on the COC; however, as the laboratory analyzed and reported the sample Trip Blank, the results were validated. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

Two gasoline standard initial calibrations dated 08/20/04 and 08/26/04 were associated with these SDGs. The %RSDs for GRO (C4-C12) were within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for the CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

Two water method blanks (5C03008-BLK1 and 5C04004-BLK1) were associated with these SDGs. GRO (C4-C12) was not detected above the MDL in either of the method blanks. Review of the raw data indicated no false negative results. No qualifications were necessary.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water method blank spikes (5C03008-BS1 and 5C04004-BS1) were associated with these SDGs. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in

both of the blank spikes. The recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The samples and QC were fortified with the surrogate compound bromofluorobenzene (BFB). The surrogate recovery was within the laboratory QC limits of 65-140% for the samples. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed for these SDGs; therefore, evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank (IOB2064) and Trip Blank (IOB2065) were the trip blanks associated with the site samples in these SDGs. Target compound GRO was not detected in either of the trip blanks. There were no other field QC samples associated with these SDGs. No qualifications were required.

### 2.7.2 Field Duplicates

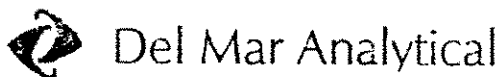
There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for this SDG by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

*Peer  
 Eval  
 Cool*

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	LL
Surrogate: 4-BFB (FID) (65-140%)					87 %				
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water)									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C03008	0.050	0.10	ND	1	03/03/05	03/03/05	LL
Surrogate: 4-BFB (FID) (65-140%)					86 %				

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 793-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C04004	50	100	ND	1	03/04/05	03/04/05	U
Surrogate: 4-BFB (FID) (65-140%)					87 %				
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C04004	50	100	ND	1	03/04/05	03/04/05	U
Surrogate: 4-BFB (FID) (65-140%)					92 %				

*Paul*  
*Paul*

**AMEC VALIDATED**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF41  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 2  
 Date April 6, 2005  
 Reviewer's Signature K. Shadowlight

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method TPH-Extractable

ACTION ITEMS <sup>a</sup>	
1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
COMMENTS <sup>b</sup>	Acceptable as reviewed
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 6, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB2065-01	water	8015M/EFH
Outfall 011 Composite	Outfall 011 Composite	IOB2064-01	water	8015M/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analysis was analyzed on 11/11/04. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3 METHOD BLANKS

One method blank (5C01045-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C01045-BS1/5C01045-BS1D) was extracted and analyzed with the samples in these SDGs. The laboratory reported the alkane range of C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120% and the RPD was  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.5 SURROGATE RECOVERY

The samples and QC were fortified with the surrogate compound n-octacosane. The surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with the samples in these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by EPA SW846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detect, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. The reporting limit was not adjusted for sample amount; however, the dilution factors on the sample result summaries reflected the sample amount extracted. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02-25-05  
 Received: 02/25/05

**DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

*Pass*  
*Qual*  
*Comp*

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont. Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.943	03/01/05	03/02/05	u
Surrogate: n-Octacosane (40-125%) 66%									

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C01045	0.082	0.50	ND	0.99	03/01/05	03/02/05	Low Qual
Surrogate: n-Octacosane (40-125%)					69 %				High Qual

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*



**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO66  
 Task Order 313150010  
 SDG No. IOB2064, IOB2065

No. of Analyses 4

Laboratory Del Mar

Reviewer M. Pokorny

Analysis/Method Volatiles

Date: April 5, 2005

Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis	Qualifications were required for trip blank contamination and estimated nondetects for no calibration.
Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOB2064, IOB2065

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## I. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 5, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample identification

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	water	624
Trip Blank	Trip Blank	IOB2064-02	water	624
Outfall 011-Grab	Outfall 011-Grab	IOB2065-01	water	624
Trip Blank	Trip Blank	IOB2065-02	water	624

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in the EPA Method 624 and SW-846 Method 8260B, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Three initial calibrations dated 11/03/04 (acrolein, acrylonitrile, and Freon 113 only), 02/01/05, and 02/18/05 were associated with this SDG. The average RRFs were  $\geq 0.05$  for all compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for the target compounds analyzed by EPA Method 624, and the %RSD for trichlorotrifluoroethane (Freon 113) analyzed by EPA SW-846 Method 8260B was  $\leq 15\%$ . Six continuing calibrations associated with the sample analyses were analyzed 02/26/05 (07:25 and 07:56), 03/02/05 (19:16 and 19:47), and 03/04/05 (09:12 and 09:43). The RRFs were  $\geq 0.05$  in all of the continuing calibrations. The %Ds for the continuing calibrations associated with the site samples were all  $\leq 20\%$ . A representative number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

Three water method blanks (5B26009-BLK1, 5C03036-BLK1, and 5C04021-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two water blank spikes (5B26009-BS1 and 5C03036-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample Outfall011-Composite was the MS/MSD analyses associated with these SDGs. All percent recoveries and RPDs were within the QC limits. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Samples Trip Blank (IOB2064-02) and Trip Blank (IOB2065-02) were the trip blank associated with these SDGs. No target compounds were reported in the Trip Blank IOB2064-02. Methylene chloride was reported in Trip Blank (IOB2065-02) at 0.94ug/L. The methylene chloride detect for sample Outfall 011-Grab was qualified as a nondetect, "U." No further qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in these SDGs were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane, as these compounds were not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## \* 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not performed for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for those compounds. Nondetects for both compounds were qualified as estimated, "UJ," in the site samples of these SDGs. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. Detects below the reporting limits were qualified as estimated, "J," by the laboratory. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for these SDGs. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB2064

Sampled: 02/25/05

Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual	Qual
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont. Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water) Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05	U		
Cyclohexane	EPA 624 (MOD.)	5C03036	N/A	2.5	ND	1	03/03/05	03/03/05	U		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Perf Qual	Qual Cool
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)											
Reporting Units: ug/l											
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05		CC	
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05			
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05			
Surrogate: Dibromofluoromethane (80-120%)					106%						
Surrogate: Toluene-d8 (80-120%)					96%						
Surrogate: 4-Bromofluorobenzene (80-120%)					94%						

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real Qual	Anal Code
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05			
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05			
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05			
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05			
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05			
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05			
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05			
Methylene chloride	EPA 624	5B26009	0.48	5.0	1.1	1	02/26/05	02/26/05			
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05			
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05			
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05			
Surrogate: Dibromofluoromethane (80-120%)											106 %
Surrogate: Toluene-d8 (80-120%)											96 %
Surrogate: 4-Bromofluorobenzene (80-120%)											94 %

Handwritten notes and arrows on the right side of the table. A vertical line is drawn through the 'Data Qualifiers' column. A large arrow points downwards from the top of the table to the 'Methylene chloride' row, with the word 'U' written above it. Another arrow points downwards from the 'Methylene chloride' row to the 'Surrogate' rows, with the word 'U' written above it. The letters 'J' and 'DNG' are written near the bottom of the vertical line.

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)

Outfall 011

Report Number: IOB2064

Sampled: 02/25/05

Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Real Qual	Qual Code
Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C03036	0.28	1.0	ND	1	03/03/05	03/03/05		↓	
Bromodichloromethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
Bromoform	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05			
Bromomethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05			
Carbon tetrachloride	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05			
Chlorobenzene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05			
Chloroethane	EPA 624	5C03036	0.33	5.0	ND	1	03/03/05	03/03/05			
Chloroform	EPA 624	5C03036	0.33	2.0	ND	1	03/03/05	03/03/05			
Chloromethane	EPA 624	5C03036	0.30	5.0	ND	1	03/03/05	03/03/05			
Dibromochloromethane	EPA 624	5C03036	0.28	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichlorobenzene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05			
1,3-Dichlorobenzene	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05			
1,4-Dichlorobenzene	EPA 624	5C03036	0.37	2.0	ND	1	03/03/05	03/03/05			
1,1-Dichloroethane	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichloroethane	EPA 624	5C03036	0.28	0.50	ND	1	03/03/05	03/03/05			
1,1-Dichloroethene	EPA 624	5C03036	0.32	5.0	ND	1	03/03/05	03/03/05			
trans-1,2-Dichloroethene	EPA 624	5C03036	0.27	2.0	ND	1	03/03/05	03/03/05			
1,2-Dichloropropane	EPA 624	5C03036	0.35	2.0	ND	1	03/03/05	03/03/05			
cis-1,3-Dichloropropene	EPA 624	5C03036	0.22	2.0	ND	1	03/03/05	03/03/05			
trans-1,3-Dichloropropene	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05			
Ethylbenzene	EPA 624	5C03036	0.25	2.0	ND	1	03/03/05	03/03/05			
Methylene chloride	EPA 624	5C03036	0.48	5.0	ND	1	03/03/05	03/03/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C03036	0.24	2.0	ND	1	03/03/05	03/03/05			
Tetrachloroethene	EPA 624	5C03036	0.32	2.0	ND	1	03/03/05	03/03/05			
Toluene	EPA 624	5C03036	0.36	2.0	ND	1	03/03/05	03/03/05			
1,1,1-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
1,1,2-Trichloroethane	EPA 624	5C03036	0.30	2.0	ND	1	03/03/05	03/03/05			
Trichloroethene	EPA 624	5C03036	0.26	2.0	ND	1	03/03/05	03/03/05			
Trichlorofluoromethane	EPA 624	5C03036	0.34	5.0	ND	1	03/03/05	03/03/05			
Vinyl chloride	EPA 624	5C03036	0.26	0.50	ND	1	03/03/05	03/03/05			
Xylenes, Total	EPA 624	5C03036	0.52	4.0	ND	1	03/03/05	03/03/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05			
Surrogate: Dibromofluoromethane (80-120%)					105 %						
Surrogate: Toluene-d8 (80-120%)					98 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %						

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LEVEL IV



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: FREON 113 (EPA 8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	U
Surrogate: Dibromofluoromethane (80-120%)					106 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					97 %				
<b>Sample ID: IOB2064-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C03036	1.2	5.0	ND	1	03/03/05	03/03/05	U
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					98 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

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 9530 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunrise Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Data	Qual
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	UJ		*11
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	U		
Cyclohexane	EPA 624 (MOD.)	5B26009	N/A	2.5	ND	1	02/26/05	02/26/05	U		

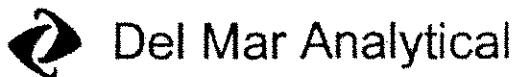
*Qual*  
*Code*

**APPROXIMATELY**

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Per Qual	Qual Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05			
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05			
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05			
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05			
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05			
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05			
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05			
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05			
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05			
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05			
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05			
Methylene chloride	EPA 624	5B26009	0.48	5.0	ND 0.74	1	02/26/05	02/26/05			
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05			
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05			
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05			
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05			
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05			
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05			
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05			
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05			
Surrogate: Dibromofluoromethane (80-120%)											106 %
Surrogate: Toluene-d8 (80-120%)											96 %
Surrogate: 4-Bromofluorobenzene (80-120%)											94 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	U
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	U
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	U
Surrogate: Dibromofluoromethane (80-120%)					106 %				
Surrogate: Toluene-d8 (80-120%)					96 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5B26009	4.6	50	ND	1	02/26/05	02/26/05	U
Acrylonitrile	EPA 624	5B26009	5.1	50	ND	1	02/26/05	02/26/05	U
2-Chloroethyl vinyl ether	EPA 624	5B26009	1.3	5.0	ND	1	02/26/05	02/26/05	U
Surrogate: Dibromofluoromethane (80-120%)					101 %				
Surrogate: Toluene-d8 (80-120%)					94 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

### AMEC VALIDATED

### LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Qual Code
Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)										
Reporting Units: ug/l										
Benzene	EPA 624	5B26009	0.28	1.0	ND	1	02/26/05	02/26/05		U
Bromodichloromethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		
Bromoform	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05		
Bromomethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05		
Carbon tetrachloride	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05		
Chlorobenzene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05		
Chloroethane	EPA 624	5B26009	0.33	5.0	ND	1	02/26/05	02/26/05		
Chloroform	EPA 624	5B26009	0.33	2.0	ND	1	02/26/05	02/26/05		
Chloromethane	EPA 624	5B26009	0.30	5.0	ND	1	02/26/05	02/26/05		
Dibromochloromethane	EPA 624	5B26009	0.28	2.0	ND	1	02/26/05	02/26/05		
1,2-Dichlorobenzene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05		
1,3-Dichlorobenzene	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05		
1,4-Dichlorobenzene	EPA 624	5B26009	0.37	2.0	ND	1	02/26/05	02/26/05		
1,1-Dichloroethane	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05		
1,2-Dichloroethane	EPA 624	5B26009	0.28	0.50	ND	1	02/26/05	02/26/05		
1,1-Dichloroethene	EPA 624	5B26009	0.32	5.0	ND	1	02/26/05	02/26/05		
trans-1,2-Dichloroethene	EPA 624	5B26009	0.27	2.0	ND	1	02/26/05	02/26/05		
1,2-Dichloropropane	EPA 624	5B26009	0.35	2.0	ND	1	02/26/05	02/26/05		
cis-1,3-Dichloropropene	EPA 624	5B26009	0.22	2.0	ND	1	02/26/05	02/26/05		
trans-1,3-Dichloropropene	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05		
Ethylbenzene	EPA 624	5B26009	0.25	2.0	ND	1	02/26/05	02/26/05		
Methylene chloride	EPA 624	5B26009	0.48	5.0	0.94	1	02/26/05	02/26/05	J	J DNR
1,1,2,2-Tetrachloroethane	EPA 624	5B26009	0.24	2.0	ND	1	02/26/05	02/26/05		U
Tetrachloroethene	EPA 624	5B26009	0.32	2.0	ND	1	02/26/05	02/26/05		
Toluene	EPA 624	5B26009	0.36	2.0	ND	1	02/26/05	02/26/05		
1,1,1-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		
1,1,2-Trichloroethane	EPA 624	5B26009	0.30	2.0	ND	1	02/26/05	02/26/05		
Trichloroethene	EPA 624	5B26009	0.26	2.0	ND	1	02/26/05	02/26/05		
Trichlorofluoromethane	EPA 624	5B26009	0.34	5.0	ND	1	02/26/05	02/26/05		
Vinyl chloride	EPA 624	5B26009	0.26	0.50	ND	1	02/26/05	02/26/05		
Xylenes, Total	EPA 624	5B26009	0.52	4.0	ND	1	02/26/05	02/26/05		
Surrogate: Dibromofluoromethane (80-120%)										101 %
Surrogate: Toluene-d8 (80-120%)										94 %
Surrogate: 4-Bromofluorobenzene (80-120%)										94 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011

Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

**DRAFT: FREON 113 (EPA 8260B)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Anal Code
<b>Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)</b>										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	U	
Surrogate: Dibromofluoromethane (80-120%)					105 %					
Surrogate: Toluene-d8 (80-120%)					100 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %					
<b>Sample ID: IOB2065-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
Trichlorotrifluoroethane (Freon 113)	EPA 8260B	5C04021	1.2	5.0	ND	1	03/04/05	03/04/05	U	
Surrogate: Dibromofluoromethane (80-120%)					105 %					
Surrogate: Toluene-d8 (80-120%)					99 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %					

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**LEVEL IV**





# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLES DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Samples Delivery Group #: IOB2064, IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 29, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Samples identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	Water	Perchlorate
Outfall 011- Grab	Outfall 011- Grab	IOB2065-01	Water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLES MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Samples Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the dates of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## **2.6 LABORATORY DUPLICATES**

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was based on LCS results.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLES RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	*
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	*
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	U

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 9830 South 51st S., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-088  
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 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	U

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOB2064 & IOB2065

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOB2064/IOB2065  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: March 29, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures* SOP DVP-6, Rev. 2, *USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 330.5, 405.1, 335.2, 218.6, 418.1, 350.2, 413.1, 415.1, 160.5, 120.1, 160.2, and 180.1. Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOB2064/2065  
Analysis: General Minerals

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Composite	Outfall 011-Composite	IOB2064-01	Water	General Minerals
Outfall 011-Grab	Outfall 011-Grab	IOB2065-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the analyses and samples presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for oil and grease, chloride, sulfate, fluoride, total organic carbon, conductivity, ammonia, and total recoverable hydrocarbons, the 14-day holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for turbidity, nitrate/nitrite, total settleable solids, surfactants, and biological oxygen demand, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . The initial and continuing calibration verification information was acceptable with %Rs within the control limits of 90-110%. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. The reporting limit check standards for cyanide, chloride, nitrate, fluoride, and sulfate were within the control limits of 70-130%. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total settleable solids, or total suspended solids. No qualifications were required.

### 2.3 BLANKS

Turbidity was detected in method blank SB26046-BLK1 at 0.0500 NTU; however, the method blank result was insufficient to qualify the Outfall 011-Composite and Outfall 011-Grab results. The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the sample were nondetects at the reporting limit. Blank analyses are not applicable to residual chlorine, conductivity, and total settleable solids. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample and laboratory control sample duplicate (BOD, total recoverable hydrocarbons, and oil and grease only) recoveries were within the laboratory-established control limits. The LCS is not applicable to turbidity, total settleable solids, or residual chlorine. No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

MS/MSD analyses were performed on sample Outfall 011-Composite for cyanide. The RPD was within the control limit of  $\leq 15\%$ . No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall 011-Composite for cyanide. The recoveries were within the laboratory-established control limits and no qualifications were required.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Flouride, BOD, and surfactant detected below the reporting limit in samples Outfall 011-Composite and Outfall 011-Grab were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.





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 8404 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 587-8394 FAX (619) 587-8395  
 8830 South 51st St., Suite 3-120, Phoenix, AZ 85044 (480) 780-4043 FAX (480) 763-0015  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3020 FAX (702) 796-3021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5B25097	0.10	0.10	ND	1	02/25/05	02/25/05	u

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### LEVEL II

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 10133 E. Camino Jr., Suite A, Colton, CA 92534 (909) 374-5067 FAX (909) 374-5124  
 9404 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 502-8796 FAX (619) 502-0294  
 5830 South 51st St., Suite B-120, Phoenix, AZ 85034 (480) 792-0243 FAX (480) 792-0244  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89101 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: NTU										
Turbidity	EPA 180.1	5B26046	0.040	1.0	8.0	1	02/26/05	02/26/05		REV GAIL COOK

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 8454 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8516 FAX (619) 505-1100  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 781-3026  
 2520 E. Sunset Blvd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3622

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5B28080	1.0	1.0	150	1	02/28/05	02/28/05	REV QUAL GM COG

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
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 1014 E. Copley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-0114  
 3484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8550 FAX (619) 503-0019  
 9810 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 705-0043 FAX (480) 783-0012  
 2320 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 799-1112

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5B25125	0.10	1.0	ND	1	02/25/05	02/26/05	U
Total Cyanide	EPA 335.2	5B28115	2.2	5.0	ND	1	02/28/05	03/01/05	U
Perchlorate	EPA 314.0	5B28103	0.80	4.0	ND	1	02/28/05	03/01/05	*

### AMEC VALIDATED

### LEVEL IV

Analytic Not Validated

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 9484 Chusanecker Cr., Suite 805, San Diego, CA 92123 (619) 343-8596 FAX (619) 365-9101  
 4630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-6143 FAX (480) 782-0101  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2064

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03-07-05	U
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	0.76	1	02/25/05	03-02-05	J DNQ
Chloride	EPA 300.0	5B25042	0.26	0.50	5.1	1	02/25/05	02/25/05	J DNQ
Fluoride	EPA 300.0	5B25042	0.10	0.50	0.15	1	02/25/05	02/25/05	J DNQ
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	0.38	1	02/25/05	02/25/05	J DNQ
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03-02-05	U
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	U
Sulfate	EPA 300.0	5B25042	0.18	0.50	11	1	02/25/05	02/25/05	J DNQ
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	0.051	1	02/25/05	02/25/05	J DNQ
Total Dissolved Solids	SM2540C	5B28078	10	10	110	1	02/28/05	02/28/05	J DNQ
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	9.0	1	03/01/05	03-01-05	J DNQ
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03-03-05	U

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-96  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85344 (480) 765-0043 FAX (480) 765-08  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-36

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5B28069	0.31	1.0	ND	1	02/28/05	02/28/05	U

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### LEVEL IV

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-869  
 9830 South 51st St., Suite 9-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-082  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-362

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ml/hr										
Total Settleable Solids	EPA 160.5	5B25097	0.10	0.10	ND	1	02/25/05	02/25/05	U	REV QUAL CODE

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# LEVEL IV

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-963  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 755-082  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-362

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5B26046	0.040	1.0	9.4	1	02/26/05	02/26/05	REV TAMM OUT COO

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# LEVEL II

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9454 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-3633  
 3830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3820 FAX (702) 798-3620

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV QUAL	QUAL CODE
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: umhos/cm										
Specific Conductance	EPA 120.1	5B28080	1.0	1.0	150	1	02/28/05	02/28/05		

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# LEVEL IV

DRAFT REPORT  
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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 788-0043 FAX (480) 788-088  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89129 (702) 798-3620 FAX (702) 798-362

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOB2065

Sampled: 02/25/05  
 Received: 02/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	
									Qualifiers	Code
Sample ID: IOB2065-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5C07070	0.30	0.50	ND	1	03/07/05	03/07/05	U	
Biochemical Oxygen Demand	EPA 405.1	5B25128	0.59	2.0	0.68	1	02/25/05	03/02/05	J	DNR
Chloride	EPA 300.0	5B25042	0.25	0.50	5.1	1	02/25/05	02/25/05	J	DNR
Chromium VI	EPA 218.6	5B25125	0.00010	0.0010	ND	1	02/25/05	02/26/05	U	
Total Cyanide	EPA 335.2	5B28115	0.0022	0.0050	ND	1	02/28/05	03/01/05	U	
Fluoride	EPA 300.0	5B25042	0.10	0.50	0.17	1	02/25/05	02/25/05	J	DNR
Nitrate/Nitrite-N	EPA 300.0	5B25042	0.072	0.26	0.38	1	02/25/05	02/25/05	J	DNR
Oil & Grease	EPA 413.1	5C02094	0.94	5.0	ND	1	03/02/05	03/02/05	U	
Residual Chlorine	EPA 330.5	5B25120	0.10	0.10	ND	1	02/25/05	02/25/05	U	
Sulfate	EPA 300.0	5B25042	0.18	0.50	11	1	02/25/05	02/25/05	J	DNR
Surfactants (MBAS)	SM5540-C	5B25118	0.044	0.10	0.054	1	02/25/05	02/25/05	J	DNR
Total Dissolved Solids	SM2540C	5B28078	10	10	100	1	02/28/05	02/28/05	J	DNR
Total Organic Carbon	EPA 415.1	5C01065	0.25	1.0	11	1	03/01/05	03/01/05	J	DNR
Total Suspended Solids	EPA 160.2	5C03074	10	10	ND	1	03/03/05	03/03/05	U	

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 DATA SUBJECT TO CHANGE

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**APPENDIX A**

**Section 43**

Outfall 011, March 18, 2005

Del Mar Analytical Laboratory Report



### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/18/05  
Received: 03/18/05  
Issued: 04/12/05 19:13

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 10 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

#### CASE NARRATIVE

**SAMPLE RECEIPT:** Samples were received intact, at 3°C, on ice and with chain of custody documentation.

**HOLDING TIMES:** All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.

**PRESERVATION:** Samples requiring preservation were verified prior to sample analysis. Results were qualified where the sample container did not meet the method preservation requirements.

**QA/QC CRITERIA:** All analyses met method criteria, except as noted in the report with data qualifiers. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported.

**COMMENTS:** Results that fall between the MDL and RL are 'J' flagged.

**SUBCONTRACTED:** Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOC1526-01	Outfall 011 Composite	Water
IOC1526-02	Trip Blank	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

**EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C21048	0.082	0.50	ND	0.943	03/21/05	03/21/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					81 %				

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	0.050	0.10	ND	1	03/21/05	03/21/05	
Surrogate: 4-BFB (FID) (65-140%)					81 %				
<b>Sample ID: IOC1526-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	0.050	0.10	ND	1	03/21/05	03/21/05	
Surrogate: 4-BFB (FID) (65-140%)					76 %				

PI

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 Project Manager

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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)
Outfall 011
Report Number: IOC1526

Sampled: 03/18/05
Received: 03/18/05

PURGEABLES BY GC/MS (EPA 624)

Table with columns: Analyte, Method, Batch, MDL Limit, Reporting Limit, Sample Result, Dilution Factor, Date Extracted, Date Analyzed, Data Qualifiers. Includes sample ID IOC1526-01 and various chemical analytes like Benzene, Bromodichloromethane, etc.

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-02 (Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C20002	0.28	1.0	ND	1	03/20/05	03/20/05	
Bromodichloromethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Bromoform	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
Bromomethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Carbon tetrachloride	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
Chlorobenzene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
Chloroethane	EPA 624	5C20002	0.33	5.0	ND	1	03/20/05	03/20/05	
Chloroform	EPA 624	5C20002	0.33	2.0	ND	1	03/20/05	03/20/05	
Chloromethane	EPA 624	5C20002	0.30	5.0	ND	1	03/20/05	03/20/05	
Dibromochloromethane	EPA 624	5C20002	0.28	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichlorobenzene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
1,3-Dichlorobenzene	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
1,4-Dichlorobenzene	EPA 624	5C20002	0.37	2.0	ND	1	03/20/05	03/20/05	
1,1-Dichloroethane	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloroethane	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
1,1-Dichloroethene	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
trans-1,2-Dichloroethene	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloropropane	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
cis-1,3-Dichloropropene	EPA 624	5C20002	0.22	2.0	ND	1	03/20/05	03/20/05	
trans-1,3-Dichloropropene	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Ethylbenzene	EPA 624	5C20002	0.25	2.0	ND	1	03/20/05	03/20/05	
Methylene chloride	EPA 624	5C20002	0.48	5.0	ND	1	03/20/05	03/20/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Tetrachloroethene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
Toluene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
1,1,1-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
1,1,2-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Trichloroethene	EPA 624	5C20002	0.26	2.0	ND	1	03/20/05	03/20/05	
Trichlorofluoromethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Vinyl chloride	EPA 624	5C20002	0.26	0.50	ND	1	03/20/05	03/20/05	
Xylenes, Total	EPA 624	5C20002	0.52	4.0	ND	1	03/20/05	03/20/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C20002	1.2	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)									112 %
Surrogate: Toluene-d8 (80-120%)									103 %
Surrogate: 4-Bromofluorobenzene (80-120%)									96 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	
<i>Surrogate: Dibromofluoromethane (80-120%)</i>					116 %				
<i>Surrogate: Toluene-d8 (80-120%)</i>					103 %				
<i>Surrogate: 4-Bromofluorobenzene (80-120%)</i>					94 %				

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**PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	
<b>Sample ID: IOC1526-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	

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Outfall 011
Report Number: IOC1526

Sampled: 03/18/05
Received: 03/18/05

ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Table with columns: Analyte, Method, Batch, MDL Limit, Reporting Limit, Sample Result, Dilution Factor, Date Extracted, Date Analyzed, Data Qualifiers. Includes sample ID IOC1526-01 and various chemical analytes like Acenaphthene, Aniline, etc.

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.9	03/20/05	03/22/05	RL-3
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.9	03/20/05	03/22/05	
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.9	03/20/05	03/22/05	
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.9	03/20/05	03/22/05	
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.9	03/20/05	03/22/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.9	03/20/05	03/22/05	
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.9	03/20/05	03/22/05	
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.9	03/20/05	03/22/05	
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.9	03/20/05	03/22/05	
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05	
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.9	03/20/05	03/22/05	
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.9	03/20/05	03/22/05	
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.9	03/20/05	03/22/05	
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.9	03/20/05	03/22/05	
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.9	03/20/05	03/22/05	
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.9	03/20/05	03/22/05	
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.9	03/20/05	03/22/05	
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.9	03/20/05	03/22/05	
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.9	03/20/05	03/22/05	
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.9	03/20/05	03/22/05	
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.9	03/20/05	03/22/05	
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.9	03/20/05	03/22/05	
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05	
Surrogate: 2-Fluorophenol (30-120%)					68 %				
Surrogate: Phenol-d6 (35-120%)					67 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					79 %				
Surrogate: Nitrobenzene-d5 (45-120%)					68 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					70 %				
Surrogate: Terphenyl-d14 (45-120%)					78 %				

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

**ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	
<b>4,4'-DDT</b>	EPA 608	5C19034	0.030	0.10	<b>0.11</b>	0.952	03/19/05	03/19/05	
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					31 %				ZX
Surrogate: Decachlorobiphenyl (45-120%)					39 %				ZX

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
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**TOTAL PCBS (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					37 %				ZX

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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05	
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05	
Iron	EPA 200.8	5C19038	0.0032	0.010	0.27	1	03/19/05	03/21/05	B-1

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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C19038	0.18	2.0	0.26	1	03/19/05	03/21/05	B, J
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.1	1	03/19/05	03/21/05	
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.079	1	03/19/05	03/21/05	B, J
Chromium	EPA 200.8	5C19038	0.26	2.0	0.93	1	03/19/05	03/21/05	J
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.33	1	03/19/05	03/21/05	J
Copper	EPA 200.8	5C19038	0.49	2.0	3.0	1	03/19/05	03/21/05	
Lead	EPA 200.8	5C19038	0.13	1.0	0.39	1	03/19/05	03/21/05	J
Manganese	EPA 200.8	5C21088	0.44	1.0	56	1	03/21/05	03/21/05	
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	
Nickel	EPA 200.8	5C19038	0.15	2.0	1.9	1	03/19/05	03/21/05	B, J
Selenium	EPA 200.8	5C19038	0.36	2.0	0.43	1	03/19/05	03/21/05	J
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	
Vanadium	EPA 200.8	5C19038	0.86	2.0	1.3	1	03/19/05	03/21/05	J
Zinc	EPA 200.8	5C19038	3.1	20	9.8	1	03/19/05	03/21/05	J

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	<b>0.56</b>	1	03/22/05	03/22/05	
Biochemical Oxygen Demand	EPA 405.1	5C18070	0.59	2.0	<b>3.8</b>	1	03/18/05	03/23/05	
Chloride	EPA 300.0	5C18104	0.26	0.50	<b>15</b>	1	03/18/05	03/19/05	
Fluoride	EPA 300.0	5C18104	0.10	0.50	<b>0.36</b>	1	03/18/05	03/19/05	B, J
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/19/05	
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	
Residual Chlorine	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	
Sulfate	EPA 300.0	5C18104	0.18	0.50	<b>41</b>	1	03/18/05	03/19/05	
Surfactants (MBAS)	SM5540-C	5C18107	0.044	0.10	<b>0.064</b>	1	03/18/05	03/18/05	J
Total Dissolved Solids	SM2540C	5C21073	10	10	<b>230</b>	1	03/21/05	03/21/05	
Total Organic Carbon	EPA 415.1	5C22101	0.25	1.0	<b>13</b>	1	03/22/05	03/22/05	
Total Suspended Solids	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	

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Sampled: 03/18/05  
 Received: 03/18/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ml/hr</b>									
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: NTU</b>									
Turbidity	EPA 180.1	5C19032	0.040	1.0	2.4	1	03/19/05	03/19/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5C18067	0.10	1.0	ND	1	03/18/05	03/18/05	
Total Cyanide	EPA 335.2	5C21083	2.2	5.0	ND	1	03/21/05	03/21/05	
Perchlorate	EPA 314.0	5C18121	0.80	4.0	ND	1	03/18/05	03/19/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	350	1	03/21/05	03/21/05	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC1526-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND	1	03/22/05	03/22/05	
<i>Surrogate: Dibromofluoromethane (80-125%)</i>					<i>117 %</i>				

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 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## SHORT HOLD TIME DETAIL REPORT

Sample ID: Outfall 011 Composite (IOC1526-01) - Water	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
EPA 160.5	2	03/18/2005 14:40	03/18/2005 20:15	03/19/2005 09:00	03/19/2005 10:00
EPA 180.1	2	03/18/2005 14:40	03/18/2005 20:15	03/19/2005 09:30	03/19/2005 10:30
EPA 218.6	1	03/18/2005 14:40	03/18/2005 20:15	03/18/2005 21:40	03/18/2005 22:04
EPA 300.0	2	03/18/2005 14:40	03/18/2005 20:15	03/18/2005 23:00	03/19/2005 01:05
EPA 330.5	1	03/18/2005 14:40	03/18/2005 20:15	03/19/2005 09:00	03/19/2005 10:00
EPA 405.1	2	03/18/2005 14:40	03/18/2005 20:15	03/18/2005 22:35	03/23/2005 10:30
EPA 624	3	03/18/2005 14:40	03/18/2005 20:15	03/20/2005 00:00	03/20/2005 12:57
SM5540-C	2	03/18/2005 14:40	03/18/2005 20:15	03/18/2005 22:01	03/18/2005 22:20

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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

METHOD BLANK/QC DATA

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C22091 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C22091-BLK1)</b>											
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l							
<b>LCS Analyzed: 03/22/2005 (5C22091-BS1)</b>											
Total Recoverable Hydrocarbons	4.49	1.0	0.31	mg/l	5.00		90	65-120			M-NRI
<b>LCS Dup Analyzed: 03/22/2005 (5C22091-BSD1)</b>											
Total Recoverable Hydrocarbons	4.59	1.0	0.31	mg/l	5.00		92	65-120	2	20	

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Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21048 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21048-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.174			mg/l	0.200		87	40-125			
<b>LCS Analyzed: 03/21/2005 (5C21048-BS1)</b>											
EFH (C13 - C40)	0.738	0.50	0.082	mg/l	0.775		95	40-120			M-NR1
Surrogate: n-Octacosane	0.182			mg/l	0.200		91	40-125			
<b>LCS Dup Analyzed: 03/21/2005 (5C21048-BSD1)</b>											
EFH (C13 - C40)	0.688	0.50	0.082	mg/l	0.775		89	40-120	7	25	
Surrogate: n-Octacosane	0.177			mg/l	0.200		88	40-125			

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## METHOD BLANK/QC DATA

### VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21006 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21006-BLK1)</b>											
GRO (C4 - C12)	ND	0.10	0.050	mg/l							
Surrogate: 4-BFB (FID)	0.00839			mg/l	0.0100		84	65-140			
<b>LCS Analyzed: 03/21/2005 (5C21006-BS1)</b>											
GRO (C4 - C12)	0.650	0.10	0.050	mg/l	0.800		81	70-140			
Surrogate: 4-BFB (FID)	0.0238			mg/l	0.0300		79	65-140			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21006-MS1)</b>											
						<b>Source: IOC1526-01</b>					
GRO (C4 - C12)	0.220	0.10	0.050	mg/l	0.220	ND	100	60-140			
Surrogate: 4-BFB (FID)	0.00955			mg/l	0.0100		96	65-140			
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C21006-MSD1)</b>											
						<b>Source: IOC1526-01</b>					
GRO (C4 - C12)	0.221	0.10	0.050	mg/l	0.220	ND	100	60-140	1	20	
Surrogate: 4-BFB (FID)	0.00960			mg/l	0.0100		96	65-140			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting			Spike Level	Source Result	%REC		RPD	Data Qualifiers
		Limit	MDL	Units			%REC	Limit		
<b>Batch: 5C20002 Extracted: 03/20/05</b>										
<b>Blank Analyzed: 03/20/2005 (5C20002-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	27.7			ug/l	25.0		111	80-120		
Surrogate: Toluene-d8	25.5			ug/l	25.0		102	80-120		
Surrogate: 4-Bromofluorobenzene	23.8			ug/l	25.0		95	80-120		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>											
<b>LCS Analyzed: 03/20/2005 (5C20002-BS1)</b>											
Benzene	25.7	1.0	0.28	ug/l	25.0		103	70-120			
Bromodichloromethane	25.4	2.0	0.30	ug/l	25.0		102	70-140			
Bromoform	24.2	5.0	0.32	ug/l	25.0		97	55-135			
Bromomethane	29.2	5.0	0.34	ug/l	25.0		117	60-140			
Carbon tetrachloride	25.2	0.50	0.28	ug/l	25.0		101	70-140			
Chlorobenzene	24.0	2.0	0.36	ug/l	25.0		96	80-125			
Chloroethane	28.3	5.0	0.33	ug/l	25.0		113	60-145			
Chloroform	27.9	2.0	0.33	ug/l	25.0		112	75-130			
Chloromethane	29.6	5.0	0.30	ug/l	25.0		118	40-145			
Dibromochloromethane	24.5	2.0	0.28	ug/l	25.0		98	65-145			
1,2-Dichlorobenzene	24.0	2.0	0.32	ug/l	25.0		96	80-120			
1,3-Dichlorobenzene	23.6	2.0	0.35	ug/l	25.0		94	80-120			
1,4-Dichlorobenzene	23.9	2.0	0.37	ug/l	25.0		96	80-120			
1,1-Dichloroethane	28.0	2.0	0.27	ug/l	25.0		112	70-135			
1,2-Dichloroethane	29.5	0.50	0.28	ug/l	25.0		118	60-150			
1,1-Dichloroethene	26.3	5.0	0.32	ug/l	25.0		105	75-135			
trans-1,2-Dichloroethene	26.8	2.0	0.27	ug/l	25.0		107	70-130			
1,2-Dichloropropane	26.2	2.0	0.35	ug/l	25.0		105	70-120			
cis-1,3-Dichloropropene	26.0	2.0	0.22	ug/l	25.0		104	75-130			
trans-1,3-Dichloropropene	26.4	2.0	0.24	ug/l	25.0		106	75-135			
Ethylbenzene	25.0	2.0	0.25	ug/l	25.0		100	80-120			
Methylene chloride	28.0	5.0	0.48	ug/l	25.0		112	60-135			
1,1,2,2-Tetrachloroethane	25.9	2.0	0.24	ug/l	25.0		104	60-135			
Tetrachloroethene	23.1	2.0	0.32	ug/l	25.0		92	75-125			
Toluene	24.8	2.0	0.36	ug/l	25.0		99	75-120			
1,1,1-Trichloroethane	26.8	2.0	0.30	ug/l	25.0		107	75-140			
1,1,2-Trichloroethane	25.9	2.0	0.30	ug/l	25.0		104	70-125			
Trichloroethene	25.3	2.0	0.26	ug/l	25.0		101	80-120			
Trichlorofluoromethane	28.9	5.0	0.34	ug/l	25.0		116	65-145			
Vinyl chloride	25.4	0.50	0.26	ug/l	25.0		102	50-130			
Surrogate: Dibromofluoromethane	27.8			ug/l	25.0		111	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>											
<b>Matrix Spike Analyzed: 03/20/2005 (5C20002-MS1)</b>											
<b>Source: IOC1175-01</b>											
Benzene	26.4	1.0	0.28	ug/l	25.0	ND	106	70-120			
Bromodichloromethane	25.5	2.0	0.30	ug/l	25.0	ND	102	70-140			
Bromoform	22.3	5.0	0.32	ug/l	25.0	ND	89	55-140			
Bromomethane	29.7	5.0	0.34	ug/l	25.0	ND	119	50-145			
Carbon tetrachloride	25.0	0.50	0.28	ug/l	25.0	ND	100	70-145			
Chlorobenzene	24.6	2.0	0.36	ug/l	25.0	ND	98	80-125			
Chloroethane	28.1	5.0	0.33	ug/l	25.0	ND	112	50-145			
Chloroform	27.8	2.0	0.33	ug/l	25.0	ND	111	70-135			
Chloromethane	30.6	5.0	0.30	ug/l	25.0	ND	122	35-145			
Dibromochloromethane	23.8	2.0	0.28	ug/l	25.0	ND	95	65-145			
1,2-Dichlorobenzene	24.5	2.0	0.32	ug/l	25.0	ND	98	75-130			
1,3-Dichlorobenzene	24.5	2.0	0.35	ug/l	25.0	ND	98	75-130			
1,4-Dichlorobenzene	24.7	2.0	0.37	ug/l	25.0	ND	99	80-120			
1,1-Dichloroethane	27.3	2.0	0.27	ug/l	25.0	ND	109	65-135			
1,2-Dichloroethane	29.3	0.50	0.28	ug/l	25.0	ND	117	60-150			
1,1-Dichloroethene	27.7	5.0	0.32	ug/l	25.0	ND	111	65-140			
trans-1,2-Dichloroethene	25.5	2.0	0.27	ug/l	25.0	ND	102	65-135			
1,2-Dichloropropane	27.0	2.0	0.35	ug/l	25.0	ND	108	65-130			
cis-1,3-Dichloropropene	25.7	2.0	0.22	ug/l	25.0	ND	103	70-140			
trans-1,3-Dichloropropene	25.7	2.0	0.24	ug/l	25.0	ND	103	70-140			
Ethylbenzene	25.4	2.0	0.25	ug/l	25.0	ND	102	70-130			
Methylene chloride	27.8	5.0	0.48	ug/l	25.0	ND	111	60-135			
1,1,2,2-Tetrachloroethane	26.4	2.0	0.24	ug/l	25.0	ND	106	60-145			
Tetrachloroethene	23.6	2.0	0.32	ug/l	25.0	ND	94	70-130			
Toluene	25.3	2.0	0.36	ug/l	25.0	ND	101	70-120			
1,1,1-Trichloroethane	24.2	2.0	0.30	ug/l	25.0	ND	97	75-140			
1,1,2-Trichloroethane	25.3	2.0	0.30	ug/l	25.0	ND	101	60-135			
Trichloroethene	24.6	2.0	0.26	ug/l	25.0	ND	98	70-125			
Trichlorofluoromethane	28.3	5.0	0.34	ug/l	25.0	ND	113	55-145			
Vinyl chloride	25.8	0.50	0.26	ug/l	25.0	ND	103	40-135			
Surrogate: Dibromofluoromethane	27.4			ug/l	25.0		110	80-120			
Surrogate: Toluene-d8	25.4			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98	80-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>											
<b>Matrix Spike Dup Analyzed: 03/20/2005 (5C20002-MSD1)</b>						<b>Source: IOC1175-01</b>					
Benzene	25.8	1.0	0.28	ug/l	25.0	ND	103	70-120	2	20	
Bromodichloromethane	25.1	2.0	0.30	ug/l	25.0	ND	100	70-140	2	20	
Bromoform	24.1	5.0	0.32	ug/l	25.0	ND	96	55-140	8	25	
Bromomethane	28.4	5.0	0.34	ug/l	25.0	ND	114	50-145	4	25	
Carbon tetrachloride	24.7	0.50	0.28	ug/l	25.0	ND	99	70-145	1	25	
Chlorobenzene	24.4	2.0	0.36	ug/l	25.0	ND	98	80-125	1	20	
Chloroethane	26.7	5.0	0.33	ug/l	25.0	ND	107	50-145	5	25	
Chloroform	27.1	2.0	0.33	ug/l	25.0	ND	108	70-135	3	20	
Chloromethane	29.1	5.0	0.30	ug/l	25.0	ND	116	35-145	5	25	
Dibromochloromethane	24.6	2.0	0.28	ug/l	25.0	ND	98	65-145	3	25	
1,2-Dichlorobenzene	24.5	2.0	0.32	ug/l	25.0	ND	98	75-130	0	20	
1,3-Dichlorobenzene	24.0	2.0	0.35	ug/l	25.0	ND	96	75-130	2	20	
1,4-Dichlorobenzene	24.4	2.0	0.37	ug/l	25.0	ND	98	80-120	1	20	
1,1-Dichloroethane	26.3	2.0	0.27	ug/l	25.0	ND	105	65-135	4	20	
1,2-Dichloroethane	29.0	0.50	0.28	ug/l	25.0	ND	116	60-150	1	20	
1,1-Dichloroethene	27.1	5.0	0.32	ug/l	25.0	ND	108	65-140	2	20	
trans-1,2-Dichloroethene	25.2	2.0	0.27	ug/l	25.0	ND	101	65-135	1	20	
1,2-Dichloropropane	26.4	2.0	0.35	ug/l	25.0	ND	106	65-130	2	20	
cis-1,3-Dichloropropene	25.8	2.0	0.22	ug/l	25.0	ND	103	70-140	0	20	
trans-1,3-Dichloropropene	26.5	2.0	0.24	ug/l	25.0	ND	106	70-140	3	25	
Ethylbenzene	24.8	2.0	0.25	ug/l	25.0	ND	99	70-130	2	20	
Methylene chloride	27.1	5.0	0.48	ug/l	25.0	ND	108	60-135	3	20	
1,1,2,2-Tetrachloroethane	28.9	2.0	0.24	ug/l	25.0	ND	116	60-145	9	30	
Tetrachloroethene	23.4	2.0	0.32	ug/l	25.0	ND	94	70-130	1	20	
Toluene	24.9	2.0	0.36	ug/l	25.0	ND	100	70-120	2	20	
1,1,1-Trichloroethane	23.0	2.0	0.30	ug/l	25.0	ND	92	75-140	5	20	
1,1,2-Trichloroethane	26.1	2.0	0.30	ug/l	25.0	ND	104	60-135	3	25	
Trichloroethene	24.2	2.0	0.26	ug/l	25.0	ND	97	70-125	2	20	
Trichlorofluoromethane	27.4	5.0	0.34	ug/l	25.0	ND	110	55-145	3	25	
Vinyl chloride	22.4	0.50	0.26	ug/l	25.0	ND	90	40-135	14	30	
Surrogate: Dibromofluoromethane	27.0			ug/l	25.0		108	80-120			
Surrogate: Toluene-d8	25.6			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	24.4			ug/l	25.0		98	80-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/20/2005 (5C20002-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	27.7			ug/l	25.0		111	80-120			
Surrogate: Toluene-d8	25.5			ug/l	25.0		102	80-120			
Surrogate: 4-Bromofluorobenzene	23.8			ug/l	25.0		95	80-120			
<b>LCS Analyzed: 03/20/2005 (5C20002-BS1)</b>											
2-Chloroethyl vinyl ether	26.5	5.0	1.3	ug/l	25.0		106	20-175			
Surrogate: Dibromofluoromethane	27.8			ug/l	25.0		111	80-120			
Surrogate: Toluene-d8	25.7			ug/l	25.0		103	80-120			
Surrogate: 4-Bromofluorobenzene	25.3			ug/l	25.0		101	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20002 Extracted: 03/20/05</b>										
<b>Blank Analyzed: 03/20/2005 (5C20002-BLK1)</b>										
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l						
Cyclohexane	ND	2.5	N/A	ug/l						

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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>										
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>										
Acenaphthene	ND	0.50	0.10	ug/l						
Acenaphthylene	ND	0.50	0.10	ug/l						
Aniline	ND	10	2.9	ug/l						
Anthracene	ND	0.50	0.083	ug/l						
Benzidine	ND	5.0	2.4	ug/l						
Benzoic acid	ND	20	3.7	ug/l						
Benzo(a)anthracene	ND	5.0	0.038	ug/l						
Benzo(a)pyrene	ND	2.0	0.14	ug/l						
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l						
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l						
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l						
Benzyl alcohol	ND	5.0	0.21	ug/l						
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l						
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l						
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l						
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l						
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l						
Butyl benzyl phthalate	0.600	5.0	0.34	ug/l						J
4-Chloroaniline	ND	2.0	0.20	ug/l						
2-Chloronaphthalene	ND	0.50	0.059	ug/l						
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l						
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l						
2-Chlorophenol	ND	1.0	0.12	ug/l						
Chrysene	ND	0.50	0.072	ug/l						
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l						
Dibenzofuran	ND	0.50	0.075	ug/l						
Di-n-butyl phthalate	ND	2.0	0.26	ug/l						
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l						
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l						
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l						
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l						
2,4-Dichlorophenol	ND	2.0	0.21	ug/l						
Diethyl phthalate	0.220	1.0	0.12	ug/l						J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l						
Dimethyl phthalate	ND	0.50	0.081	ug/l						

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Sampled: 03/18/05  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>										
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>										
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l						
2,4-Dinitrophenol	ND	5.0	2.7	ug/l						N-1
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l						
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l						
Di-n-octyl phthalate	ND	5.0	0.17	ug/l						
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l						
Fluoranthene	ND	0.50	0.089	ug/l						
Fluorene	ND	0.50	0.075	ug/l						
Hexachlorobenzene	ND	1.0	0.13	ug/l						
Hexachlorobutadiene	ND	2.0	0.38	ug/l						
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l						
Hexachloroethane	ND	3.0	0.51	ug/l						
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l						
Isophorone	ND	1.0	0.059	ug/l						
2-Methylnaphthalene	ND	1.0	0.13	ug/l						
2-Methylphenol	ND	2.0	0.28	ug/l						
4-Methylphenol	ND	5.0	0.20	ug/l						
Naphthalene	ND	1.0	0.13	ug/l						
2-Nitroaniline	ND	5.0	0.18	ug/l						
3-Nitroaniline	ND	5.0	0.35	ug/l						
4-Nitroaniline	ND	5.0	0.49	ug/l						
Nitrobenzene	ND	1.0	0.10	ug/l						
2-Nitrophenol	ND	2.0	0.23	ug/l						
4-Nitrophenol	ND	5.0	0.73	ug/l						
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l						
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l						
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l						
Pentachlorophenol	ND	2.0	0.78	ug/l						
Phenanthrene	ND	0.50	0.071	ug/l						
Phenol	ND	1.0	0.14	ug/l						
Pyrene	ND	0.50	0.059	ug/l						
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l						
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l						
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l						
Surrogate: 2-Fluorophenol	12.3			ug/l	20.0		62		30-120	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C20022-BLK1)</b>											
Surrogate: Phenol-d6	12.0			ug/l	20.0		60	35-120			
Surrogate: 2,4,6-Tribromophenol	15.4			ug/l	20.0		77	45-120			
Surrogate: Nitrobenzene-d5	6.34			ug/l	10.0		63	45-120			
Surrogate: 2-Fluorobiphenyl	7.02			ug/l	10.0		70	45-120			
Surrogate: Terphenyl-d14	7.70			ug/l	10.0		77	45-120			
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>											
Acenaphthene	7.60	0.50	0.10	ug/l	10.0		76	55-120			
Acenaphthylene	7.76	0.50	0.10	ug/l	10.0		78	55-120			
Aniline	7.02	10	2.9	ug/l	10.0		70	35-120			J
Anthracene	7.94	0.50	0.083	ug/l	10.0		79	55-120			
Benzidine	ND	5.0	2.4	ug/l	10.0			20-160			L2
Benzoic acid	7.08	20	3.7	ug/l	10.0		71	35-120			J
Benzo(a)anthracene	8.78	5.0	0.038	ug/l	10.0		88	60-120			
Benzo(a)pyrene	8.28	2.0	0.14	ug/l	10.0		83	55-120			
Benzo(b)fluoranthene	7.98	2.0	0.050	ug/l	10.0		80	50-120			
Benzo(g,h,i)perylene	7.68	5.0	0.059	ug/l	10.0		77	40-125			
Benzo(k)fluoranthene	8.24	0.50	0.053	ug/l	10.0		82	50-120			
Benzyl alcohol	7.48	5.0	0.21	ug/l	10.0		75	45-120			
Bis(2-chloroethoxy)methane	7.56	0.50	0.072	ug/l	10.0		76	55-120			
Bis(2-chloroethyl)ether	6.46	0.50	0.084	ug/l	10.0		65	50-120			
Bis(2-chloroisopropyl)ether	6.98	0.50	0.11	ug/l	10.0		70	45-120			
Bis(2-ethylhexyl)phthalate	8.18	5.0	1.1	ug/l	10.0		82	60-130			
4-Bromophenyl phenyl ether	7.30	1.0	0.12	ug/l	10.0		73	50-120			
Butyl benzyl phthalate	8.02	5.0	0.34	ug/l	10.0		80	55-125			
4-Chloroaniline	6.88	2.0	0.20	ug/l	10.0		69	50-120			
2-Chloronaphthalene	7.82	0.50	0.059	ug/l	10.0		78	55-120			
4-Chloro-3-methylphenol	7.16	2.0	0.34	ug/l	10.0		72	60-120			
4-Chlorophenyl phenyl ether	7.94	0.50	0.056	ug/l	10.0		79	55-120			
2-Chlorophenol	6.82	1.0	0.12	ug/l	10.0		68	45-120			
Chrysene	8.32	0.50	0.072	ug/l	10.0		83	60-120			
Dibenz(a,h)anthracene	8.64	0.50	0.083	ug/l	10.0		86	45-130			
Dibenzofuran	7.52	0.50	0.075	ug/l	10.0		75	60-120			
Di-n-butyl phthalate	8.02	2.0	0.26	ug/l	10.0		80	55-125			
1,2-Dichlorobenzene	6.12	0.50	0.11	ug/l	10.0		61	35-120			
1,3-Dichlorobenzene	6.00	0.50	0.13	ug/l	10.0		60	35-120			

M-NR1

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>											
1,4-Dichlorobenzene	5.96	0.50	0.050	ug/l	10.0		60	35-120			M-NR1
3,3-Dichlorobenzidine	7.18	5.0	0.93	ug/l	10.0		72	45-130			
2,4-Dichlorophenol	7.36	2.0	0.21	ug/l	10.0		74	55-120			
Diethyl phthalate	7.40	1.0	0.12	ug/l	10.0		74	55-120			
2,4-Dimethylphenol	6.64	2.0	0.31	ug/l	10.0		66	30-120			
Dimethyl phthalate	7.78	0.50	0.081	ug/l	10.0		78	60-120			
4,6-Dinitro-2-methylphenol	8.54	5.0	0.38	ug/l	10.0		85	50-120			
2,4-Dinitrophenol	7.42	5.0	2.7	ug/l	10.0		74	40-120			N-I
2,4-Dinitrotoluene	6.94	5.0	0.23	ug/l	10.0		69	60-120			
2,6-Dinitrotoluene	7.46	5.0	0.24	ug/l	10.0		75	60-120			
Di-n-octyl phthalate	9.76	5.0	0.17	ug/l	10.0		98	60-130			
1,2-Diphenylhydrazine/Azobenzene	7.98	1.0	0.087	ug/l	10.0		80	60-120			
Fluoranthene	8.32	0.50	0.089	ug/l	10.0		83	55-120			
Fluorene	8.12	0.50	0.075	ug/l	10.0		81	60-120			
Hexachlorobenzene	7.64	1.0	0.13	ug/l	10.0		76	50-120			
Hexachlorobutadiene	6.48	2.0	0.38	ug/l	10.0		65	40-120			
Hexachlorocyclopentadiene	6.58	5.0	1.8	ug/l	10.0		66	15-120			
Hexachloroethane	6.08	3.0	0.51	ug/l	10.0		61	35-120			
Indeno(1,2,3-cd)pyrene	8.12	2.0	0.19	ug/l	10.0		81	40-130			
Isophorone	6.94	1.0	0.059	ug/l	10.0		69	50-120			
2-Methylnaphthalene	7.42	1.0	0.13	ug/l	10.0		74	50-120			
2-Methylphenol	7.02	2.0	0.28	ug/l	10.0		70	45-120			
4-Methylphenol	7.14	5.0	0.20	ug/l	10.0		71	45-120			
Naphthalene	7.10	1.0	0.13	ug/l	10.0		71	50-120			
2-Nitroaniline	7.92	5.0	0.18	ug/l	10.0		79	60-120			
3-Nitroaniline	7.18	5.0	0.35	ug/l	10.0		72	55-120			
4-Nitroaniline	7.68	5.0	0.49	ug/l	10.0		77	50-125			
Nitrobenzene	6.56	1.0	0.10	ug/l	10.0		66	50-120			
2-Nitrophenol	7.28	2.0	0.23	ug/l	10.0		73	55-120			
4-Nitrophenol	8.18	5.0	0.73	ug/l	10.0		82	45-120			
N-Nitrosodimethylamine	6.94	2.0	0.22	ug/l	10.0		69	40-120			
N-Nitroso-di-n-propylamine	6.80	2.0	0.18	ug/l	10.0		68	45-120			
N-Nitrosodiphenylamine	7.34	1.0	0.077	ug/l	10.0		73	55-120			
Pentachlorophenol	8.06	2.0	0.78	ug/l	10.0		81	50-120			
Phenanthrene	7.82	0.50	0.071	ug/l	10.0		78	55-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>										
<b>LCS Analyzed: 03/22/2005 (5C20022-BS1)</b>										
Phenol	7.76	1.0	0.14	ug/l	10.0		78 45-120			M-NR1
Pyrene	8.14	0.50	0.059	ug/l	10.0		81 50-120			
1,2,4-Trichlorobenzene	6.40	1.0	0.10	ug/l	10.0		64 45-120			
2,4,5-Trichlorophenol	8.04	2.0	0.075	ug/l	10.0		80 60-120			
2,4,6-Trichlorophenol	8.04	1.0	0.10	ug/l	10.0		80 60-120			
Surrogate: 2-Fluorophenol	13.1			ug/l	20.0		66 30-120			
Surrogate: Phenol-d6	13.0			ug/l	20.0		65 35-120			
Surrogate: 2,4,6-Tribromophenol	16.1			ug/l	20.0		80 45-120			
Surrogate: Nitrobenzene-d5	6.72			ug/l	10.0		67 45-120			
Surrogate: 2-Fluorobiphenyl	7.48			ug/l	10.0		75 45-120			
Surrogate: Terphenyl-d14	7.66			ug/l	10.0		77 45-120			
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>										
Acenaphthene	7.52	0.50	0.10	ug/l	10.0		75 55-120	1	20	
Acenaphthylene	7.54	0.50	0.10	ug/l	10.0		75 55-120	3	20	
Aniline	6.88	10	2.9	ug/l	10.0		69 35-120	2	25	J
Anthracene	7.78	0.50	0.083	ug/l	10.0		78 55-120	2	20	
Benzidine	ND	5.0	2.4	ug/l	10.0		20-160		35	L2
Benzoic acid	6.18	20	3.7	ug/l	10.0		62 35-120	14	30	J
Benzo(a)anthracene	8.48	5.0	0.038	ug/l	10.0		85 60-120	3	20	
Benzo(a)pyrene	8.12	2.0	0.14	ug/l	10.0		81 55-120	2	25	
Benzo(b)fluoranthene	7.90	2.0	0.050	ug/l	10.0		79 50-120	1	25	
Benzo(g,h,i)perylene	7.32	5.0	0.059	ug/l	10.0		73 40-125	5	25	
Benzo(k)fluoranthene	7.98	0.50	0.053	ug/l	10.0		80 50-120	3	20	
Benzyl alcohol	7.26	5.0	0.21	ug/l	10.0		73 45-120	3	20	
Bis(2-chloroethoxy)methane	7.42	0.50	0.072	ug/l	10.0		74 55-120	2	20	
Bis(2-chloroethyl)ether	6.10	0.50	0.084	ug/l	10.0		61 50-120	6	20	
Bis(2-chloroisopropyl)ether	6.98	0.50	0.11	ug/l	10.0		70 45-120	0	20	
Bis(2-ethylhexyl)phthalate	8.08	5.0	1.1	ug/l	10.0		81 60-130	1	20	
4-Bromophenyl phenyl ether	7.30	1.0	0.12	ug/l	10.0		73 50-120	0	25	
Butyl benzyl phthalate	8.02	5.0	0.34	ug/l	10.0		80 55-125	0	20	
4-Chloroaniline	6.62	2.0	0.20	ug/l	10.0		66 50-120	4	25	
2-Chloronaphthalene	7.54	0.50	0.059	ug/l	10.0		75 55-120	4	20	
4-Chloro-3-methylphenol	6.86	2.0	0.34	ug/l	10.0		69 60-120	4	25	
4-Chlorophenyl phenyl ether	8.16	0.50	0.056	ug/l	10.0		82 55-120	3	20	
2-Chlorophenol	6.74	1.0	0.12	ug/l	10.0		67 45-120	1	25	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
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## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>										
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>										
Chrysene	8.10	0.50	0.072	ug/l	10.0	81	60-120	3	20	
Dibenz(a,h)anthracene	8.08	0.50	0.083	ug/l	10.0	81	45-130	7	25	
Dibenzofuran	7.54	0.50	0.075	ug/l	10.0	75	60-120	0	20	
Di-n-butyl phthalate	8.10	2.0	0.26	ug/l	10.0	81	55-125	1	20	
1,2-Dichlorobenzene	5.86	0.50	0.11	ug/l	10.0	59	35-120	4	25	
1,3-Dichlorobenzene	5.64	0.50	0.13	ug/l	10.0	56	35-120	6	25	
1,4-Dichlorobenzene	5.68	0.50	0.050	ug/l	10.0	57	35-120	5	25	
3,3-Dichlorobenzidine	6.88	5.0	0.93	ug/l	10.0	69	45-130	4	25	
2,4-Dichlorophenol	7.30	2.0	0.21	ug/l	10.0	73	55-120	1	20	
Diethyl phthalate	7.32	1.0	0.12	ug/l	10.0	73	55-120	1	20	
2,4-Dimethylphenol	6.42	2.0	0.31	ug/l	10.0	64	30-120	3	25	
Dimethyl phthalate	7.70	0.50	0.081	ug/l	10.0	77	60-120	1	20	
4,6-Dinitro-2-methylphenol	8.26	5.0	0.38	ug/l	10.0	83	50-120	3	25	
2,4-Dinitrophenol	7.02	5.0	2.7	ug/l	10.0	70	40-120	6	25	N-I
2,4-Dinitrotoluene	6.92	5.0	0.23	ug/l	10.0	69	60-120	0	20	
2,6-Dinitrotoluene	7.22	5.0	0.24	ug/l	10.0	72	60-120	3	20	
Di-n-octyl phthalate	9.76	5.0	0.17	ug/l	10.0	98	60-130	0	20	
1,2-Diphenylhydrazine/Azobenzene	8.02	1.0	0.087	ug/l	10.0	80	60-120	1	25	
Fluoranthene	8.28	0.50	0.089	ug/l	10.0	83	55-120	1	20	
Fluorene	8.34	0.50	0.075	ug/l	10.0	83	60-120	3	20	
Hexachlorobenzene	7.50	1.0	0.13	ug/l	10.0	75	50-120	2	20	
Hexachlorobutadiene	5.84	2.0	0.38	ug/l	10.0	58	40-120	10	25	
Hexachlorocyclopentadiene	6.76	5.0	1.8	ug/l	10.0	68	15-120	3	30	
Hexachloroethane	5.66	3.0	0.51	ug/l	10.0	57	35-120	7	25	
Indeno(1,2,3-cd)pyrene	7.86	2.0	0.19	ug/l	10.0	79	40-130	3	25	
Isophorone	6.12	1.0	0.059	ug/l	10.0	61	50-120	13	20	
2-Methylnaphthalene	7.12	1.0	0.13	ug/l	10.0	71	50-120	4	20	
2-Methylphenol	6.92	2.0	0.28	ug/l	10.0	69	45-120	1	20	
4-Methylphenol	7.06	5.0	0.20	ug/l	10.0	71	45-120	1	20	
Naphthalene	6.86	1.0	0.13	ug/l	10.0	69	50-120	3	20	
2-Nitroaniline	7.94	5.0	0.18	ug/l	10.0	79	60-120	0	20	
3-Nitroaniline	6.78	5.0	0.35	ug/l	10.0	68	55-120	6	25	
4-Nitroaniline	7.64	5.0	0.49	ug/l	10.0	76	50-125	1	20	
Nitrobenzene	6.62	1.0	0.10	ug/l	10.0	66	50-120	1	25	
2-Nitrophenol	7.20	2.0	0.23	ug/l	10.0	72	55-120	1	25	

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 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C20022 Extracted: 03/20/05</b>											
<b>LCS Dup Analyzed: 03/22/2005 (5C20022-BSD1)</b>											
4-Nitrophenol	7.96	5.0	0.73	ug/l	10.0		80	45-120	3	25	
N-Nitrosodimethylamine	6.82	2.0	0.22	ug/l	10.0		68	40-120	2	20	
N-Nitroso-di-n-propylamine	6.68	2.0	0.18	ug/l	10.0		67	45-120	2	20	
N-Nitrosodiphenylamine	7.28	1.0	0.077	ug/l	10.0		73	55-120	1	20	
Pentachlorophenol	7.92	2.0	0.78	ug/l	10.0		79	50-120	2	25	
Phenanthrene	7.68	0.50	0.071	ug/l	10.0		77	55-120	2	20	
Phenol	7.62	1.0	0.14	ug/l	10.0		76	45-120	2	25	
Pyrene	7.96	0.50	0.059	ug/l	10.0		80	50-120	2	25	
1,2,4-Trichlorobenzene	6.06	1.0	0.10	ug/l	10.0		61	45-120	5	20	
2,4,5-Trichlorophenol	7.66	2.0	0.075	ug/l	10.0		77	60-120	5	20	
2,4,6-Trichlorophenol	7.78	1.0	0.10	ug/l	10.0		78	60-120	3	20	
Surrogate: 2-Fluorophenol	12.8			ug/l	20.0		64	30-120			
Surrogate: Phenol-d6	12.9			ug/l	20.0		64	35-120			
Surrogate: 2,4,6-Tribromophenol	16.0			ug/l	20.0		80	45-120			
Surrogate: Nitrobenzene-d5	6.74			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.16			ug/l	10.0		72	45-120			
Surrogate: Terphenyl-d14	7.48			ug/l	10.0		75	45-120			

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 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	Data Qualifiers
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**Batch: 5C19034 Extracted: 03/19/05**

#### Blank Analyzed: 03/19/2005 (5C19034-BLK1)

Aldrin	ND	0.10	0.030	ug/l					
alpha-BHC	ND	0.10	0.015	ug/l					
beta-BHC	ND	0.10	0.015	ug/l					
delta-BHC	ND	0.20	0.020	ug/l					
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l					
Chlordane	ND	1.0	0.20	ug/l					
4,4'-DDD	ND	0.10	0.020	ug/l					
4,4'-DDE	ND	0.10	0.025	ug/l					
4,4'-DDT	ND	0.10	0.030	ug/l					
Dieldrin	ND	0.10	0.015	ug/l					
Endosulfan I	ND	0.10	0.015	ug/l					
Endosulfan II	ND	0.10	0.040	ug/l					
Endosulfan sulfate	ND	0.20	0.015	ug/l					
Endrin	ND	0.10	0.020	ug/l					
Endrin aldehyde	ND	0.10	0.045	ug/l					
Endrin ketone	ND	0.10	0.020	ug/l					
Heptachlor	ND	0.10	0.030	ug/l					
Heptachlor epoxide	ND	0.10	0.020	ug/l					
Methoxychlor	ND	0.10	0.035	ug/l					
Toxaphene	ND	5.0	1.5	ug/l					
Surrogate: Tetrachloro-m-xylene	0.320			ug/l	0.500	64	35-115		
Surrogate: Decachlorobiphenyl	0.403			ug/l	0.500	81	45-120		

#### LCS Analyzed: 03/19/2005 (5C19034-BS1)

Aldrin	0.340	0.10	0.030	ug/l	0.500	68	40-115		M-NRI
alpha-BHC	0.351	0.10	0.015	ug/l	0.500	70	45-115		
beta-BHC	0.339	0.10	0.015	ug/l	0.500	68	50-115		
delta-BHC	0.351	0.20	0.020	ug/l	0.500	70	55-120		
gamma-BHC (Lindane)	0.357	0.10	0.020	ug/l	0.500	71	45-115		
4,4'-DDD	0.390	0.10	0.020	ug/l	0.500	78	60-120		
4,4'-DDE	0.380	0.10	0.025	ug/l	0.500	76	55-120		
4,4'-DDT	0.402	0.10	0.030	ug/l	0.500	80	60-120		
Dieldrin	0.380	0.10	0.015	ug/l	0.500	76	55-120		
Endosulfan I	0.359	0.10	0.015	ug/l	0.500	72	50-115		
Endosulfan II	0.377	0.10	0.040	ug/l	0.500	75	60-125		
Endosulfan sulfate	0.377	0.20	0.015	ug/l	0.500	75	60-120		

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19034 Extracted: 03/19/05</b>										
<b>LCS Analyzed: 03/19/2005 (5C19034-BS1)</b>										
Endrin	0.378	0.10	0.020	ug/l	0.500		76 55-125			
Endrin aldehyde	0.339	0.10	0.045	ug/l	0.500		68 55-115			
Endrin ketone	0.393	0.10	0.020	ug/l	0.500		79 60-115			
Heptachlor	0.357	0.10	0.030	ug/l	0.500		71 45-115			
Heptachlor epoxide	0.352	0.10	0.020	ug/l	0.500		70 50-115			
Methoxychlor	0.386	0.10	0.035	ug/l	0.500		77 60-120			
Surrogate: Tetrachloro-m-xylene	0.299			ug/l	0.500		60 35-115			
Surrogate: Decachlorobiphenyl	0.398			ug/l	0.500		80 45-120			
<b>LCS Dup Analyzed: 03/19/2005 (5C19034-BSD1)</b>										
Aldrin	0.380	0.10	0.030	ug/l	0.500		76 40-115	11	30	M-NR1
alpha-BHC	0.391	0.10	0.015	ug/l	0.500		78 45-115	11	30	
beta-BHC	0.375	0.10	0.015	ug/l	0.500		75 50-115	10	30	
delta-BHC	0.391	0.20	0.020	ug/l	0.500		78 55-120	11	30	
gamma-BHC (Lindane)	0.393	0.10	0.020	ug/l	0.500		79 45-115	10	30	
4,4'-DDD	0.427	0.10	0.020	ug/l	0.500		85 60-120	9	30	
4,4'-DDE	0.423	0.10	0.025	ug/l	0.500		85 55-120	11	30	
4,4'-DDT	0.447	0.10	0.030	ug/l	0.500		89 60-120	11	30	
Dieldrin	0.416	0.10	0.015	ug/l	0.500		83 55-120	9	30	
Endosulfan I	0.395	0.10	0.015	ug/l	0.500		79 50-115	10	30	
Endosulfan II	0.409	0.10	0.040	ug/l	0.500		82 60-125	8	30	
Endosulfan sulfate	0.410	0.20	0.015	ug/l	0.500		82 60-120	8	30	
Endrin	0.415	0.10	0.020	ug/l	0.500		83 55-125	9	30	
Endrin aldehyde	0.373	0.10	0.045	ug/l	0.500		75 55-115	10	30	
Endrin ketone	0.425	0.10	0.020	ug/l	0.500		85 60-115	8	30	
Heptachlor	0.398	0.10	0.030	ug/l	0.500		80 45-115	11	30	
Heptachlor epoxide	0.389	0.10	0.020	ug/l	0.500		78 50-115	10	30	
Methoxychlor	0.427	0.10	0.035	ug/l	0.500		85 60-120	10	30	
Surrogate: Tetrachloro-m-xylene	0.309			ug/l	0.500		62 35-115			
Surrogate: Decachlorobiphenyl	0.433			ug/l	0.500		87 45-120			

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19034 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19034-BLK1)</b>											
Aroclor 1016	ND	1.0	0.20	ug/l							
Aroclor 1221	ND	1.0	0.10	ug/l							
Aroclor 1232	ND	1.0	0.15	ug/l							
Aroclor 1242	ND	1.0	0.15	ug/l							
Aroclor 1248	ND	1.0	0.25	ug/l							
Aroclor 1254	ND	1.0	0.25	ug/l							
Aroclor 1260	ND	1.0	0.40	ug/l							
Surrogate: Decachlorobiphenyl	0.356			ug/l	0.500		71	45-120			
<b>LCS Analyzed: 03/19/2005 (5C19034-BS2)</b>											
Aroclor 1016	2.73	1.0	0.20	ug/l	4.00		68	50-115			
Aroclor 1260	2.92	1.0	0.40	ug/l	4.00		73	55-115			
Surrogate: Decachlorobiphenyl	0.373			ug/l	0.500		75	45-120			
<b>LCS Dup Analyzed: 03/19/2005 (5C19034-BSD2)</b>											
Aroclor 1016	2.54	1.0	0.20	ug/l	4.00		64	50-115	7	30	
Aroclor 1260	2.83	1.0	0.40	ug/l	4.00		71	55-115	3	25	
Surrogate: Decachlorobiphenyl	0.348			ug/l	0.500		70	45-120			

M-NR1

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Project ID: 13267 (Study 1)  
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**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19029 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19029-BLK1)</b>											
Mercury	ND	0.20	0.063	ug/l							
<b>LCS Analyzed: 03/19/2005 (5C19029-BS1)</b>											
Mercury	8.50	0.20	0.063	ug/l	8.00		106	85-115			
<b>Matrix Spike Analyzed: 03/19/2005 (5C19029-MS1)</b>											
Mercury	8.46	0.20	0.063	ug/l	8.00	ND	106	70-130			
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C19029-MSD1)</b>											
Mercury	8.44	0.20	0.063	ug/l	8.00	ND	106	70-130	0	20	
<b>Batch: 5C19038 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C19038-BLK1)</b>											
Antimony	1.25	2.0	0.18	ug/l							J
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							J
Cadmium	0.0170	1.0	0.015	ug/l							
Chromium	ND	2.0	0.26	ug/l							
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							B-I
Iron	0.0190	0.010	0.0032	mg/l							
Lead	ND	1.0	0.13	ug/l							J
Nickel	0.555	2.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							J
Silver	0.184	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19038 Extracted: 03/19/05</b>											
<b>LCS Analyzed: 03/21/2005 (5C19038-BS1)</b>											
Antimony	81.3	2.0	0.18	ug/l	80.0		102	85-115			
Arsenic	86.3	1.0	0.49	ug/l	80.0		108	85-115			
Barium	0.0806	0.0010	0.00014	mg/l	0.0800		101	85-115			
Beryllium	74.7	0.50	0.037	ug/l	80.0		93	85-115			
Cadmium	78.9	1.0	0.015	ug/l	80.0		99	85-115			
Chromium	80.8	2.0	0.26	ug/l	80.0		101	85-115			
Cobalt	80.6	1.0	0.10	ug/l	80.0		101	85-115			
Copper	80.6	2.0	0.49	ug/l	80.0		101	85-115			
Iron	0.803	0.010	0.0032	mg/l	0.800		100	85-115			
Lead	81.1	1.0	0.13	ug/l	80.0		101	85-115			
Nickel	81.5	2.0	0.15	ug/l	80.0		102	85-115			
Selenium	80.8	2.0	0.36	ug/l	80.0		101	85-115			
Silver	80.7	1.0	0.089	ug/l	80.0		101	85-115			
Thallium	80.8	1.0	0.075	ug/l	80.0		101	85-115			
Vanadium	79.6	2.0	0.86	ug/l	80.0		100	85-115			
Zinc	79.7	20	3.1	ug/l	80.0		100	85-115			

### Source: IOC1524-01

### Matrix Spike Analyzed: 03/21/2005 (5C19038-MS1)

Antimony	84.1	2.0	0.18	ug/l	80.0	0.64	104	70-130			
Arsenic	88.5	1.0	0.49	ug/l	80.0	1.2	109	70-130			
Barium	0.0958	0.0010	0.00014	mg/l	0.0800	0.013	104	70-130			
Beryllium	75.0	0.50	0.037	ug/l	80.0	ND	94	70-130			
Cadmium	80.3	1.0	0.015	ug/l	80.0	0.034	100	70-130			
Chromium	81.8	2.0	0.26	ug/l	80.0	1.2	101	70-130			
Cobalt	81.7	1.0	0.10	ug/l	80.0	0.25	102	70-130			
Copper	84.0	2.0	0.49	ug/l	80.0	3.3	101	70-130			
Iron	1.06	0.010	0.0032	mg/l	0.800	0.15	114	70-130			
Lead	82.7	1.0	0.13	ug/l	80.0	0.50	103	70-130			
Nickel	82.5	2.0	0.15	ug/l	80.0	1.1	102	70-130			
Selenium	80.9	2.0	0.36	ug/l	80.0	0.39	101	70-130			
Silver	80.5	1.0	0.089	ug/l	80.0	ND	101	70-130			
Thallium	82.7	1.0	0.075	ug/l	80.0	0.13	103	70-130			
Vanadium	82.7	2.0	0.86	ug/l	80.0	2.7	100	70-130			
Zinc	89.8	20	3.1	ug/l	80.0	8.2	102	70-130			

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 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19038 Extracted: 03/19/05</b>											
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C19038-MSD1)</b>						<b>Source: IOC1524-01</b>					
Antimony	82.6	2.0	0.18	ug/l	80.0	0.64	102	70-130	2	20	
Arsenic	85.5	1.0	0.49	ug/l	80.0	1.2	105	70-130	3	20	
Barium	0.0950	0.0010	0.00014	mg/l	0.0800	0.013	102	70-130	1	20	
Beryllium	73.6	0.50	0.037	ug/l	80.0	ND	92	70-130	2	20	
Cadmium	78.6	1.0	0.015	ug/l	80.0	0.034	98	70-130	2	20	
Chromium	79.9	2.0	0.26	ug/l	80.0	1.2	98	70-130	2	20	
Cobalt	79.3	1.0	0.10	ug/l	80.0	0.25	99	70-130	3	20	
Copper	81.9	2.0	0.49	ug/l	80.0	3.3	98	70-130	3	20	
Iron	0.905	0.010	0.0032	mg/l	0.800	0.15	94	70-130	16	20	
Lead	81.9	1.0	0.13	ug/l	80.0	0.50	102	70-130	1	20	
Nickel	79.8	2.0	0.15	ug/l	80.0	1.1	98	70-130	3	20	
Selenium	80.4	2.0	0.36	ug/l	80.0	0.39	100	70-130	1	20	
Silver	79.2	1.0	0.089	ug/l	80.0	ND	99	70-130	2	20	
Thallium	81.2	1.0	0.075	ug/l	80.0	0.13	101	70-130	2	20	
Vanadium	81.6	2.0	0.86	ug/l	80.0	2.7	99	70-130	1	20	
Zinc	84.2	20	3.1	ug/l	80.0	8.2	95	70-130	6	20	

### Batch: 5C19039 Extracted: 03/19/05

#### Blank Analyzed: 03/19/2005 (5C19039-BLK1)

Boron	ND	0.050	0.0074	mg/l							
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#### LCS Analyzed: 03/19/2005 (5C19039-BS1)

Boron	0.473	0.050	0.0074	mg/l	0.500		95	85-115			
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#### Matrix Spike Analyzed: 03/19/2005 (5C19039-MS1)

Boron	0.585	0.050	0.0074	mg/l	0.500	0.090	99	70-130			
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#### Source: IOC1526-01

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**METHOD BLANK/QC DATA**

**METALS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C19039 Extracted: 03/19/05</b>											
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C19039-MSD1)</b>											
Boron	0.588	0.050	0.0074	mg/l	0.500	0.090	100	70-130	1	20	
<b>Batch: 5C21088 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21088-BLK1)</b>											
Manganese	ND	1.0	0.44	ug/l							
<b>LCS Analyzed: 03/21/2005 (5C21088-BS1)</b>											
Manganese	80.1	1.0	0.44	ug/l	80.0		100	85-115			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21088-MS1)</b>											
Manganese	84.6	1.0	0.44	ug/l	80.0	6.3	98	70-130			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21088-MS2)</b>											
Manganese	170	1.0	0.44	ug/l	80.0	90	100	70-130			
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C21088-MSD1)</b>											
Manganese	85.2	1.0	0.44	ug/l	80.0	6.3	99	70-130	1	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C18067 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18067-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 03/18/2005 (5C18067-BS1)</b>											
Chromium VI	51.4	1.0	0.10	ug/l	50.0		103	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18067-MS1)</b>											
Chromium VI	51.9	1.0	0.10	ug/l	50.0	ND	104	90-110			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18067-MSD1)</b>											
Chromium VI	53.8	1.0	0.10	ug/l	50.0	ND	108	90-110	4	10	
<b>Batch: 5C18070 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/23/2005 (5C18070-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 03/23/2005 (5C18070-BS1)</b>											
Biochemical Oxygen Demand	202	100	30	mg/l	198		102	85-115			
<b>LCS Dup Analyzed: 03/23/2005 (5C18070-BSD1)</b>											
Biochemical Oxygen Demand	200	100	30	mg/l	198		101	85-115	1	20	
<b>Batch: 5C18104 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18104-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	0.103	0.50	0.10	mg/l							J
Nitrate/Nitrite-N	ND	0.11	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C18104 Extracted: 03/18/05</b>											
<b>LCS Analyzed: 03/18/2005 (5C18104-BS1)</b>											
Chloride	4.80	0.50	0.26	mg/l	5.00		96	90-110			
Fluoride	4.67	0.50	0.10	mg/l	5.00		93	90-110			
Sulfate	10.0	0.50	0.18	mg/l	10.0		100	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18104-MS1)</b>											
						<b>Source: IOC1500-06</b>					
Chloride	10.3	0.50	0.26	mg/l	5.00	6.1	84	80-120			
Fluoride	4.51	0.50	0.10	mg/l	5.00	0.39	82	80-120			
Sulfate	12.8	0.50	0.18	mg/l	10.0	3.8	90	80-120			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18104-MSD1)</b>											
						<b>Source: IOC1500-06</b>					
Chloride	10.3	0.50	0.26	mg/l	5.00	6.1	84	80-120	0	20	
Fluoride	4.52	0.50	0.10	mg/l	5.00	0.39	83	80-120	0	20	
Sulfate	12.8	0.50	0.18	mg/l	10.0	3.8	90	80-120	0	20	
<b>Batch: 5C18107 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/18/2005 (5C18107-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 03/18/2005 (5C18107-BS1)</b>											
Surfactants (MBAS)	0.237	0.10	0.044	mg/l	0.250		95	90-110			
<b>Matrix Spike Analyzed: 03/18/2005 (5C18107-MS1)</b>											
						<b>Source: IOC1443-01</b>					
Surfactants (MBAS)	0.263	0.10	0.044	mg/l	0.250	ND	105	50-125			
<b>Matrix Spike Dup Analyzed: 03/18/2005 (5C18107-MSD1)</b>											
						<b>Source: IOC1443-01</b>					
Surfactants (MBAS)	0.263	0.10	0.044	mg/l	0.250	ND	105	50-125	0	20	

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C18121 Extracted: 03/18/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C18121-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 03/19/2005 (5C18121-BS1)</b>											
Perchlorate	52.7	4.0	0.80	ug/l	50.0		105	85-115			
<b>Matrix Spike Analyzed: 03/19/2005 (5C18121-MS1)</b>											
Perchlorate	53.9	4.0	0.80	ug/l	50.0	ND	108	80-120			
<b>Matrix Spike Dup Analyzed: 03/19/2005 (5C18121-MSD1)</b>											
Perchlorate	54.1	4.0	0.80	ug/l	50.0	ND	108	80-120	0	20	
<b>Batch: 5C19030 Extracted: 03/19/05</b>											
<b>Duplicate Analyzed: 03/19/2005 (5C19030-DUP1)</b>											
Residual Chlorine	ND	0.10	0.10	mg/l						20	
<b>Batch: 5C19032 Extracted: 03/19/05</b>											
<b>Blank Analyzed: 03/19/2005 (5C19032-BLK1)</b>											
Turbidity	0.0600	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 03/19/2005 (5C19032-DUP1)</b>											
Turbidity	0.110	1.0	0.040	NTU					9	20	J
<b>Batch: 5C21062 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21062-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							

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**METHOD BLANK/QC DATA**

**INORGANICS**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21062 Extracted: 03/21/05</b>											
<b>LCS Analyzed: 03/21/2005 (5C21062-BS1)</b>											
Oil & Grease	17.1	5.0	0.94	mg/l	20.0		86	65-120			M-NR1
<b>LCS Dup Analyzed: 03/21/2005 (5C21062-BSD1)</b>											
Oil & Grease	16.0	5.0	0.94	mg/l	20.0		80	65-120	7	20	
<b>Batch: 5C21068 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21068-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/21/2005 (5C21068-BS1)</b>											
Total Suspended Solids	942	10	10	mg/l	1000		94	85-115			
<b>Duplicate Analyzed: 03/21/2005 (5C21068-DUP1)</b>											
Total Suspended Solids	ND	10	10	mg/l		Source: IOC1566-01 ND				10	
<b>Batch: 5C21073 Extracted: 03/21/05</b>											
<b>Blank Analyzed: 03/21/2005 (5C21073-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/21/2005 (5C21073-BS1)</b>											
Total Dissolved Solids	968	10	10	mg/l	1000		97	90-110			
<b>Duplicate Analyzed: 03/21/2005 (5C21073-DUP1)</b>											
Total Dissolved Solids	320	10	10	mg/l		Source: IOC1566-01 300			6	10	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C21077 Extracted: 03/21/05</b>										
<b>Duplicate Analyzed: 03/21/2005 (5C21077-DUP1)</b>										
Specific Conductance	244	1.0	1.0	umhos/cm		240		2	5	
<b>Batch: 5C21083 Extracted: 03/21/05</b>										
<b>Blank Analyzed: 03/21/2005 (5C21083-BLK1)</b>										
Total Cyanide	ND	5.0	2.2	ug/l						
<b>LCS Analyzed: 03/21/2005 (5C21083-BS1)</b>										
Total Cyanide	203	5.0	2.2	ug/l	200		102 90-110			
<b>Matrix Spike Analyzed: 03/21/2005 (5C21083-MS1)</b>										
Total Cyanide	152	5.0	2.2	ug/l	200	ND	76 70-115			
<b>Matrix Spike Dup Analyzed: 03/21/2005 (5C21083-MSD1)</b>										
Total Cyanide	172	5.0	2.2	ug/l	200	ND	86 70-115	12	15	
<b>Batch: 5C22089 Extracted: 03/22/05</b>										
<b>Blank Analyzed: 03/22/2005 (5C22089-BLK1)</b>										
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l						
<b>LCS Analyzed: 03/22/2005 (5C22089-BS1)</b>										
Ammonia-N (Distilled)	9.24	0.50	0.30	mg/l	10.0		92 80-115			
<b>Matrix Spike Analyzed: 03/22/2005 (5C22089-MS1)</b>										
Ammonia-N (Distilled)	9.52	0.50	0.30	mg/l	10.0	1.1	84 70-120			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C22089 Extracted: 03/22/05</b>											
<b>Matrix Spike Dup Analyzed: 03/22/2005 (5C22089-MSD1)</b>						<b>Source: IOC1175-01</b>					
Ammonia-N (Distilled)	10.1	0.50	0.30	mg/l	10.0	1.1	90	70-120	6	15	
<b>Batch: 5C22101 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (5C22101-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 03/22/2005 (5C22101-BS1)</b>											
Total Organic Carbon	10.8	1.0	0.25	mg/l	10.0		108	90-110			
<b>Matrix Spike Analyzed: 03/22/2005 (5C22101-MS1)</b>						<b>Source: IOC1062-02</b>					
Total Organic Carbon	10.6	1.0	0.25	mg/l	5.00	5.8	96	80-120			
<b>Matrix Spike Dup Analyzed: 03/22/2005 (5C22101-MSD1)</b>						<b>Source: IOC1062-02</b>					
Total Organic Carbon	10.9	1.0	0.25	mg/l	5.00	5.8	102	80-120	3	20	

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## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5C2203 Extracted: 03/22/05</b>											
<b>Blank Analyzed: 03/22/2005 (P5C2203-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.11			ug/l	1.00		111	80-125			
<b>LCS Analyzed: 03/22/2005 (P5C2203-BS1)</b>											
1,4-Dioxane	8.06	1.0	0.49	ug/l	10.0		81	70-130			
Surrogate: Dibromofluoromethane	1.12			ug/l	1.00		112	80-125			
<b>LCS Dup Analyzed: 03/22/2005 (P5C2203-BSD1)</b>											
1,4-Dioxane	10.2	1.0	0.49	ug/l	10.0		102	70-130	23	20	R-7
Surrogate: Dibromofluoromethane	1.09			ug/l	1.00		109	80-125			
<b>Matrix Spike Analyzed: 03/22/2005 (P5C2203-MS1)</b>											
						<b>Source: POC0388-06</b>					
1,4-Dioxane	32.8	1.0	0.49	ug/l	10.0	25	78	70-150			
Surrogate: Dibromofluoromethane	1.06			ug/l	1.00		106	80-125			
<b>Matrix Spike Dup Analyzed: 03/22/2005 (P5C2203-MSD1)</b>											
						<b>Source: POC0388-06</b>					
1,4-Dioxane	32.4	1.0	0.49	ug/l	10.0	25	74	70-150	1	25	
Surrogate: Dibromofluoromethane	1.07			ug/l	1.00		107	80-125			

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

## DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- B-1** Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- N-1** See case narrative.
- P1** Sample received and analyzed without chemical preservation.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- RL-3** Reporting limit raised due to high concentrations of non-target analytes.
- ZX** Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

## ADDITIONAL COMMENTS

### For TICs:

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

### For 1,2-Diphenylhydrazine:

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

### For GRO (C4-C12):

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

### For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager

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IOC1526 <Page 52 of 54>





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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical *California Cert #1640*

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR  
 Samples: IOC1526-01

Analysis Performed: EDD + Level 4  
 Samples: IOC1526-01

#### Aquatic Testing Laboratories-SUB *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chrnic  
 Samples: IOC1526-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

## **Aquatic Testing Laboratories-SUB** California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC1526-01

## **Del Mar Analytical - Phoenix** NELAC Cert #01109CA, California Cert #2446

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC1526-01

## **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC1526-01

Analysis Performed: Gross Alpha  
Samples: IOC1526-01

Analysis Performed: Gross Beta  
Samples: IOC1526-01

Analysis Performed: Radium, Combined  
Samples: IOC1526-01

Analysis Performed: Strontium 90  
Samples: IOC1526-01

Analysis Performed: Tritium  
Samples: IOC1526-01

## **Truesdail Laboratories-SUB** California Cert #1237

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC1526-01

Analysis Performed: Level 4 Data Package  
Samples: IOC1526-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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**IOC1526 <Page 54 of 54>**

1001526

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version: 02/23/05

<b>Client Name/Address:</b> MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		<b>Project:</b> Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		<b>ANALYSIS REQUIRED</b>												<b>Field readings:</b> Temp = _____ pH = _____ Comments: **Continued Analysis required on Page 2 of 2			
<b>Project Manager:</b> Bronwyn Kelly Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		<b>Flow Weight Composite</b> Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Alpha BHC (608) + PP list + _____ Ammonia-N, Titr (350.2) w/dist _____ Conductivity _____ Turbidity, TDS, TSS _____ Perchlorate, Fluoride _____ C-, SO4, NO3+NO2-N, Surfactants (MBAS) _____ BOD5(20 degrees C) _____ Cyanide (total recoverable) _____ Oil & Grease (EPA 413.1) _____ TCDD (and all congeners) _____ VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list _____ Settleable Solids _____ Total Recoverable Metals: Pb, Cu, Ni, Se, Ag, Ti, Zn, Co, V, Cr, Hg, _____ Cd, Ni, Se, Ag, Ti, Zn, Co, V, _____ Cu, Pb, Bi, Fe, Mn, Sb, As, Be, _____												2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + TP list _____ Total Flow (gpm) = 53 Total Flow (gpm) = 41 Total Flow (gpm) = 58 Total Flow (gpm) = 46 Total Flow (gpm) = 51 Total Flow (gpm) = 39 Total Flow (gpm) = 44 Total Flow (gpm) = 47			
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	VOCS 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	C-, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list +	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + TP list	Field readings:		
Outfall 011	W	1G Poly	2	None	3-18-05 12:20	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	12:20	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	12:40	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	13:00	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	13:20	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	13:40	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	14:00	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	14:20	X	X	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	2	None	14:40	X	X	X	X	X	X	X	X	X	X	X	X		
Trip Blank	W	VOAs	3	HCL		X													
Relinquished By: [Signature]				Date/Time: 3-18-05 1620		Received By: [Signature]				Date/Time: 3/18/05 1620		Turn around Time: (check) 24 Hours _____ 48 Hours _____ 72 Hours _____				Metals Only 72 Hours _____		Sample Integrity: (Check) Intact _____ On Ice: X3C	
Relinquished By: [Signature]				Date/Time: 3/18/05 2015		Received By: [Signature]				Date/Time: 3/18/05 2015		Perchlorate Only 72 Hours _____				Metals Only 72 Hours _____		Sample Integrity: (Check) Intact _____ On Ice: X3C	
Relinquished By: [Signature]				Date/Time: 3/18/05 2015		Received By: [Signature]				Date/Time: 3/18/05 2015		Perchlorate Only 72 Hours _____				Metals Only 72 Hours _____		Sample Integrity: (Check) Intact _____ On Ice: X3C	

*DRP*

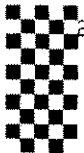
Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.

# CHAIN OF CUSTODY FORM

Version 02/23/05

Client Name/Address:				Project:				ANALYSIS REQUIRED										Comments
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101				Boeing-SSFL NPDES Outfall 011 - 13267 Perimeter Pond Flow-weight Composite				Residual Chlorine	TOC, 1,4-Dioxane MTH 3/21/05	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Momomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity- bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Residual Chlorine	TOC, 1,4-Dioxane MTH 3/21/05	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Momomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity- bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	Comments		
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	**Required analysis continued from Page 1 of 2		
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X			
Relinquished By	Date/Time: 3-18-05 1620			Received By			Date/Time: 3/18/05 1620										Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____	
Relinquished By	Date/Time: 3/18/05 2015			Received By			Date/Time: 3/18/05 2015										Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/>	
Relinquished By	Date/Time:			Received By			Date/Time:											

\* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA >15pCi/L



**F A X**



300 N. Lake Ave., Suite 1200  
Pasadena, California 91101  
Tel: 626-568-6691  
Fax: 626-568-6515

Date: 03/21/05

To: Michele Harper / Del Mar Analytical Fax No: 949-260-3297  
 Krissi McIlvenna / MWH 925-975-3412

From: Bronwyn K. Kelly  
 sign:

Subject: Chain-of-Custody Form Analytical Request Change No. of Pages: 5  
(including cover)

**Per Request:**  
Please make the changes listed below to the chain-of-custody analytical request form. Include this form with the final deliverables for these samples.

Del Mar Work Order #	Sample ID	Date Collected	Change(s) Requested on COC	Change(s) or Method (s) Now Requested
1001526	Outfall 011-13267 (Composite)	03/18/05	Metals: B and B; 8015-Gas; Monomethylhydrazine; Fluoride	B and Ba; Add 1,4-Dioxane analysis; 8015-Gas analysis for Trip Blanks; Monomethylhydrazine; Fluoride
1001523	Outfall 011-13267 (Grab)	03/18/05	1,4-Dioxane for Trip Blank	1,4-Dioxane not required on TBs

<sup>MH 3/21/05</sup>  
The reason for these changes:

- Incorrectly marked on COC form \_\_\_\_\_ X \_\_\_\_\_
- Lack of sample volume \_\_\_\_\_
- MWH office personnel require this change \_\_\_\_\_
- Other: Containers mislabeled \_\_\_\_\_

New COC's are attached for review.

Thank you

CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED												Field readings:																														
MWVH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		<table border="1"> <tr> <td>Total Recoverable Metals: Pb, Cu, Pb, Ba, Fe, Mn, Sr, Ag, V, Cr, Hg</td> <td>Settleable Solids</td> <td>VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list</td> <td>TCDD (end all congeners)</td> <td>Oil &amp; Grease (EPA 413.1)</td> <td>Cyanide (total recoverable)</td> <td>BOD5(20 degrees C)</td> <td>Surfactants (MBAS)</td> <td>Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride</td> <td>Turbidity, TDS, TSS, Conductivity</td> <td>Ammonia-N, TR (350.2) w/dist</td> <td>Alpha BHC (609) + PP list + 608-PeBs</td> <td>2,4,6 Trichlorophenol, 2,4-Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list</td> <td>Temp =</td> <td rowspan="2">Comments -Continued Analysis required on Page 2 of 2</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>pH=</td> </tr> </table>												Total Recoverable Metals: Pb, Cu, Pb, Ba, Fe, Mn, Sr, Ag, V, Cr, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (end all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, TR (350.2) w/dist	Alpha BHC (609) + PP list + 608-PeBs	2,4,6 Trichlorophenol, 2,4-Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list	Temp =	Comments -Continued Analysis required on Page 2 of 2														pH=		
Total Recoverable Metals: Pb, Cu, Pb, Ba, Fe, Mn, Sr, Ag, V, Cr, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (end all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, TR (350.2) w/dist	Alpha BHC (609) + PP list + 608-PeBs	2,4,6 Trichlorophenol, 2,4-Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list	Temp =	Comments -Continued Analysis required on Page 2 of 2																																
													pH=																																	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Total Recoverable Metals: Pb, Cu, Pb, Ba, Fe, Mn, Sr, Ag, V, Cr, Hg	Settleable Solids	VOCs 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (end all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, TR (350.2) w/dist	Alpha BHC (609) + PP list + 608-PeBs	2,4,6 Trichlorophenol, 2,4-Dinitrofluorene, Bis(2-ethylhexyl)phthalate, NDMA, pentachlorophenol (EPA 625) + PP list	Temp =	Comments -Continued Analysis required on Page 2 of 2																										
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Outfall 011	W	1G Poly	2		None	X	X	X	X	X	X	X	X	X	X	X	X	X																												
Trip Blank	W	VOAS	3		HCL																																									
Relinquished By				Date/Time:	Received By															Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____																										
Relinquished By				Date/Time:	Received By															Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____																										
Relinquished By				Date/Time:	Received By															Sample Integrity: (Check) Intact _____ On Ice _____																										

Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

**Client Name/Address:**  
 MWH-Pasadena  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

**Project:**  
 Boeing-SSFL NPDES  
 Outfall 011 - 13267  
 Perimeter Pond

**Project Manager:** Bronwyn Kelly

**Flow-weight Composite**  
 Phone Number:  
 (626) 568-6691  
 Fax Number:  
 (626) 568-6515

**Sampler:**

**ANALYSIS REQUIRED**

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2CVF	Acute and Chronic toxicity-biossays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Radium 228, Tritium	Comments			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	**Required analysis executed from Page 1 of 2			
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X					
Trip Blank	W	VOAs	3		HCL						X								
Relinquished By						Received By						Date/Time:				Date/Time:			
Relinquished By						Received By						Date/Time:				Date/Time:			
Relinquished By						Received By						Date/Time:				Date/Time:			

\*ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA > 15pCi/L



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

April 4, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/18/05  
 Del Mar Analytical Number: IOC1526

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Composite	IOC1526-01	A-05031905-001/002	940884-1	25938-001	PENDING

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager



# LABORATORY REPORT

**Aquatic  
Testing**



**Laboratories**

*"dedicated to providing quality aquatic toxicity testing"*

4350 Transport Street, Unit 107  
Ventura, CA 93003

(805) 650-0546 FAX (805) 650-0756

CA DOHS ELAP Cert. No.: 1775

**Date:** March 25, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

**Laboratory No.:** A-05031905-001/002  
**Sample I.D.:** IOC1526-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 03/18/05  
Date Received: 03/19/05  
Date Tested: 03/19/05 to 03/25/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TUa</b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TUc</b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05031905-001  
 Client/ID: Del Mar - IOC1526-01

Start Date: 03/19/2005

## TEST SUMMARY

Species: *Pimephales promelas*.  
 Age: 10 (1-14) days.  
 Regulations: NPDES.  
 Test solution volume: 250 ml.  
 Feeding: prior to renewal at 48 hrs.  
 Number of replicates: 2.  
 Dilution water: Moderately hard reconstituted water.  
 Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.  
 Test type: Static-Renewal.  
 Test Protocol: EPA-821-R-02-012.  
 Endpoints: Percent Survival at 96 hrs.  
 Test chamber: 600 ml beakers.  
 Temperature: 20 +/- 1°C.  
 Number of fish per chamber: 10.  
 QA/QC Batch No.: RT-050303.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	19.3	9.3	8.2	0	0	Rw 1430
	100%	20.8	10.1	7.5	0	0	
24 Hr	Control	19.2	7.7	8.1	0	0	Rw 1440
	100%	19.2	7.5	8.1	0	0	
48 Hr	Control	20.1	7.1	8.0	0	0	Rw 1440
	100%	19.5	8.0	8.0	0	0	
Renewal	Control	19.9	8.4	7.2	0	0	Rw 1440
	100%	20.0	8.9	7.7	0	0	
72 Hr	Control	20.1	6.6	7.8	0	0	Rw 1200
	100%	20.0	6.5	8.0	0	0	
96 Hr	Control	19.9	6.9	7.9	0	0	Rw 1330
	100%	19.8	7.0	7.9	0	0	

### Comments:

Sample as received: Chlorine: 0 mg/l; pH: 7.5; Conductivity: 310 umho; Temp: 4°C;  
 DO: 10.1 mg/l; Alkalinity: 95 mg/l; Hardness: 132 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.  
 Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / No.  
 Control: Alkalinity: 54 mg/l; Hardness: 90 mg/l; Conductivity: 290 umho.  
 Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes / No.  
 Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05031905  
Client/ID: Del Mar IOC1526-01

Date Tested: 03/19/05 to 03/25/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: <24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050311.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	21.9
6.25%	100%	23.7
12.5%	100%	24.4
25%	100%	26.8
50%	100%	28.6
100%	100%	26.6

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female average	Pass (21.9 young)
>60% surviving controls had 3 broods	Pass (90% with 3 broods)
PMSD <47% for reproduction; if >47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 20.6%)
Statistically significantly different concentrations relative difference >13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chessaapeake Drive, Suite 806, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
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 2520 E. Sunaet Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC1526

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Aquatic Testing Laboratories-SUB 4350 Transport Street, Unit 107 Ventura, CA 93003 Phone: (805) 650-0546 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

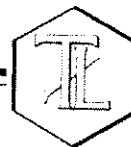
Analysis	Expiration	Comments	
<b>Sample ID: IOC1526-01 Water</b>	<b>Sampled: 03/18/05 14:40</b>	<b>Instant Notification</b>	
Bioassay-7 dy Chmic	03/20/05 02:40	ceriodaphnia, 13267	
Bioassay-Acute 96hr	03/20/05 02:40	fathhead minnow, 13267	
<b>Containers Supplied:</b>			
1 gal Poly (IOC1526-01AR)			
1 gal Poly (IOC1526-01AS)			

SAMPLE INTEGRITY:			
All containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Samples Preserved Properly:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Samples Received On Ice:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Samples Received at (temp):	4°C

	3/19/05	10:15		3/19/05	11:45
Released By	Date	Time	Received By	Date	Time
	3/19/05	14:00		3-19-05	14:00
Released By	Date	Time	Received By	Date	Time

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 25, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
**Attention:** Michele Harper

**Project Name:** IOC1526  
**Date Received:** 03/21/05

**Truesdail Project:** 940884

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
940884-1	IOC1526-01	Water	03/18/05	1440	Hydrazines by EPA 8315M

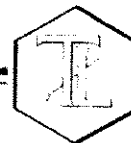
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

K. R. P. Iyer  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

Xuan Huong Dang  
Xuan Huong Dang  
Project Manager

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOC1526

**Truesdail Project:** 940884

**Date Received:** 03/21/05

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.


**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager



## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
Liquid / 1 Sample

**Project Name:** IOC1526

**P.O. Number:** IOC1526

**Method Number:** 8315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 940884

**Report Date:** March 25, 2005

**Sampling Date:** March 18, 2005

**Receiving Date:** March 21, 2005

**Extraction Date:** March 21, 2005

**Analysis Date:** March 23, 2005

**Units:** µg/L

**Dilution Factor:** 1

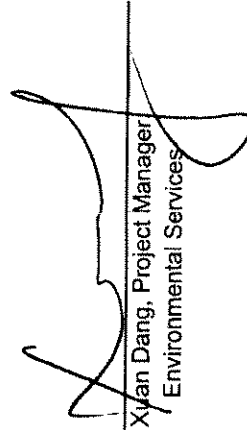
**Reported By:** JS

## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	ND	Hydrazine	ND	
704855-MB	Method Blank	ND	ND	ND	ND	ND
940884	IOC1526-01	ND	ND	ND	ND	ND
MDL		1.2		0.27		0.39
PQL		5.0		5.0		1.0

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1937

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Client Contact:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Sample ID:** IOC1526  
**P.O. Number:** IOC1526  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 3017; Analysis: 378  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704855  
**Project Lab. No.:** 940884  
**Spiked Sample ID:** 940884  
**Report Date:** March 25, 2005  
**Sampling Date:** March 18, 2005  
**Receiving Date:** March 21, 2005  
**Extraction Date:** March 21, 2005  
**Analysis Date:** March 23, 2005  
**Units:** µg/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

#### ICV

Parameter	Theoretical Value (ug/L)	Measured Value (ug/L)	% Rec.	Control Limits	Flag
Monomethyl Hydrazine	25.0	28.0	112	85-115	PASS
u-Dimethyl Hydrazine	25.0	24.1	96.3	85-115	PASS
Hydrazine	5.0	4.96	99.2	85-115	PASS

#### QCS

Parameter	Theoretical Value (ug/L)		Measured Value (ug/L)	% Rec.	Control Limits	Flag
	Value	MSD				
Monomethyl Hydrazine	50.0	40.4	55.4	111	85-115	PASS
u-Dimethyl Hydrazine	50.0	37.0	49.3	98.5	85-115	PASS
Hydrazine	10.0	7.43	10.2	102	85-115	PASS

### Quality Control/Quality Assurance Spikes Report MS/MSD

#### LCS/LCSD

Parameter	Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	LCS	LCSD	LCS %D	LCSD %D	Flag	Control Limits	%D	% Rec.
		LCS	MB									
Monomethyl Hydrazine	50.0	52.7	54.8	105	110	3.92%	PASS	20	70-130	70-130	20	70-130
u-Dimethyl Hydrazine	50.0	47.9	48.0	95.8	96.0	0.27%	PASS	20	70-130	70-130	20	70-130
Hydrazine	10.0	10.2	10.2	102	102	0.60%	PASS	20	70-130	70-130	20	70-130

#### MS/MSD

Parameter	Spiked Conc. ug/L	Recovered Concentration		Percent Recovery (%)	MSD	MSD % D	Flag	Control Limits	%D	% Rec.
		MS	MSD							
Monomethyl Hydrazine	50.0	42.9	40.4	85.7	80.9	5.83%	PASS	20	0-150	0-150
u-Dimethyl Hydrazine	50.0	37.9	37.0	75.8	73.9	2.56%	PASS	20	0-150	0-150
Hydrazine	10.0	7.15	7.43	71.5	74.3	3.81%	PASS	20	0-150	0-150

ICV: Initial Calibration Verification

QCS: Quality Control Standard

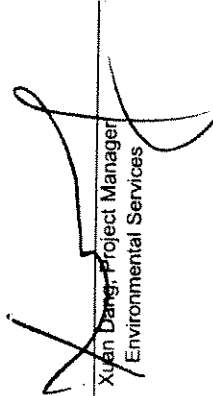
LCS: Laboratory Control Spike

MS: Matrix Spike

%D: Percent Difference

Flag: "Pass" if within Control Limits, otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.





**Del Mar Analytical**  
**940 884**

**SUBCONTRACT ORDER - PROJECT # IOC1526**

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Truesdail Laboratories-SUB  
 14201 Franklin Avenue  
 Tustin, CA 92680  
 Phone : (714) 730-6239  
 Fax: (714) 730-6462

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC1526-01 Water	Sampled: 03/18/05 14:40	Instant Notification
Hydrazine-OUT	03/21/05 14:40	J flags, Sub Truesdail for Monomethylhydrazine
Level 4 Data Package	04/15/05 14:40	

**Containers Supplied:**  
 1 L Amber (IOC1526-01 AM) **BB**  
 1 L Amber (IOC1526-01 AM) **BC**

**ALERT!!**  
**Level IV QC**

Rec'd 03/21/05  
 940884  
 s6c

**For Sample Conditions  
 See Form Attached**

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No      Sample labels/COC agree:  Yes  No      Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No      Samples Preserved Properly:  Yes  No      Samples Received at (temp): \_\_\_\_\_

Released By *[Signature]* 3/21/05 0715      Received By *[Signature]* 3/21/05 0715  
 Released By *[Signature]* 3/21/05 0740      Received By *[Signature]* 3/21/05 7:40



TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar Analytical

Lab # 940884

Date Delivered: 3/21/05 Time: 7:40 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client
12. Were samples pH checked? pH = Level IV QC  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other water
16. Comments: \_\_\_\_\_
17. Sample Check-In completed by Truesdail Log-In/Receiving: J Brown

**ALERT!!**  
**Level IV QC**

# Internal Chain of Custody Logbook

Lab Number: 940884  
 Client Name: Del Mar

Storage Temperature: 4°C

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				3/21	8:00		J. Brown	<i>J. Brown</i>
	Hydrazine	3/21/05	8:30 am	3/21/05	9: AM	300ML	Jefferson	<i>J. Brown</i>

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials



March 24, 2005

**Alta Project I.D.: 25938**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 22, 2005 under your Project Name "IOC1526". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640



**Section I: Sample Inventory Report**

**Date Received: 3/22/2005**

Alta Lab. ID

Client Sample ID

25938-001

IOC1526-01

**SECTION II**



Method Blank		EPA Method 1613						
Matrix:	Aqueous	QC Batch No.:	6624	Lab Sample:	0-MB001			
Sample Size:	1.000 L	Date Extracted:	22-Mar-05	Date Analyzed DB-5:	23-Mar-05			
				Date Analyzed DB-225:	NA			
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.841			IS 13C-2,3,7,8-TCDD	79.3	25 - 164	
1,2,3,7,8-PeCDD	ND	0.749			13C-1,2,3,7,8-PeCDD	75.2	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.49			13C-1,2,3,4,7,8-HxCDD	74.0	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.52			13C-1,2,3,6,7,8-HxCDD	80.9	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.50			13C-1,2,3,4,6,7,8-HpCDD	72.5	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	1.17			13C-OCDD	55.5	17 - 157	
OCDD	ND	3.33			13C-2,3,7,8-TCDF	82.1	24 - 169	
2,3,7,8-TCDF	ND	0.795			13C-1,2,3,7,8-PeCDF	74.6	24 - 185	
1,2,3,7,8-PeCDF	ND	1.67			13C-2,3,4,7,8-PeCDF	77.9	21 - 178	
2,3,4,7,8-PeCDF	ND	1.39			13C-1,2,3,4,7,8-HxCDF	62.7	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.474			13C-1,2,3,6,7,8-HxCDF	73.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.442			13C-2,3,4,6,7,8-HxCDF	71.1	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.510			13C-1,2,3,7,8,9-HxCDF	67.2	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.820			13C-1,2,3,4,6,7,8-HpCDF	67.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.929			13C-1,2,3,4,7,8,9-HpCDF	71.3	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.13			13C-OCDF	58.9	17 - 157	
OCDF	ND	2.74			CRS 37Cl-2,3,7,8-TCDD	83.9	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.841						
Total PeCDD	ND	0.749						
Total HxCDD	ND	1.51						
Total HpCDD	ND	1.17						
Total TCDF	ND	0.795						
Total PeCDF	ND	1.52						
Total HxCDF	ND	0.545						
Total HpCDF	ND	1.02						
<b>Footnotes</b>								
a. Sample specific estimated detection limit.								
b. Estimated maximum possible concentration.								
c. Method detection limit.								
d. Lower control limit - upper control limit.								

Analyst: JMH

Approved By: Martha M. Maier 24-Mar-2005 09:41



OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	6624	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	22-Mar-05	Date Analyzed DB-5:	23-Mar-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	9.02	6.7 - 15.8	IS 13C-2,3,7,8-TCDD	86.2	25 - 164
1,2,3,7,8-PeCDD	50.0	44.9	35 - 71	13C-1,2,3,7,8-PeCDD	83.6	25 - 181
1,2,3,4,7,8-HxCDD	50.0	45.7	35 - 82	13C-1,2,3,4,7,8-HxCDD	83.1	32 - 141
1,2,3,6,7,8-HxCDD	50.0	47.1	38 - 67	13C-1,2,3,6,7,8-HxCDD	90.5	28 - 130
1,2,3,7,8,9-HxCDD	50.0	47.2	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	80.1	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	49.7	35 - 70	13C-OCDD	60.0	17 - 157
OCDD	100	102	78 - 144	13C-2,3,7,8-TCDF	89.6	24 - 169
2,3,7,8-TCDF	10.0	9.28	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	82.2	24 - 185
1,2,3,7,8-PeCDF	50.0	49.7	40 - 67	13C-2,3,4,7,8-PeCDF	86.0	21 - 178
2,3,4,7,8-PeCDF	50.0	48.9	34 - 80	13C-1,2,3,4,7,8-HxCDF	69.1	26 - 152
1,2,3,4,7,8-HxCDF	50.0	52.4	36 - 67	13C-1,2,3,6,7,8-HxCDF	83.1	26 - 123
1,2,3,6,7,8-HxCDF	50.0	51.4	42 - 65	13C-2,3,4,6,7,8-HxCDF	80.9	28 - 136
2,3,4,6,7,8-HxCDF	50.0	51.3	35 - 78	13C-1,2,3,7,8,9-HxCDF	77.1	29 - 147
1,2,3,7,8,9-HxCDF	50.0	51.3	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	77.1	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	54.0	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	78.6	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	53.2	39 - 69	13C-OCDF	65.1	17 - 157
OCDF	100	103	63 - 170	CRS 37Cl-2,3,7,8-TCDD	89.8	35 - 197

Analyst: JMH

Approved By: Martha M. Maier 24-Mar-2005 09:41





Sample ID: IOC1526-01		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name: Del Mar Analytical, Irvine	Matrix: Aqueous	Lab Sample: 25938-001	Date Received: 22-Mar-05		
Project: IOC1526	Sample Size: 0.925 L	QC Batch No.: 6624	Date Extracted: 22-Mar-05		
Date Collected: 18-Mar-05		Date Analyzed DB-5: 23-Mar-05	Date Analyzed DB-225: NA		
Time Collected: 1440					
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.691		84.4	25 - 164
1,2,3,7,8-PeCDD	ND	0.658		81.5	25 - 181
1,2,3,4,7,8-HxCDD	ND	1.61		84.0	32 - 141
1,2,3,6,7,8-HxCDD	ND	1.53		91.3	28 - 130
1,2,3,7,8,9-HxCDD	ND	1.56		84.7	23 - 140
1,2,3,4,6,7,8-HpCDD	ND		1.56	67.5	17 - 157
OCDD	18.1			90.5	24 - 169
2,3,7,8-TCDF	ND	0.979		84.6	24 - 185
1,2,3,7,8-PeCDF	ND	1.91		85.0	21 - 178
2,3,4,7,8-PeCDF	ND	1.78		69.6	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.646		80.7	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.612		79.6	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.697		77.6	29 - 147
1,2,3,7,8,9-HxCDF	ND	1.12		80.8	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.763		82.7	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.923		71.4	17 - 157
OCDF	ND	3.25		81.5	35 - 197
<b>Totals</b>					
Total TCDD	ND	0.691			
Total PeCDD	ND	0.658			
Total HxCDD	ND	1.57			
Total HpCDD	2.62		4.18		
Total TCDF	ND	0.979			
Total PeCDF	ND	1.84			
Total HxCDF	ND	0.749			
Total HpCDF	ND	0.832			
<b>Footnotes</b>					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					

Analyst: JMH Approved By: Martha M. Maier 24-Mar-2005 09:41

**APPENDIX**

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## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>P</b>	<b>Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that correspond to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.

## **CURRENT CERTIFICATIONS**



**NELAP** — (Primary AA: California, Certificate No. 02102CA)  
**Department of the Navy**  
**U.S. Army Corps of Engineers**  
**U.S. EPA Region 5**  
**Bureau of Reclamation — Mid-Pacific Region** — (MP-470, Res-1.10)  
**Commonwealth of Kentucky** — (Certificate No. 90063)  
**Commonwealth of Virginia** — (Certificate No. 00013)  
**State of Alaska, Department of Environmental Conservation** — (Certificate No. OS-00197)  
**State of Arizona** — (Certificate No. AZ0639)  
**State of Arkansas, Department of Health** — (Approval granted through CA certification)  
**State of Arkansas, Department of Environmental Quality**  
**State of California** — (Certificate No. 1640)  
**State of Colorado**  
**State of Connecticut** — (Certificate No. PH-0182)  
**State of Florida** — (Certificate No. 87456)  
**State of Louisiana, Department of Health and Hospitals** — (Certificate No. LA000014)  
**State of Louisiana, Department of Environmental Quality**  
**State of Maine**  
**State of Michigan** (Certificate No. 81178087)  
**State of Mississippi** — (Approval granted through CA certification)  
**State of Nevada** — (Certificate No. CA413)  
**State of New Jersey** — (Certificate No. CA003)  
**State of New York, Department of Health** — (Certificate No. 11411)  
**State of North Carolina** — (Certification No. 06700)  
**State of North Dakota, Department of Health** — (Certificate No. R-078)  
**State of New Mexico**  
**State of Oklahoma** – (D9919)  
**State of Oregon** – (Certificate No. CA413)  
**State of Pennsylvania** — (Certificate No. 68-490)  
**State of South Carolina** — (Certificate No. 87002001)  
**State of Tennessee** — (Certificate No. 02996)  
**State of Texas** — (Certificate No. TX247-1000A)  
**State of Utah** — (Certificate No. E-201)  
**State of Washington** – (Certification No. C091)  
**State of Wisconsin** — (Certificate No. 998036160)  
**State of Wyoming** — (USEPA Region 8 Ref: 8TMS-Q)

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25938

1. Date Samples Arrived:	<u>3/22/05 0945</u>	Initials:	<u>GW</u>	Location:	<u>WR-2</u>
2. Time / Date logged in:	<u>3/22/05 115</u>	Initials:	<u>GW</u>	Location:	<u>WR-2</u>
3. Samples Arrived By: (circle)	<u>FedEx</u>	UPS	World Courier	Other:	
4. Shipping Preservation: (circle)	<u>Ice</u>	Blue Ice / Dry Ice / None	Temp °C	<u>3.2</u>	
5. Shipping Container(s) Intact? If not, describe condition in comment section.		YES	NO	NA	
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.		✓			
7. Shipping Documentation Present? (circle) Shipping Label Tracking Number	<u>Airbill</u> <u>PUS 766A 570L</u>	✓			
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section.			✓		✓
9. Sample Container Intact? If no, indicate sample condition in comment section.		✓			
10. Chain of Custody (COC) or other Sample Documentation Present?		✓			
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.		✓			
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed					
13. Container(s) and/or Bottle(s) Requested?			✓		
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted					✓ ✓

Comments:

IOC1521-01  
 IOC1523-01  
 IOC1525-01  
 IOC1526-01  
 IOC1563-01

\* Sampler's initials missing from label

ALTA Analytical Laboratory  
 El Dorado Hills, CA 95762

SOP# CH10B\_R18, Page 6 of 12



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4867 Fax (909) 370-1046  
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9696 Fax (619) 505-9689  
 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 786-0043 Fax (480) 786-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 796-3820 Fax (702) 796-3821

## SUBCONTRACT ORDER - PROJECT # IOC1526

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 933-0940

Standard TAT is requested unless specific due date is requested => Due Date: 1 week Initials: MH

Analysis	Expiration	Comments
Sample ID: IOC1526-01 Water	Sampled: 03/18/05 14:40	Instant Notification
1613-Dioxin-HR	03/25/05 14:40	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	04/15/05 14:40	Excel EDD email to pm, include Std logs for Lvl IV
Containers Supplied:		
1 L Amber (IOC1526-01) <del>EN</del>		
1 L Amber (IOC1526-01) <del>H</del>		

25938 3.2°

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received On Ice:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
			Samples Received at (temp):	_____	

	3-21-05	1700		3/22/05	0915
Released By	Date	Time	Received By	Date	Time

Released By	Date	Time	Received By	Date	Time
Project 25938					Page III of II 2

STANDARD OPERATING PROCEDURE

Attachment 10.B.4

**Chain of Custody Anomaly / Sample Acceptance Form**

Client: Del Mar Analytical Project Number: 25938  
 Contact: Michele Harper Date Received: 3/22/05  
 Fax Number: (949) 260-3297 Documented by/date: W 3/24/05

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis. Thank You. (Fax #916-673-0106)

The following information or item is needed to proceed with the analysis:

- Completed Chain-of-Custody
- Test Method Requested
- Analyte List Requested
- Preservative
- Sample Identification
- Sample Collection Date /Time
- Collector's Name
- Sample Type
- Sample Location

The following anomalies were noted. Authorization is needed to proceed with the analysis:

Temperature outside  $\pm 2^{\circ}\text{C}$  range Samples Affected: \_\_\_\_\_  
 Temp \_\_\_\_\_  $^{\circ}\text{C}$  Ice Present? Yes No

Sample ID Discrepancy Samples Affected: \_\_\_\_\_  
 Sample holding time missed Samples Affected: \_\_\_\_\_  
 Custody seals broken Samples Affected: \_\_\_\_\_  
 Insufficient Sample Size Samples Affected: \_\_\_\_\_  
 Sample Container(s) Broken Samples Affected: \_\_\_\_\_  
 Incorrect Container Type Samples Affected: \_\_\_\_\_  
 Other \_\_\_\_\_

**Client Authorization:**  
 Proceed With Analysis: YES NO Signature and Date: W 3/24/05  
 Client Comments/Instructions: "P.P." per email from M. Harper

ALTA Analytical Laboratory  
El Dorado Hills, CA 95762







LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/18/05  
Received: 03/18/05  
Issued: 04/12/05 19:13

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 10 pages, are included and are an integral part of this report. This entire report was reviewed and approved for release.*

CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 3°C, on ice and with chain of custody documentation.
- HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis. Results were qualified where the sample container did not meet the method preservation requirements.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOC1526-01	Outfall 011 Composite	Water
IOC1526-02	Trip Blank	Water

Reviewed By:

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOC1526-01

Analysis Performed: EDD + Level 4

Samples: IOC1526-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chrmic

Samples: IOC1526-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*



# Del Mar Analytical

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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC1526

Sampled: 03/18/05  
Received: 03/18/05

**Aquatic Testing Laboratories-SUB** *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC1526-01

**Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC1526-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC1526-01

Analysis Performed: Gross Alpha  
Samples: IOC1526-01

Analysis Performed: Gross Beta  
Samples: IOC1526-01

Analysis Performed: Radium, Combined  
Samples: IOC1526-01

Analysis Performed: Strontium 90  
Samples: IOC1526-01

Analysis Performed: Tritium  
Samples: IOC1526-01

**Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC1526-01

Analysis Performed: Level 4 Data Package  
Samples: IOC1526-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

**IOC1526 <Page 54 of 54>**

2001526

Del Mar Analytical Version 02/23/05 **CHAIN OF CUSTODY FORM** Page 1 of 2

Client Name/Address: <b>MWH-Pasadena</b> 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Project: Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		ANALYSIS REQUIRED												Field readings: Temp = pH =			
Project Manager: Bronwyn Kelly Sampler: <i>P. Kelly</i>		Flow Weight Composite Phone Number: (626) 568-6691 Fax Number: (626) 568-6515		Preservative														Comments **Continued Analysis required on Page 2 of 2	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Total Recoverable Metals: Pb, Cd, Ni, Se, Ag, TI, Zn, Co, V, Cu, Pb, B, Fe, Mn, Sb, As, Be, Cr, Hg	Settleable Solids	VOCS 624 + xylenes + Freon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl <sub>2</sub> , SO <sub>4</sub> , NO <sub>3</sub> +NO <sub>2</sub> -N, Perchlorate, Flouride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-Pcbs	2,4,6 Trichlorophenol, 2,4-Dinitroloene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + TP list	Total Flow (gals)= Flow (gpm)=	
Outfall 011	W	1G Poly	2	3-18-05 12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 53	
Outfall 011	W	1G Poly	2	12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 41	
Outfall 011	W	1G Poly	2	12:40	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 58	
Outfall 011	W	1G Poly	2	13:00	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 46	
Outfall 011	W	1G Poly	2	13:20	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 51	
Outfall 011	W	1G Poly	2	13:40	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 51	
Outfall 011	W	1G Poly	2	14:00	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 59	
Outfall 011	W	1G Poly	2	14:20	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 44	
Outfall 011	W	1G Poly	2	14:40	X	X	X	X	X	X	X	X	X	X	X	X	X	12700 47	
Trip Blank	W	VOAS	3		X														
Relinquished By: <i>[Signature]</i>	Date/Time: 3-18-05 1620	Received By: <i>[Signature]</i>	Date/Time: 3/18/05 1620															Turn around Time: (check) 24 Hours _____ 5 Days _____	
Relinquished By: <i>[Signature]</i>	Date/Time: 3/18/05 2015	Received By: <i>[Signature]</i>	Date/Time: 3/18/05 2015															48 Hours _____ 10 Days _____	
Relinquished By:	Date/Time:	Received By:	Date/Time:															72 Hours _____ Normal _____	
																		Perchlorate Only 72 Hours _____	
																		Metals Only 72 Hours _____	
																		Sample Integrity: (Check) Intact <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/>	

*DRP*

Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.

CHAIN OF CUSTODY FORM

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED										Comments		
MWVH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond														
Project Manager: Bronwyn Kelly		Flow-weight Composite												**Required analysis continued from Page 1 of 2		
Sampler: <i>P. Kelly</i>		Phone Number: (626) 568-6691 Fax Number: (626) 568-6515														
Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date/Time	Preservative	Residual Chlorine	TOC, 1,4-DICHLOROBENZENE	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Momomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Total Combined Radium 226 & Radium 228, Tritium	
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Outfall 011	W	1G Poly	-		None	X	X	X	X	X	X	X	X	X	X	Total Flow (gals)= Flow (gpm)=
Relinquished By				Date/Time: 3-18-05 1620												Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____
Relinquished By				Date/Time: 3/18/05 1620												Sample Integrity (Check) <input checked="" type="checkbox"/> On Ice: <input checked="" type="checkbox"/>
Relinquished By				Date/Time: 3/18/05 2015												

\* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA >15pCi/L



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/18/05  
 Del Mar Analytical Number: IOC1526

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Composite	IOC1526-01	A-05031905-001/002	940884-1	25938-001	R503154-8344

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager



May 10, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOC1526  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503154-8344

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 22 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), strontium-90 (Sr-90, EPA905.0), radium-226 (Ra-226, EPA903.1), and radium-228 (Ra-228, EPA904.0). The QC LCS, blank analyses, sample duplicates, and matrix spike results for the analyses were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Sr-90 and Ra-228, do not require matrix spike analyses to be performed.

Please call me if you have any questions concerning this report.

Regards,

*Melissa Mannion*

Melissa Mannion  
Senior Program Manager

*MCM/njv*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

# Eberline Services

## ANALYSIS RESULTS

SDG <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

<u>Client</u>	<u>Lab</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results ± 2σ</u>	<u>Units</u>	<u>MDA</u>
<u>IOC1526</u>	<u>8344-001</u>	<u>03/18/05</u>	<u>04/02/05</u>	<u>GrossAlpha</u>	<u>0.305 ± 0.81</u>	<u>pCi/L</u>	<u>1.20</u>
			<u>04/02/05</u>	<u>Gross Beta</u>	<u>1.96 ± 1.1</u>	<u>pCi/L</u>	<u>1.80</u>
			<u>04/22/05</u>	<u>Ra228</u>	<u>0.359 ± 0.23</u>	<u>pCi/L</u>	<u>0.576</u>
			<u>04/07/05</u>	<u>H3</u>	<u>-31.0 ± 98</u>	<u>pCi/L</u>	<u>166</u>
			<u>05/06/05</u>	<u>Ra226</u>	<u>0.063 ± 0.020</u>	<u>pCi/L</u>	<u>0.024</u>
			<u>04/05/05</u>	<u>Sr90</u>	<u>0.032 ± 0.22</u>	<u>pCi/L</u>	<u>0.442</u>

Certified by *[Signature]*  
Report Date 05/10/05  
Page 1



# Eberline Services

## QC RESULTS

SDG <u>8344</u> Work Order <u>R503154-01</u> Received Date <u>03/22/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOC1526</u> Matrix <u>WATER</u>
--	---

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8263-002	Ra228	12.7 ± 0.80	pCi/Smpl	10.2	1.07	125% recovery
<u>BLANK</u>							
	8263-003	Ra228	-0.465 ± 0.43	pCi/Smpl	NA	1.19	<MDA
<u>LCS</u>							
	8344-002	GrossAlpha	8.03 ± 1.1	pCi/Smpl	11.2	0.419	72% recovery
		Gross Beta	11.3 ± 0.78	pCi/Smpl	12.1	0.541	93% recovery
		H3	236 ± 15	pCi/Smpl	258	16.5	91% recovery
		Sr90	11.6 ± 0.61	pCi/Smpl	11.1	0.239	105% recovery
<u>BLANK</u>							
	8344-003	GrossAlpha	-0.115 ± 0.12	pCi/Smpl	NA	0.392	<MDA
		Gross Beta	0.070 ± 0.31	pCi/Smpl	NA	0.546	<MDA
		H3	1.47 ± 9.9	pCi/Smpl	NA	16.6	<MDA
		Sr90	-0.039 ± 0.12	pCi/Smpl	NA	0.246	<MDA
<u>LCS</u>							
	8368-005	GrossAlpha	13.0 ± 1.4	pCi/Smpl	11.2	0.420	116% recovery
		Gross Beta	12.4 ± 0.85	pCi/Smpl	12.1	0.581	102% recovery
		Ra226	5.45 ± 0.18	pCi/Smpl	5.59	0.056	97% recovery
<u>BLANK</u>							
	8368-006	GrossAlpha	-0.051 ± 0.14	pCi/Smpl	NA	0.355	<MDA
		Gross Beta	-0.190 ± 0.30	pCi/Smpl	NA	0.542	<MDA
		Ra226	-0.014 ± 0.011	pCi/Smpl	NA	0.021	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8263-004	Ra228	0.245 ± 0.27	0.716
8344-004	GrossAlpha	0.239 ± 0.86	1.59
	Gross Beta	2.19 ± 1.2	1.85
	H3	8.93 ± 100	168
	Sr90	-0.013 ± 0.24	0.484
8368-007	GrossAlpha	5.26 ± 5.8	8.58
	Gross Beta	11.2 ± 7.5	11.8

<u>ORIGINALS</u>						
Sample ID	Results ± 2σ	MDA	3σ	RPD	(Tot)	Eval
8263-001	0.143 ± 0.31	0.787	-	-	0	satis.
8344-001	0.305 ± 0.81	1.20	-	-	0	satis.
	1.96 ± 1.1	1.80	11	122		satis.
	-31.0 ± 98	166	-	-	0	satis.
	0.032 ± 0.22	0.442	-	-	0	satis.
8368-001	8.78 ± 6.2	7.52	50	187		satis.
	16.6 ± 7.3	10.8	39	118		satis.

Certified by *[Signature]*  
 Report Date 05/10/05  
 Page 2

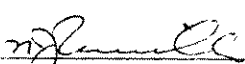
# Eberline Services

## QC RESULTS

SDG # <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

DUPLICATES			ORIGINALS						
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>3σ</u>	<u>RPD (Tot)</u>	<u>Eval</u>
	Ra226	0.011 ± 0.27	0.488		-0.198 ± 0.13	0.241	-		0 satis.

SPIKED SAMPLE				ORIGINAL SAMPLE				
<u>Sample ID</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>Sample ID</u>	<u>Results + 2σ</u>	<u>MDA</u>	<u>Added</u>	<u>Recv</u>
8344-005	GrossAlpha	63.4 ± 5.6	1.22	8344-001	0.305 ± 0.81	1.20	76.6	82
	Gross Beta	77.1 ± 3.6	1.83		1.96 ± 1.1	1.80	73.7	102
	H3	23100 ± 500	223		-31.0 ± 98	166	23500	98
8368-008	GrossAlpha	1560 ± 120	21.4	8368-002	26.5 ± 18	22.4	1530	100
	Gross Beta	1490 ± 72	35.5		50.6 ± 24	36.5	1480	97

Certified by <u></u> Report Date <u>05/10/05</u> Page 3
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17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC1526

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Eberline Services 2030 Wright Avenue Richmond, CA 94804 Phone : (510) 235-2633 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => Due Date: \_\_\_\_\_ Initials: \_\_\_\_\_

Analysis	Expiration	Comments
<b>Sample ID: IOC1526-01 Water      Sampled: 03/18/05 14:40</b>		
EDD + Level 4-OUT	04/15/05 14:40	<b>Instant Notification</b>
Gross Alpha-O	03/18/06 14:40	<b>**LEVEL IV QC, ACCESS 7 EDD**</b>
Gross Beta-O	03/18/06 14:40	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Radium, Combined-O	03/18/06 14:40	900.0, IF RESULT > 15 pCi/L, run Radium 226 & 228
Strontium 90-O	03/18/06 14:40	HOLD for Gross Alpha/Beta result; EPA 903.1 & 904.0
Tritium-O	03/18/06 14:40	905.0
		906

- Containers Supplied:**
- 1 L Amber (IOC1526-01AT)
  - 1 L Amber (IOC1526-01AU)
  - 1 L Amber (IOC1526-01AV)
  - 1 L Amber (IOC1526-01AW)
  - 1 L Amber (IOC1526-01AX)
  - 1 L Amber (IOC1526-01AY)
  - 1 L Amber (IOC1526-01AZ)
  - 1 L Amber (IOC1526-01BA)
  - 40 ml Voa Vial (IOC1526-01BB) *AF*
  - 40 ml Voa Vial (IOC1526-01BC) *AF*

### SAMPLE INTEGRITY:

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By	Date	Time	SON THAI	Date	Time
				3/22/05	10:00AM
Released By	Date	Time	Received By	Date	Time



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client DEL MAR City IRVINE State CA

Date/Time received 03/22/05 CoC No. IOC 1526

Container I.D. No. N/A ID Requested TAT (Days) 4d P.O. Received Yes [ ] No [ ]

INSPECTION

- 1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]
- 2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]
- 3. Custody seals on sample containers intact? Yes [ ] No [  ] N/A [ ]
- 4. Custody seals on sample containers dated & signed? Yes [ ] No [  ] N/A [ ]
- 5. Packing material is: Wet [  ] Dry [ ]
- 6. Number of samples in shipping container: 1 Sample Matrix Water
- 7. Number of containers per sample: 10 (Or see CoC \_\_\_\_\_)
- 8. Samples are in correct container Yes [  ] No [ ]
- 9. Paperwork agrees with samples? Yes [  ] No [ ]
- 10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]
- 11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]
- 12. Samples are: Preserved [ ] Not preserved [  ] pH 7 Preservative \_\_\_\_\_
- 13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_

15. Inspected by TS Date: 03/22/05 Time: 10:00 AM

Customer Sample				Customer Sample			
No.	cpm	mR/hr	wipe	No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_

# **APPENDIX A**

## **Section 44**

Outfall 011, March 18, 2005

MEC<sup>X</sup> Data Validation Reports





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: Multiple SDGs

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: Multiple  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 10  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 4, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.



**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 002	IOC1521-01	25935-001	water	1613
Outfall 011	IOC1523-01	25936-001	water	1613
Outfall 005	IOC1524-01	25940-001	water	1613
Outfall 006	IOC1525-01	25937-001	water	1613
Outfall 011 Composite	IOC1526-01	25938-001	water	1613
Outfall 001	IOC1561-01	25941-001	water	1613
Outfall 004	IOC1563-01	25939-001	water	1613
Outfall 008	IOC1564-01	25942-001	water	1613
Outfall 003	IOC1565-01	25943-001	water	1613
Outfall 009	IOC1566-01	25944-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

Samples Outfall 001, Outfall 004, and Outfall 008 were received at Del Mar Analytical outside the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . Due to non-volatile nature of the target compounds, no qualifications were required. The other samples were received with cooler temperatures within the limits. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 08/30/04. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0\_6624\_MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_6624\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any reported EMPC was qualified as an estimated nondetect, "UJ." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." No further qualifications were required.

Sample ID: IOC1523-01		Duffell Oil		EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25936-001	Date Received:	22-Mar-05
Project:	IOC1523	Sample Size:	0.896 L	QC Batch No.:	6624	Date Extracted:	22-Mar-05
Date Collected:	18-Mar-05			Date Analyzed DB-5:	23-Mar-05	Date Analyzed DB-225:	NA
Time Collected:	1110						
Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.723			84.7	25 - 164	
1,2,3,7,8-PeCDD	ND	0.811			81.8	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.40			88.6	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.38			95.7	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.39			87.9	23 - 140	
1,2,3,4,6,7,8-HpCDD	2.62				66.5	17 - 157	
OCDD	22.3			J	91.0	24 - 169	
2,3,7,8-TCDF	ND	1.14			84.4	24 - 185	
1,2,3,7,8-PeCDF	ND	1.67			85.8	21 - 178	
2,3,4,7,8-PeCDF	ND	1.48			73.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.575			85.9	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.535			82.9	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.610			80.5	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.976			80.9	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.932			85.4	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	1.07			72.6	17 - 157	
OCDF	ND	3.17			85.7	35 - 197	
Totals							
Total TCDD	ND	0.723					
Total PeCDD	ND	0.811					
Total HxCDD	ND	1.39					
Total HpCDD	5.93						
Total TCDF	ND	1.14					
Total PeCDF	ND	1.57					
Total HxCDF	ND	0.655					
Total HpCDF	ND	0.992					

Approved By: Martha M. Maier 24-Mar-2005 09:37

ANALYTICAL

LEVEL IV

Analyst: JMH

Project 25936

Qual Code

DNQ

Sample ID: **IOC1526-01** **DuPont Oil composite** **EPA Method 1613**

**Client Data**  
 Name: Del Mar Analytical, Irvine  
 Project: IOC1526  
 Date Collected: 18-Mar-05  
 Time Collected: 1440

**Sample Data**  
 Matrix: Aqueous  
 Sample Size: 0.925 L

**Laboratory Data**  
 Lab Sample: 25938-001  
 QC Batch No.: 6624  
 Date Analyzed DB-5: 23-Mar-05  
 Date Analyzed DB-225: NA

Analyte	Conc. (pg/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCI <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.691			13C-2,3,7,8-TCDD	84.4	25 - 164	
1,2,3,7,8-PeCDD	ND	0.658			13C-1,2,3,7,8-PeCDD	81.5	25 - 181	
1,2,3,4,7,8-HxCDD	ND	1.61			13C-1,2,3,4,7,8-HxCDD	84.0	32 - 141	
1,2,3,6,7,8-HxCDD	ND	1.53			13C-1,2,3,6,7,8-HxCDD	91.3	28 - 130	
1,2,3,7,8,9-HxCDD	ND	1.56			13C-1,2,3,7,8,9-HxCDD	84.7	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND		1.56		13C-OCDD	67.5	17 - 157	
OCDD	18.1				13C-2,3,7,8-TCDF	90.5	24 - 169	
2,3,7,8-TCDF	ND	0.979			13C-1,2,3,7,8-PeCDF	84.6	24 - 185	
1,2,3,7,8-PeCDF	ND	1.91			13C-2,3,4,7,8-PeCDF	85.0	21 - 178	
2,3,4,7,8-PeCDF	ND	1.78			13C-1,2,3,4,7,8-HxCDF	69.6	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.646			13C-1,2,3,6,7,8-HxCDF	80.7	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.612			13C-2,3,4,6,7,8-HxCDF	79.6	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.697			13C-1,2,3,7,8,9-HxCDF	77.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	1.12			13C-1,2,3,4,6,7,8-HpCDF	80.8	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.763			13C-1,2,3,4,7,8,9-HpCDF	82.7	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.923			13C-OCDF	71.4	17 - 157	
OCDF	ND	3.25			CRS 37Cl-2,3,7,8-TCDD	81.5	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.691						
Total PeCDD	ND	0.658						
Total HxCDD	ND	1.57						
Total HpCDD	2.62		4.18					
Total TCDF	ND	0.979						
Total PeCDF	ND	1.84						
Total HxCDF	ND	0.749						
Total HpCDF	ND	0.832						

**Footnotes**  
 a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

Analyst: JMH  
 Approved By: Martha M. Maier 24-Mar-2005 09:41

**INVALID**

**LEVEL IV**

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711HZ11

Task Order 313150010

SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Truesdail

Reviewer P. Meeks

Analysis/Method Hydrazines

Date: 04/11/05

Reviewer's Signature  


**ACTION ITEMS\***

1. Case Narrative Deficiencies
2. Out of Scope Analyses
3. Analyses Not Conducted
4. Missing Hardcopy Deliverables
5. Incorrect Hardcopy Deliverables
6. Deviations from Analysis Protocol, e.g.,
  - Holding Times
  - GC/MS Tune/Inst. Performance
  - Calibrations
  - Blanks
  - Surrogates
  - Matrix Spike/Dup LCS
  - Field QC
  - Internal Standard Performance
  - Compound Identification and Quantitation
  - System Performance

**COMMENTS\***      Acceptable as reviewed.

\* Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
 \* Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**DATA VALIDATION REPORT**

Project: NPDES  
SDG No.: IOC2063, 2064  
Analysis: Hydrazines

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.5 SURROGATES RECOVERY

Surrogates were not utilized in this analysis. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## 2.7 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.7.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC. No qualifications were required.

### 2.7.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.8 COMPOUND IDENTIFICATION

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## 2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

14201 FRANKLIN AVENUE • TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 • FAX (714) 730-6462 • www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2063  
**P.O. Number:** IOC2063  
**Method Number:** 8316 (Modified)  
**Investigation:** Hydrazines In Liquid

**Laboratory No:** 941100  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** ug/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Reagent		Unsymmetrical Dimethyl Reagent		Hydrazine		Hydrazine	
		Hydrazine	Qual	Hydrazine	Qual	Hydrazine	Qual	Hydrazine	Qual
704871-MB	Method Blank	ND	*	ND	*	ND	U	ND	U
941100	Outfall Oil Grab IOC2063-01	1.2	U	0.27	U	0.39	U	0.39	U
MDL		5.0		5.0		1.0		1.0	
PQL									

*QMA 4/4/05*

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

# LABVBL IV

*[Signature]*  
Xuan Dang, Project Manager  
Environmental Services

Analysis Not Validated

## AMEC VALIDATED

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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 (714) 730-6239 - FAX (714) 730-6462 - www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
 17461 Derian Ave., Suite 100  
 Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOC2084

**P.O. Number:** IOC2084

**Method Number:** 8315 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941101

**Report Date:** March 30, 2005

**Sampling Date:** March 25, 2005

**Receiving Date:** March 28, 2005

**Extraction Date:** March 28, 2005

**Analysis Date:** March 29, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		µg/L	Qual Code	µg/L	Qual Code	µg/L	Qual Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101 Outfall Oil Composite	IOC2084-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

pm 4/6/05

MDL: Method Detection Limit, µg/L  
 PQL: Practical Quantitation Limit, µg/L  
 ND: Not Detected at or above the MDL value.  
 N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
 Environmental Services

# AMEC VALIDATED

\*Analytical Not Validated

# JEWELL IV

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT72  
 Task Order 313150010  
 SDG No. IOC1526, IOC1523

No. of Analyses 2

Laboratory Del Mar

Date: 04/05/05

Reviewer P. Meeks

Reviewer's Signature  


Analysis/Method Metals

<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g.,	Qualifications applied for:
Holding Times	1. Detects below the reporting limit
GC/MS Tune/Inst. Performance	2. Positive and negative results in the method blanks and CCBs
Calibrations	3. Reporting limit check standard recovery outlier
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).



## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 05, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	ILM04
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. Duplicate samples were submitted for the samples in these SDGs; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals, and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. The 0.2 ppb reporting limit check standard for antimony was not recovered; therefore nondetected antimony in both site samples (see section 2.4) was qualified as estimated, "UJ." The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

**DATA VALIDATION REPORT**

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**2.4 BLANKS**

Nickel were detected in method blank 5C19038 at 555 µg/L; therefore, nickel detected in both site samples was qualified as estimated, "UJ." Chromium was reported in a bracketing method blank at -0.35 µg/L; therefore, chromium detected in both site samples was qualified as estimated, "J."

Due to the high level of antimony found in the method blank, 1.25 µg/L, the reviewer raised the antimony MDLs to the level of interference, 1.3 µg/L and qualified the results as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

**2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)**

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and boron, barium, beryllium, selenium, thallium, vanadium, antimony and lead were not spiked into the ICSAB solution. Aluminum was recovered below the control limit in all the ICSA and ICSAB analyses; however, as aluminum was found at a low level in the site sample, no qualifications were required. Manganese, cobalt copper, and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the boron ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferents and the other spiked analytes were within the control limits of 80-120%. No qualifications were required.

**2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The ICP/MS LCS samples were identified as 5C21088-BS1 and 5C19038-BS1 and the ICP LCS sample was identified as 5C19039-BS1. The mercury LCS sample was identified as 5C19029-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

**2.7 LABORATORY DUPLICATES**

MS/MSD analyses were performed on Outfall 011 Composite for boron only. The RPD was within the control limit of 20% and no qualifications were required.

**DATA VALIDATION REPORT**

---

**2.8 MATRIX SPIKE**

MS/MSD analyses were performed on Outfall 011 Composite for boron only. The recoveries were within the AMEC control limits of 75-125% and no qualifications were required. Method accuracy for the remaining analytes was evaluated based on LCS results.

**2.9 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

**2.10 ICP/MS AND ICP SERIAL DILUTION**

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

**2.11 INTERNAL STANDARDS PERFORMANCE**

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

**2.12 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

**2.13 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

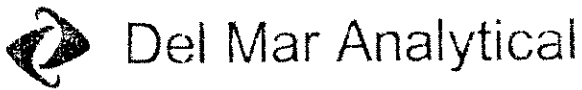
**2.13.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

**2.13.2 Field Duplicates**

There were no field duplicate analyses performed in association with the site samples.





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Raw Qual	Qua Cod
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.										
Reporting Units: ug/l										
Antimony	EPA 200.8	5C19038	<del>0.18</del> 1.3	2.0	<del>0.34</del> 1.3	1	03/19/05	03/21/05	UJ	B, J
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.4	1	03/19/05	03/21/05		
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	U	
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.085	1	03/19/05	03/21/05	J	B, J
Chromium	EPA 200.8	5C19038	0.26	2.0	1.0	1	03/19/05	03/21/05	J	J
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.35	1	03/19/05	03/21/05	J	J
Copper	EPA 200.8	5C19038	0.49	2.0	4.0	1	03/19/05	03/21/05		
Lead	EPA 200.8	5C19038	0.13	1.0	0.30	1	03/19/05	03/21/05	J	J
Manganese	EPA 200.8	5C19038	0.44	1.0	65	1	03/19/05	03/21/05		B-1
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	U	
Nickel	EPA 200.8	5C19038	0.15	2.0	2.5	1	03/19/05	03/21/05	U	B
Selenium	EPA 200.8	5C19038	0.36	2.0	0.55	1	03/19/05	03/21/05	J	J
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	U	
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	U	
Vanadium	EPA 200.8	5C19038	0.86	2.0	2.0	1	03/19/05	03/21/05		
Zinc	EPA 200.8	5C19038	3.1	20	12	1	03/19/05	03/21/05	J	J

pm 4/6/05

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LEVEL II

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



# Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05	
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05	
Iron	EPA 200.8	5C19038	0.0032	0.010	0.29	1	03/19/05	03/21/05	B-1

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: METALS**

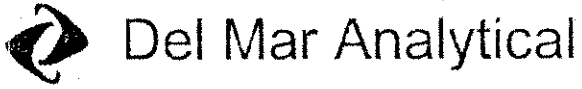
Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C19038	<del>0.18</del>	2.0	<del>0.26</del>	1	03/19/05	03/21/05	UJ B, J B, *
Arsenic	EPA 200.8	5C19038	0.49	1.0	2.1	1	03/19/05	03/21/05	
Beryllium	EPA 200.8	5C19038	0.037	0.50	ND	1	03/19/05	03/21/05	U
Cadmium	EPA 200.8	5C19038	0.015	1.0	0.079	1	03/19/05	03/21/05	J B, J DNI
Chromium	EPA 200.8	5C19038	0.26	2.0	0.93	1	03/19/05	03/21/05	J J B, H
Cobalt	EPA 200.8	5C19038	0.10	1.0	0.33	1	03/19/05	03/21/05	J J DNG
Copper	EPA 200.8	5C19038	0.49	2.0	3.0	1	03/19/05	03/21/05	
Lead	EPA 200.8	5C19038	0.13	1.0	0.39	1	03/19/05	03/21/05	J J DNG
Manganese	EPA 200.8	5C21088	0.44	1.0	56	1	03/21/05	03/21/05	U
Mercury	EPA 245.1	5C19029	0.063	0.20	ND	1	03/19/05	03/19/05	
Nickel	EPA 200.8	5C19038	0.15	2.0	1.9	1	03/19/05	03/21/05	UJ B, J B
Selenium	EPA 200.8	5C19038	0.36	2.0	0.43	1	03/19/05	03/21/05	J J DNG
Silver	EPA 200.8	5C19038	0.089	1.0	ND	1	03/19/05	03/21/05	U
Thallium	EPA 200.8	5C19038	0.075	1.0	ND	1	03/19/05	03/21/05	U
Vanadium	EPA 200.8	5C19038	0.86	2.0	1.3	1	03/19/05	03/21/05	J J DNG
Zinc	EPA 200.8	5C19038	3.1	20	9.8	1	03/19/05	03/21/05	J J DNG

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LEVEL IV

DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Raw Qual	Qual Code
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: mg/l										
Barium	EPA 200.8	5C19038	0.00014	0.0010	0.036	1	03/19/05	03/21/05		
Boron	EPA 200.7	5C19039	0.0074	0.050	0.090	1	03/19/05	03/19/05		
Iron	EPA 200.8	5C19038	0.0032	0.010	0.27	1	03/19/05	03/21/05	B-1	

**AMEC VALIDATED**

**LEVEL II**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP32  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 2

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method Pesticides/PCBs by Method 608

Date: April 11, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative</b> <b>Deficiencies</b>	_____
2. <b>Out of Scope</b> <b>Analyses</b>	_____
3. <b>Analyses Not Conducted</b>	_____
4. <b>Missing Hardcopy</b> <b>Deliverables</b>	_____
5. <b>Incorrect Hardcopy</b> <b>Deliverables</b>	_____
6. <b>Deviations from Analysis</b>	<b>Qualifications assigned for surrogate recoveries below the QC limits.</b>
<b>Protocol, e.g.,</b>	_____
Holding Times	_____
GC/MS Tune/Inst. Performance	_____
Calibration	_____
Method blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification	_____
Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES/PCBs

SAMPLE DELIVERY GROUP: IOB1523, IOB1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOB1523, IOB1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOB1523-01	water	608
Outfall 011 Composite	Outfall 011 Composite	IOB1526-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 03/02/05 associated with the pesticide analyses of the samples, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 02/11/05 associated with the PCB analyses of the samples which consisted of five points for Aroclor 1016 and Aroclor 1260. Single point calibrations for Aroclor 1242, Aroclor 1248, and Aroclor 1254 were also analyzed. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing both the pesticide and PCB analyses of the samples, all %Ds were  $\leq 15\%$ . A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

One water method blank (5C19034-BLK1) was extracted and analyzed with these SDGs. There were no pesticide target compounds or Aroclors detected in the method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C19034-BS1/BSD1 for pesticides, -BS2/BSD2 for PCBs) was extracted and analyzed with these SDGs. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$ . A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the both pesticide and PCB analysis were below the QC limits but  $\geq 10\%$  in sample Outfall 011 Composite. Notations on the laboratory extraction benchsheet and sample raw data indicated an emulsion in the extract of the

sample. Results were qualified as estimated, "UJ," for nondetects and "J," for detects. All surrogate recoveries for sample Outfall 011 Grab were within the laboratory-established QC limits. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No further qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses associated with these SDGs. Method accuracy and precision were assessed based on the blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the water samples. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticide target compounds and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and the laboratory MDL studies. The water reporting limits were not adjusted for sample amounts on the result summaries; however, the dilution factors listed on the summaries reflected the sample volume extracted. Results

DATA VALIDATION REPORT

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reported above the MDL but below the reporting limit were qualified as estimated, "J," by the laboratory. Results were reported in ug/L (ppb). No further qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Ourfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	u
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	u
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	u
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	u
4,4'-DDT	EPA 608	5C19034	0.030	0.10	0.039	0.952	03/19/05	03/19/05	J u
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	u
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	u
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	u
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	u
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	u
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	u
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	u
Surrogate: Tetrachloro-m-xylene (35-115%)									57 %
Surrogate: Decachlorobiphenyl (45-120%)									66 %

vel  
qua  
code

J u

1014HQ

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**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	<div style="text-align: center;"> <i>red qual</i>  <i>qual code</i> </div> <hr/> u ↓
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05	
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05	
Surrogate: Decachlorobiphenyl (45-120%)					64 %				

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## LEVEL IV

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05

Received: 03/18/05

**DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aldrin	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	UJ S
alpha-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
beta-BHC	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
delta-BHC	EPA 608	5C19034	0.020	0.20	ND	0.952	03/19/05	03/19/05	
gamma-BHC (Lindane)	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Chlordane	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/19/05	
4,4'-DDD	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
4,4'-DDE	EPA 608	5C19034	0.025	0.10	ND	0.952	03/19/05	03/19/05	
4,4'-DDT	EPA 608	5C19034	0.030	0.10	0.11	0.952	03/19/05	03/19/05	
Dieldrin	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan I	EPA 608	5C19034	0.015	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan II	EPA 608	5C19034	0.040	0.10	ND	0.952	03/19/05	03/19/05	
Endosulfan sulfate	EPA 608	5C19034	0.015	0.20	ND	0.952	03/19/05	03/19/05	
Endrin	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Endrin aldehyde	EPA 608	5C19034	0.045	0.10	ND	0.952	03/19/05	03/19/05	
Endrin ketone	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor	EPA 608	5C19034	0.030	0.10	ND	0.952	03/19/05	03/19/05	
Heptachlor epoxide	EPA 608	5C19034	0.020	0.10	ND	0.952	03/19/05	03/19/05	
Methoxychlor	EPA 608	5C19034	0.035	0.10	ND	0.952	03/19/05	03/19/05	
Toxaphene	EPA 608	5C19034	1.5	5.0	ND	0.952	03/19/05	03/19/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					31 %				ZX
Surrogate: Decachlorobiphenyl (45-120%)					39 %				ZX

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									val	code
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5C19034	0.20	1.0	ND	0.952	03/19/05	03/20/05	UT	S
Aroclor 1221	EPA 608	5C19034	0.10	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1232	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1242	EPA 608	5C19034	0.15	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1248	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1254	EPA 608	5C19034	0.25	1.0	ND	0.952	03/19/05	03/20/05		
Aroclor 1260	EPA 608	5C19034	0.40	1.0	ND	0.952	03/19/05	03/20/05		
Surrogate: Decachlorobiphenyl (45-120%)					37 %					ZX

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### LEVEL IV

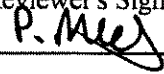
DRAFT REPORT  
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## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711RA8  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 10

Laboratory Eberline  
 Reviewer P. Meeks  
 Analysis/Method Radionuclides

Date: 05/17/05  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Qualifications were applied for detector efficiency outliers and exceeded holding times.
Holding Times	
GC/MS Tune/Inst Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064  
Project Manager: P. Costa  
Matrix: Water/Solid  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 11  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: May 17, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab/Unfiltered	IOC1523-01	8349-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC1523-03	8349-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Substrate	IOC1523-04	8350-001	solid	901.1
Outfall 011 Composite	IOC1526-01	8344-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Filtered	IOC1562-01	8351-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOC1562-02	8351-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOC1562-03	8352-001	solid	901.1
Outfall 011 Grab/Unfiltered	IOC2063-01	8381-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC2063-03	8381-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Substrate	IOC2063-04	8382-001	solid	901.1
Outfall 011 Composite	IOC2064-01	8383-001	water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

All samples were received unpreserved, in glass containers. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As instructed on the transfer COCs, Eberline filtered and then preserved samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063). The gross alpha, gross beta, strontium, radium-226, radium-228, and cesium-137 results for the remaining samples were not qualified for lack of preservation, as the methods specifies a five-day holding time for unpreserved samples.

No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. None of the COCs requested radium-226, radium-228, or cesium analyses. These analyses were requested by M. Harper of Del Mar Analytical, as per instructions in a letter from the LARWQCB dated 3/22/05. The original and transfer COCs accounted for the samples and remaining analyses presented in this data package.

Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

All tritium and cesium analyses, and all analyses for samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063) were performed within 180 days of collection. The remaining analyses were performed beyond the five day holding time for unpreserved samples; therefore, the gross alpha, gross beta, radium-226, radium-228, and strontium-90 for samples Outfall 011 Grab Unfiltered (IOC1523), Outfall 011 Grab Substrate (IOC1523), Outfall 011 Composite (IOC1526), Outfall 003 Unfiltered, Outfall 003 Substrate, Outfall 011 Grab Unfiltered (IOC2063), Outfall 011 Substrate (IOC2063), and Outfall 011 Composite (IOC2064) were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. All gross alpha detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in June 2002. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228, which was calibrated in February 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 80% and the actinium chemical yields were greater than 65%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Blank spikes were analyzed in association with the samples in these SDGs. Two gross alpha, three radium-228, two radium-226, one strontium-90, and one tritium LCS recoveries were outside the 3-sigma limits control limits, but all had acceptable recoveries ranging from 72- 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 011 Composite (IOC1526), for gross alpha, gross beta, tritium, strontium, radium-226, and radium-228 on Outfall 011 Grab Unfiltered (IOC2063), and for cesium on Outfall 011 Substrate. All results were within the 3-sigma limits and no qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, and radium-226 on Outfall 011 Grab Unfiltered (IOC2063). The Outfall 011 Grab Unfiltered gross alpha (114%), gross beta (104%), tritium (96%), and radium-226 (104%) were outside the 3-sigma control limits; however, as the recoveries were deemed acceptable, no qualifications were required. The Outfall 011 Composite gross alpha recovery outside the 3-sigma limits; however, as the 82% recovery was deemed acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Grab Unfiltered IOC1523-01	8349-001	03/18/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39	
				Gross Beta	2.09 ± 1.3	pCi/L	1.94	
				Ra228	0.453 ± 0.25	pCi/L	0.611	
				H3	-16.2 ± 98	pCi/L	166	
				Ra226	0.084 ± 0.020	pCi/L	0.023	
				Sr90	-0.108 ± 0.25	pCi/L	0.508	
Outfall Oil Grab Filtered IOC1523-03	8349-002	03/18/05	04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28	
				Gross Beta	3.37 ± 1.3	pCi/L	1.79	
				H3	-63.2 ± 96	pCi/L	166	
				Sr90	0.029 ± 0.29	pCi/L	0.588	

Res Qual	Qual Code
UJ	R, H
J	↓
UJ	
SJ	H
SJ	H
UJ	R
U	
U	

AM 5/17/05

**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>05/13/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R501159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	Rev Qual	Qual Code
		<i>Outfall Oil Grab Unfiltered</i>								
IOC1523-01	8349-001	03/18/05	04/02/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39	UJ	R, H
			04/02/05	04/02/05	Gross Beta	2.09 ± 1.3	pCi/L	1.94	J	H
			04/22/05	04/22/05	Ra-228	0.453 ± 0.25	pCi/L	0.611	UJ	H
			04/07/05	04/07/05	Tritium	16.2 ± 98	pCi/L	166	J	H
			05/06/05	05/06/05	Ra-226	0.084 ± 0.020	pCi/L	0.023	J	H
			04/05/05	04/05/05	Sr-90	-0.108 ± 0.25	pCi/L	0.508	J	H
		<i>Outfall Oil Grab Filtered</i>								
IOC1523-03	8349-002	03/18/05	04/02/05	04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28	J	R
			04/02/05	04/02/05	Gross Beta	3.37 ± 1.3	pCi/L	1.79	J	R
			06/08/05	06/08/05	Ra-228	0.340 ± 0.18	pCi/L	0.450	J	R
			04/07/05	04/07/05	Tritium	-63.2 ± 96	pCi/L	166	J	R
			06/09/05	06/09/05	Ra-226	0.392 ± 0.44	pCi/L	0.717	J	R
			04/05/05	04/05/05	Sr-90	0.029 ± 0.29	pCi/L	0.588	J	R

PM 8/1/05

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**LEVEL 1**

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Report Date <u>06/21/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8350</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503160-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results + 2σ	Units	MDA
Outfall 011 Grab Substrate								
IOC1523-04	8350-001	03/18/05	04/11/05	Cs137 (G)	U	pCi/Smpl	9.67	

Rev	Qual
05	N

pm 5/17/05  
for 8/1/05

AMEC VALIDATED  
LEVEL IV

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Report Date <u>05/04/05</u>
Page 1



Eberline Services

ANALYSIS RESULTS

SDG <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Sample ID Outfall Oil Composite IOC1526	Sample ID 8344-001	03/18/05	04/02/05	GrossAlpha	0.305 ± 0.81	pCi/L	1.20
			04/02/05	Gross Beta	1.96 ± 1.1	pCi/L	1.80
			04/22/05	Ra228	0.359 ± 0.23	pCi/L	0.576
			04/07/05	H3	-31.0 ± 98	pCi/L	166
			05/06/05	Ra226	0.063 ± 0.020	pCi/L	0.024
			04/05/05	Sr90	0.032 ± 0.22	pCi/L	0.442

AM 5/17/05

Per Qual	Qual Code
U	R, H
J	↓
U	
J	
U	H
J	H

AMEC VALIDATED  
LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/10/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8351</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503161-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 Filtered IOC1562-01	8351-001	03/19/05	04/08/05	GrossAlpha	8.96 ± 3.3	pCi/L	2.54
			04/08/05	Gross Beta	18.0 ± 3.1	pCi/L	3.73
			04/22/05	Ra228	0.448 ± 0.53	pCi/L	0.961
			04/07/05	H3	-43.7 ± 96	pCi/L	164
			05/05/05	Ra226	0.091 ± 0.026	pCi/L	0.034
			04/05/05	Sr90	5.49 ± 0.58	pCi/L	0.445
			Outfall 003 Unfiltered IOC1562-02  Am 5/17/05	8351-002	03/19/05	04/06/05	GrossAlpha
04/06/05	Gross Beta	19.0 ± 3.7				pCi/L	4.56
04/22/05	Ra228	0.386 ± 0.56				pCi/L	0.897
04/07/05	H3	-34.3 ± 99				pCi/L	168
05/05/05	Ra226	0.145 ± 0.028				pCi/L	0.031
04/05/05	Sr90	5.49 ± 0.56				pCi/L	0.404

Raw Qual	Qual Code
J	R
CC	
HHBCH	R, H
←	← H

AMEC VALIDATED

LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/18/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503162-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 Substrate		8352-001	03/19/05	04/25/05	Ca137 (G)	U	pCi/Smpl	5.55
IOC1562-03								

Rev Qual	Qual Code
UT	H

pm 5/12/05  
in 03/05

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LEVEL IV

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Report Date <u>05/03/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Sample ID	Sample ID						
<b>Outfall Oil Grab Unfiltered</b>							
IOC2063-01	8381-001	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
			04/18/05	Sr90	-0.052 ± 0.37	pCi/L	0.658
<b>Outfall Oil Grab Filtered</b>							
IOC2063-03	8381-002	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
			04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535

Rev Qual	Qual Code
S	R, H
F	H
B	H
C	H
B	H
→	→
S	R
C	
C	
C	
C	
C	

pm 5/17/05

AMEC VALIDATED

LEVEL IV

Certified by <u><i>[Signature]</i></u>
Report Date <u>05/11/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8382</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503231-01</u>	Contract <u>PROJECT# 10C2063</u>
Received Date <u>03/29/05</u>	Matrix <u>SOLID</u>

Client	Lab	Collected	Analyzed	Nuclide	Results $\pm 2\sigma$	Units	MDA
<u>Sample ID</u> 10C2063-04	<u>Sample ID</u> 8382-001	03/25/05	04/19/05	Cs137 (G)	U	pCi/G	19.4

Rev	Qual
Qual	Code
U	

Am 8/3/05

**AMEC VALIDATED**

**LEVEL I**

Certified by <u><i>MSL</i></u>
Report Date <u>07/06/05</u>
Page 1

Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503232-01</u>	Contract <u>PROJECT# IOC2064</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Outfall Oil Composite</u>							
IOC2064-01	8383-001	03/25/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
			04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
			05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
			04/21/05	H3	83.4 ± 170	pCi/L	278
			04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
			04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

PM 5/17/05

Dev	Qual
Qual	Code
5FBDS	R, H
↓	↓
5FBDS	H
↓	↓

AMEC VALIDATED  
LEVEL IV

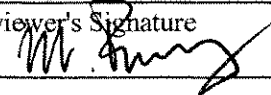
Certified by <u>[Signature]</u>
Report Date <u>05/11/05</u>
Page 1

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV50  
 Task Order 313150010  
 SDG No. IOC1523, 1526  
 No. of Analyses 2

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

Date: April 10, 2005  
 Reviewer's Signature 

<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	<hr/> <hr/>
2. <b>Out of Scope Analyses</b>	<hr/> <hr/>
3. <b>Analyses Not Conducted</b>	<hr/> <hr/>
4. <b>Missing Hardcopy Deliverables</b>	<hr/> <hr/>
5. <b>Incorrect Hardcopy Deliverables</b>	<hr/> <hr/>
6. <b>Deviations from Analysis</b>	Qualifications required for calibration and LCS outliers and for blank contamination.
<b>Protocol, e.g.,</b>	<hr/>
Holding Times	<hr/>
GC/MS Tune/Inst. Perform	<hr/>
Calibrations	<hr/>
Blanks	<hr/>
Surrogates	<hr/>
Matrix Spike/Dup LCS	<hr/>
Field QC	<hr/>
Internal Standard Performance	<hr/>
Compound Identification and	<hr/>
Quantitation	<hr/>
System Performance	<hr/>
<b>COMMENTS<sup>b</sup></b>	<hr/> <hr/> <hr/> <hr/>
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 10, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	water	625
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 03/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds listed on the sample summary form, except for the  $r^2$  values for benzoic acid and 4,6-dinitro-2-methylphenol. Benzoic acid and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the samples of these SDGs. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 03/22/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$  except for the %D for 3,3'-dichlorobenzidine. 3,3'-Dichlorobenzidine was qualified as an estimated nondetect, "UJ," in the samples of these SDGs. A representative number of RRFs,  $r^2$  values, and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

### 2.4 BLANKS

One method blank (5C20022-BLK1) was extracted and analyzed with this SDG. Butylbenzylphthalate and diethylphthalate were reported in the method blank and were qualified as nondetects, "U," in the samples of these SDGs. Review of the raw data indicated no reportable false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C20022-BS1/5C20022-BSD1) was extracted and analyzed with this SDG. All percent recoveries and RPDs were within the laboratory QC limits, except for benzidine which was not recovered in either the BS or BSD. Benzidine was rejected, "R," in the samples of these SDGs. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

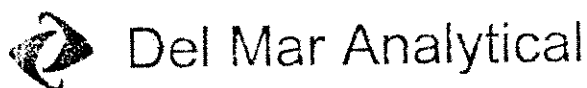
Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
 1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
 9454 Chesapeake Dr. Suite 805, San Diego, CA 92123 (858) 505-8595 FAX (858) 505-9689  
 9230 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 796-3620 FAX (702) 796-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers			
									REL QUAL	RL-3	QUAL CODE	
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)												
Reporting Units: ug/l												
Acenaphthene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	U			
Acenaphthylene	EPA 625	5C20022	0.20	1.0	ND	1.94	03/20/05	03/22/05	↓			
Aniline	EPA 625	5C20022	5.8	20	ND	1.94	03/20/05	03/22/05	↓			
Anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	↓			
Benzidine	EPA 625	5C20022	4.8	10	ND	1.94	03/20/05	03/22/05	R	L2	L	
Benzoic acid	EPA 625	5C20022	7.4	40	ND	1.94	03/20/05	03/22/05	U	J	C	
Benzo(a)anthracene	EPA 625	5C20022	0.076	10	ND	1.94	03/20/05	03/22/05	U			
Benzo(a)pyrene	EPA 625	5C20022	0.28	4.0	ND	1.94	03/20/05	03/22/05	↓			
Benzo(b)fluoranthene	EPA 625	5C20022	0.10	4.0	ND	1.94	03/20/05	03/22/05	↓			
Benzo(g,h,i)perylene	EPA 625	5C20022	0.12	10	ND	1.94	03/20/05	03/22/05	↓			
Benzo(k)fluoranthene	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	↓			
Benzyl alcohol	EPA 625	5C20022	0.42	10	ND	1.94	03/20/05	03/22/05	↓			
Bis(2-chloroethoxy)methane	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	↓			
Bis(2-chloroethyl)ether	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	↓			
Bis(2-chloroisopropyl)ether	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	↓			
Bis(2-ethylhexyl)phthalate	EPA 625	5C20022	2.2	10	ND	1.94	03/20/05	03/22/05	↓			
4-Bromophenyl phenyl ether	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	↓			
Buryl benzyl phthalate	EPA 625	5C20022	0.68	10	NDL	1.94	03/20/05	03/22/05	U	B	J B	
4-Chloroaniline	EPA 625	5C20022	0.40	4.0	ND	1.94	03/20/05	03/22/05	↓			
2-Chloronaphthalene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05	↓			
4-Chloro-3-methylphenol	EPA 625	5C20022	0.68	4.0	ND	1.94	03/20/05	03/22/05	↓			
4-Chlorophenyl phenyl ether	EPA 625	5C20022	0.11	1.0	ND	1.94	03/20/05	03/22/05	↓			
2-Chlorophenol	EPA 625	5C20022	0.24	2.0	ND	1.94	03/20/05	03/22/05	↓			
Chrysene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05	↓			
Dibenz(a,h)anthracene	EPA 625	5C20022	0.17	1.0	ND	1.94	03/20/05	03/22/05	↓			
Dibenzofuran	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05	↓			
Di-n-butyl phthalate	EPA 625	5C20022	0.52	4.0	ND	1.94	03/20/05	03/22/05	↓			
1,2-Dichlorobenzene	EPA 625	5C20022	0.22	1.0	ND	1.94	03/20/05	03/22/05	↓			
1,3-Dichlorobenzene	EPA 625	5C20022	0.26	1.0	ND	1.94	03/20/05	03/22/05	↓			
1,4-Dichlorobenzene	EPA 625	5C20022	0.10	1.0	ND	1.94	03/20/05	03/22/05	↓			
3,3-Dichlorobenzidine	EPA 625	5C20022	1.9	10	ND	1.94	03/20/05	03/22/05	U	J	C	
2,4-Dichlorophenol	EPA 625	5C20022	0.42	4.0	ND	1.94	03/20/05	03/22/05	↓			
Diethyl phthalate	EPA 625	5C20022	0.24	2.0	NDL	1.94	03/20/05	03/22/05	↓		B, J B	
2,4-Dimethylphenol	EPA 625	5C20022	0.62	4.0	ND	1.94	03/20/05	03/22/05	↓			
Dimethyl phthalate	EPA 625	5C20022	0.16	1.0	ND	1.94	03/20/05	03/22/05	↓			
4,6-Dinitro-2-methylphenol	EPA 625	5C20022	0.76	10	ND	1.94	03/20/05	03/22/05	U	J	C	
2,4-Dinitrophenol	EPA 625	5C20022	5.4	10	ND	1.94	03/20/05	03/22/05	↓			
2,4-Dinitrotoluene	EPA 625	5C20022	0.46	10	ND	1.94	03/20/05	03/22/05	↓			
2,6-Dinitrotoluene	EPA 625	5C20022	0.48	10	ND	1.94	03/20/05	03/22/05	↓			
Di-n-octyl phthalate	EPA 625	5C20022	0.34	10	ND	1.94	03/20/05	03/22/05	↓			
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C20022	0.17	2.0	ND	1.94	03/20/05	03/22/05	↓			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REL	QUAL
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.										
Reporting Units: ug/l										
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.94	03/20/05	03/22/05	U	
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.94	03/20/05	03/22/05		
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05		
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.94	03/20/05	03/22/05		
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.94	03/20/05	03/22/05		
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.94	03/20/05	03/22/05		
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.94	03/20/05	03/22/05		
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.94	03/20/05	03/22/05		
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05		
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.94	03/20/05	03/22/05		
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.94	03/20/05	03/22/05		
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.94	03/20/05	03/22/05		
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.94	03/20/05	03/22/05		
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.94	03/20/05	03/22/05		
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.94	03/20/05	03/22/05		
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05		
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.94	03/20/05	03/22/05		
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.94	03/20/05	03/22/05		
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.94	03/20/05	03/22/05		
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.94	03/20/05	03/22/05		
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.94	03/20/05	03/22/05		
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.94	03/20/05	03/22/05		
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.94	03/20/05	03/22/05		
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.94	03/20/05	03/22/05		
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.94	03/20/05	03/22/05		
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05		
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.94	03/20/05	03/22/05		
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.94	03/20/05	03/22/05		
Surrogate: 2-Fluorophenol (30-120%)										71 %
Surrogate: Phenol-d6 (35-120%)										72 %
Surrogate: 2,4,6-Tribromophenol (45-120%)										87 %
Surrogate: Nitrobenzene-d5 (45-120%)										71 %
Surrogate: 2-Fluorobiphenyl (45-120%)										76 %
Surrogate: Terphenyl-d14 (45-120%)										82 %

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									ED QUAL	RL-3 QUAL CODE
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5C20022	0.20	1.0	ND	1.9	03/20/05	03/22/05	U	
Acenaphthylene	EPA 625	5C20022	0.20	1.0	ND	1.9	03/20/05	03/22/05	↓	
Aniline	EPA 625	5C20022	5.8	20	ND	1.9	03/20/05	03/22/05	↓	
Anthracene	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	↓	
Benzidine	EPA 625	5C20022	4.8	10	ND	1.9	03/20/05	03/22/05	R	L2 L
Benzoic acid	EPA 625	5C20022	7.4	40	ND	1.9	03/20/05	03/22/05	U	C
Benzo(a)anthracene	EPA 625	5C20022	0.076	10	ND	1.9	03/20/05	03/22/05	↓	
Benzo(a)pyrene	EPA 625	5C20022	0.28	4.0	ND	1.9	03/20/05	03/22/05	↓	
Benzo(b)fluoranthene	EPA 625	5C20022	0.10	4.0	ND	1.9	03/20/05	03/22/05	↓	
Benzo(g,h,i)perylene	EPA 625	5C20022	0.12	10	ND	1.9	03/20/05	03/22/05	↓	
Benzo(k)fluoranthene	EPA 625	5C20022	0.11	1.0	ND	1.9	03/20/05	03/22/05	↓	
Benzyl alcohol	EPA 625	5C20022	0.42	10	ND	1.9	03/20/05	03/22/05	↓	
Bis(2-chloroethoxy)methane	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	↓	
Bis(2-chloroethyl)ether	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	↓	
Bis(2-chloroisopropyl)ether	EPA 625	5C20022	0.22	1.0	ND	1.9	03/20/05	03/22/05	↓	
Bis(2-ethylhexyl)phthalate	EPA 625	5C20022	2.2	10	ND	1.9	03/20/05	03/22/05	↓	
4-Bromophenyl phenyl ether	EPA 625	5C20022	0.24	2.0	ND	1.9	03/20/05	03/22/05	↓	
Butyl benzyl phthalate	EPA 625	5C20022	0.68	10	MD IT	1.9	03/20/05	03/22/05	U	B, J B
4-Chloroaniline	EPA 625	5C20022	0.40	4.0	ND	1.9	03/20/05	03/22/05	↓	
2-Chloronaphthalene	EPA 625	5C20022	0.12	1.0	ND	1.9	03/20/05	03/22/05	↓	
4-Chloro-3-methylphenol	EPA 625	5C20022	0.68	4.0	ND	1.9	03/20/05	03/22/05	↓	
4-Chlorophenyl phenyl ether	EPA 625	5C20022	0.11	1.0	ND	1.9	03/20/05	03/22/05	↓	
2-Chlorophenol	EPA 625	5C20022	0.24	2.0	ND	1.9	03/20/05	03/22/05	↓	
Chrysene	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05	↓	
Dibenz(a,h)anthracene	EPA 625	5C20022	0.17	1.0	ND	1.9	03/20/05	03/22/05	↓	
Dibenzofuran	EPA 625	5C20022	0.15	1.0	ND	1.9	03/20/05	03/22/05	↓	
Di-n-butyl phthalate	EPA 625	5C20022	0.52	4.0	ND	1.9	03/20/05	03/22/05	↓	
1,2-Dichlorobenzene	EPA 625	5C20022	0.22	1.0	ND	1.9	03/20/05	03/22/05	↓	
1,3-Dichlorobenzene	EPA 625	5C20022	0.26	1.0	ND	1.9	03/20/05	03/22/05	↓	
1,4-Dichlorobenzene	EPA 625	5C20022	0.10	1.0	ND	1.9	03/20/05	03/22/05	↓	
3,3-Dichlorobenzidine	EPA 625	5C20022	1.9	10	ND	1.9	03/20/05	03/22/05	U	C
2,4-Dichlorophenol	EPA 625	5C20022	0.42	4.0	ND	1.9	03/20/05	03/22/05	U	
Diethyl phthalate	EPA 625	5C20022	0.24	2.0	ND CAT	1.9	03/20/05	03/22/05	U	B, J B
2,4-Dimethylphenol	EPA 625	5C20022	0.62	4.0	ND	1.9	03/20/05	03/22/05	U	
Dimethyl phthalate	EPA 625	5C20022	0.16	1.0	ND	1.9	03/20/05	03/22/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5C20022	0.76	10	ND	1.9	03/20/05	03/22/05	U	C
2,4-Dinitrophenol	EPA 625	5C20022	5.4	10	ND	1.9	03/20/05	03/22/05	U	N-1
2,4-Dinitrotoluene	EPA 625	5C20022	0.46	10	ND	1.9	03/20/05	03/22/05	↓	
2,6-Dinitrotoluene	EPA 625	5C20022	0.48	10	ND	1.9	03/20/05	03/22/05	↓	
Di-n-octyl phthalate	EPA 625	5C20022	0.34	10	ND	1.9	03/20/05	03/22/05	↓	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C20022	0.17	2.0	ND	1.9	03/20/05	03/22/05	↓	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
Fluoranthene	EPA 625	5C20022	0.18	1.0	ND	1.9	03/20/05	03/22/05	U	
Fluorene	EPA 625	5C20022	0.15	1.0	ND	1.9	03/20/05	03/22/05		
Hexachlorobenzene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05		
Hexachlorobutadiene	EPA 625	5C20022	0.76	4.0	ND	1.9	03/20/05	03/22/05		
Hexachlorocyclopentadiene	EPA 625	5C20022	3.6	10	ND	1.9	03/20/05	03/22/05		
Hexachloroethane	EPA 625	5C20022	1.0	6.0	ND	1.9	03/20/05	03/22/05		
Indeno(1,2,3-cd)pyrene	EPA 625	5C20022	0.38	4.0	ND	1.9	03/20/05	03/22/05		
Isophorone	EPA 625	5C20022	0.12	2.0	ND	1.9	03/20/05	03/22/05		
2-Methylnaphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05		
2-Methylphenol	EPA 625	5C20022	0.56	4.0	ND	1.9	03/20/05	03/22/05		
4-Methylphenol	EPA 625	5C20022	0.40	10	ND	1.9	03/20/05	03/22/05		
Naphthalene	EPA 625	5C20022	0.26	2.0	ND	1.9	03/20/05	03/22/05		
2-Nitroaniline	EPA 625	5C20022	0.36	10	ND	1.9	03/20/05	03/22/05		
3-Nitroaniline	EPA 625	5C20022	0.70	10	ND	1.9	03/20/05	03/22/05		
4-Nitroaniline	EPA 625	5C20022	0.98	10	ND	1.9	03/20/05	03/22/05		
Nitrobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05		
2-Nitrophenol	EPA 625	5C20022	0.46	4.0	ND	1.9	03/20/05	03/22/05		
4-Nitrophenol	EPA 625	5C20022	1.5	10	ND	1.9	03/20/05	03/22/05		
N-Nitrosodimethylamine	EPA 625	5C20022	0.44	4.0	ND	1.9	03/20/05	03/22/05		
N-Nitroso-di-n-propylamine	EPA 625	5C20022	0.36	4.0	ND	1.9	03/20/05	03/22/05		
N-Nitrosodiphenylamine	EPA 625	5C20022	0.15	2.0	ND	1.9	03/20/05	03/22/05		
Pentachlorophenol	EPA 625	5C20022	1.6	4.0	ND	1.9	03/20/05	03/22/05		
Phenanthrene	EPA 625	5C20022	0.14	1.0	ND	1.9	03/20/05	03/22/05		
Phenol	EPA 625	5C20022	0.28	2.0	ND	1.9	03/20/05	03/22/05		
Pyrene	EPA 625	5C20022	0.12	1.0	ND	1.9	03/20/05	03/22/05		
1,2,4-Trichlorobenzene	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05		
2,4,5-Trichlorophenol	EPA 625	5C20022	0.15	4.0	ND	1.9	03/20/05	03/22/05		
2,4,6-Trichlorophenol	EPA 625	5C20022	0.20	2.0	ND	1.9	03/20/05	03/22/05		
Surrogate: 2-Fluorophenol (30-120%)										68 %
Surrogate: Phenol-d6 (35-120%)										67 %
Surrogate: 2,4,6-Tribromophenol (45-120%)										79 %
Surrogate: Nitrobenzene-d5 (45-120%)										68 %
Surrogate: 2-Fluorobiphenyl (45-120%)										70 %
Surrogate: Terphenyl-d14 (45-120%)										78 %

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LEVEL IV

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF55  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 2

Laboratory Pacific Analytical

Date: April 11, 2005

Reviewer L. Calvin

Reviewer's Signature  


Analysis/Method EFH by Method 8015B

ACTION ITEMS <sup>a</sup>	
<b>Case Narrative</b>	
<b>Deficiencies</b>	
2. <b>Out of Scope</b>	
<b>Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy</b>	
<b>Deliverables</b>	
5. <b>Incorrect Hardcopy</b>	
<b>Deliverables</b>	
6. <b>Deviations from Analysis</b>	
<b>Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but, no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	8015B/EFH
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	8015B/EFH

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analyses was analyzed on 03/11/05. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5C21048-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C21048-BS1/BSD1) was extracted and analyzed with the samples in these SDGs. The laboratory reported recoveries of alkane range C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound n-octacosane. The sample surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses performed on the samples of these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for EFH n-alkane range C13-C22 by Method 8015B. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in mg/L (ppm). No qualifications were required.



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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 535-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C21048	0.082	0.50	ND	0.957	03/21/05	03/21/05	U
Surrogate: n-Octacosane (40-125%)						91 %			

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE





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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C21048	0.082	0.50	ND	0.943	03/21/05	03/21/05	U
Surrogate: n-Octacosane (40-125%)					81 %				

*very good*  
*qual good*

**AMEC VALIDATED**  
**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF57  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 3

Laboratory Pacific Analytical

Date: April 11, 2005

Reviewer L. Calvin

Reviewer's Signature L. Calvin

Analysis/Method GRO by Method 8015M

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	_____
COMMENTS <sup>b</sup>	Acceptable as reviewed.

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: Total Petroleum Hydrocarbons: Purgeable

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgable  
QC Level: Level IV  
No. of Samples: 3  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC1526-02	water	8015M/GRO

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COCs indicated the samples were properly preserved, with the exception of the trip blank, which was an unpreserved aliquot. Information regarding lack of headspace in the VOA vials was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water site samples were analyzed within 14 days of collection, and the unpreserved sample (Trip Blank) was analyzed within seven days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/26/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5C21006-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5C21006-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound 4-bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC of 65-140%. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on site sample Outfall 011 Composite. Recoveries for GRO (C4-C12) were within the laboratory QC limits of 60-140%, and the RPD was within the QC limit of  $\leq 20\%$ . No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Sample Trip Blank was the trip blank associated with site sample Outfall 011 Composite. GRO (C4-C12) was not detected above the MDL in the trip blank. Review of the raw data indicated no false negative result. Sample Outfall 011 Grab had no associated trip blank analysis. There were no field blank or equipment rinsate samples associated with these SDGs. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in units of  $\mu\text{g/L}$  (ppb). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u
Surrogate: 4-BFB (FID) (65-140%)									
					80%				

### AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

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# Del Mar Analytical

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualified
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u
Surrogate: 4-BFB (FID) (65-140%)					81 %				
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C21006	50	100	ND	1	03/21/05	03/21/05	u
Surrogate: 4-BFB (FID) (65-140%)					76 %				

*rel qual*  
*qual*  
*Deade*

P1

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO85  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 4

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method Volatiles by 624

Date April 8, 2005  
 Reviewer's Signature K. Shadowlight

<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative</b>	
<b>Deficiencies</b>	
<b>2. Out of Scope</b>	
<b>Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy</b>	
<b>Deliverables</b>	
<b>5. Incorrect Hardcopy</b>	
<b>Deliverables</b>	
<b>6. Deviations from Analysis</b>	Qualifications were assigned for the following:
GC/MS Tune/Inst. Perform	* Average RRF <0.05 in the initial calibration
Calibrations	* RRF <0.05 in the continuing calibrations
Blanks	* Continuing calibration %D outliers
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

**\*#** Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 8, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624, SW846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	water	624
Trip Blank	Trip Blank	IOC1523-02	water	624
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	water	624
Trip Blank	Trip Blank	IOC1526-02	water	624



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows shown on the quantitation reports were consistent with those specified in EPA Method 624, and all ion abundances were within the established windows. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 03/04/05 and 03/16/05 (trichlorotrifluoroethane, acrolein, and acrylonitrile only) were associated with these SDGs. The average RRF for acrolein was  $<0.05$  in the initial calibration dated 03/16/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The average RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for all applicable target compounds. Two continuing calibrations dated 03/19/05 and 03/20/05 were associated with the sample analyses in these SDGs. The %Ds for bromomethane, chloromethane, chloroethane, 1,1-dichloroethane, 1,2-dichloroethane, and trichlorofluoromethane exceeded 20% in the continuing calibration dated 03/19/04; therefore, the nondetect results for the aforementioned target compounds were qualified as estimated, "UJ," in sample Outfall 011 Grab. No qualifications were required for the Trip Blank. The RRF for acrolein was  $<0.05$  in the continuing calibration 03/20/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. A representative

*DATA VALIDATION REPORT*

number of %RSDs and average RRFs from the initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## **2.4 BLANKS**

Two water method blanks (5C20002-BLK1 and 5C19004-BLK1) were associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summaries. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## **2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

Two water blank spike (5C20002-BS1 and 5C19004-BS1) were associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## **2.6 SURROGATE RECOVERY**

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were not performed for these SDGs. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## **2.8 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### **2.8.1 Trip Blanks**

Sample Trip Blank (IOC1523) and Trip Blank (IOC1526) were the trip blanks associated with this SDG. There were no target compounds detected above the MDLs in the trip blanks. No qualifications were required.

### **2.8.2 Field Blanks and Equipment Rinsates**

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in these SDGs were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed the volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane. The laboratory was calibrated for target compound 1,2-dichloro-1,1,2-trifluoroethane; however, the calibration was not used for identification. Target compound cyclohexane was not included in the calibration (see section 2.11). Neither compound was detected as a TIC. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not utilized for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for these compounds. Nondetects for both compounds were qualified as estimated, "UJ," in sample Outfall 011 Grab and 011 Composite. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not provide TICs for these SDGs. No qualifications were required.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	U
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	U
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	U, S, C
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	U
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	U
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	U, S, C
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	U
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	U, S, C
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	U
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	U
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	U
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	U
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	U, S, C
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	U, S, C
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	U
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	U
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	U
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	U
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	U
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	U
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	U
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	U
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	U
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	U
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	U
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	U
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	U, S, C
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	U
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	U
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	U
Surrogate: Dibromofluoromethane (80-120%)									114 %
Surrogate: Toluene-d8 (80-120%)									102 %
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C19004	0.28	1.0	ND	1	03/19/05	03/19/05	u
Bromodichloromethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Bromoform	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
Bromomethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Carbon tetrachloride	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
Chlorobenzene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
Chloroethane	EPA 624	5C19004	0.33	5.0	ND	1	03/19/05	03/19/05	
Chloroform	EPA 624	5C19004	0.33	2.0	ND	1	03/19/05	03/19/05	
Chloromethane	EPA 624	5C19004	0.30	5.0	ND	1	03/19/05	03/19/05	
Dibromochloromethane	EPA 624	5C19004	0.28	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichlorobenzene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
1,3-Dichlorobenzene	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
1,4-Dichlorobenzene	EPA 624	5C19004	0.37	2.0	ND	1	03/19/05	03/19/05	
1,1-Dichloroethane	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloroethane	EPA 624	5C19004	0.28	0.50	ND	1	03/19/05	03/19/05	
1,1-Dichloroethene	EPA 624	5C19004	0.32	5.0	ND	1	03/19/05	03/19/05	
trans-1,2-Dichloroethene	EPA 624	5C19004	0.27	2.0	ND	1	03/19/05	03/19/05	
1,2-Dichloropropane	EPA 624	5C19004	0.35	2.0	ND	1	03/19/05	03/19/05	
cis-1,3-Dichloropropene	EPA 624	5C19004	0.22	2.0	ND	1	03/19/05	03/19/05	
trans-1,3-Dichloropropene	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Ethylbenzene	EPA 624	5C19004	0.25	2.0	ND	1	03/19/05	03/19/05	
Methylene chloride	EPA 624	5C19004	0.48	5.0	ND	1	03/19/05	03/19/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C19004	0.24	2.0	ND	1	03/19/05	03/19/05	
Tetrachloroethene	EPA 624	5C19004	0.32	2.0	ND	1	03/19/05	03/19/05	
Toluene	EPA 624	5C19004	0.36	2.0	ND	1	03/19/05	03/19/05	
1,1,1-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
1,1,2-Trichloroethane	EPA 624	5C19004	0.30	2.0	ND	1	03/19/05	03/19/05	
Trichloroethene	EPA 624	5C19004	0.26	2.0	ND	1	03/19/05	03/19/05	
Trichlorofluoromethane	EPA 624	5C19004	0.34	5.0	ND	1	03/19/05	03/19/05	
Vinyl chloride	EPA 624	5C19004	0.26	0.50	ND	1	03/19/05	03/19/05	
Xylenes, Total	EPA 624	5C19004	0.52	4.0	ND	1	03/19/05	03/19/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C19004	1.2	5.0	ND	1	03/19/05	03/19/05	
Surrogate: Dibromofluoromethane (80-120%)					111 %				
Surrogate: Toluene-d8 (80-120%)					101 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				

Raw Data  
 Qual Code

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R Qual
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	U Qual
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U Qual
Surrogate: Dibromofluoromethane (80-120%)					115 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					95 %				
Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R Qual
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	U Qual
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U Qual
Surrogate: Dibromofluoromethane (80-120%)					114 %				
Surrogate: Toluene-d8 (80-120%)					102 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					96 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U S
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U S
Sample ID: IOC1523-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U
Cyclohexane	EPA 624 (MOD.)	5C19004	N/A	2.5	ND	1	03/19/05	03/19/05	U

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Benzene	EPA 624	5C20002	0.28	1.0	ND	1	03/20/05	03/20/05	New Plus Qual Ldc u
Bromodichloromethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Bromoform	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
Bromomethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Carbon tetrachloride	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
Chlorobenzene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
Chloroethane	EPA 624	5C20002	0.33	5.0	ND	1	03/20/05	03/20/05	
Chloroform	EPA 624	5C20002	0.33	2.0	ND	1	03/20/05	03/20/05	
Chloromethane	EPA 624	5C20002	0.30	5.0	ND	1	03/20/05	03/20/05	
Dibromochloromethane	EPA 624	5C20002	0.28	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichlorobenzene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
1,3-Dichlorobenzene	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
1,4-Dichlorobenzene	EPA 624	5C20002	0.37	2.0	ND	1	03/20/05	03/20/05	
1,1-Dichloroethane	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloroethane	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
1,1-Dichloroethene	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
trans-1,2-Dichloroethene	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloropropane	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
cis-1,3-Dichloropropene	EPA 624	5C20002	0.22	2.0	ND	1	03/20/05	03/20/05	
trans-1,3-Dichloropropene	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Ethylbenzene	EPA 624	5C20002	0.25	2.0	ND	1	03/20/05	03/20/05	
Methylene chloride	EPA 624	5C20002	0.48	5.0	ND	1	03/20/05	03/20/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Tetrachloroethene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
Toluene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
1,1,1-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
1,1,2-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Trichloroethene	EPA 624	5C20002	0.26	2.0	ND	1	03/20/05	03/20/05	
Trichlorofluoromethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Vinyl chloride	EPA 624	5C20002	0.26	0.50	ND	1	03/20/05	03/20/05	
Xylenes, Total	EPA 624	5C20002	0.52	4.0	ND	1	03/20/05	03/20/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C20002	1.2	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)					116 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

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LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C20002	0.28	1.0	ND	1	03/20/05	03/20/05	u
Bromodichloromethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Bromoform	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
Bromomethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Carbon tetrachloride	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
Chlorobenzene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
Chloroethane	EPA 624	5C20002	0.33	5.0	ND	1	03/20/05	03/20/05	
Chloroform	EPA 624	5C20002	0.33	2.0	ND	1	03/20/05	03/20/05	
Chloromethane	EPA 624	5C20002	0.30	5.0	ND	1	03/20/05	03/20/05	
Dibromochloromethane	EPA 624	5C20002	0.28	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichlorobenzene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
1,3-Dichlorobenzene	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
1,4-Dichlorobenzene	EPA 624	5C20002	0.37	2.0	ND	1	03/20/05	03/20/05	
1,1-Dichloroethane	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloroethane	EPA 624	5C20002	0.28	0.50	ND	1	03/20/05	03/20/05	
1,1-Dichloroethene	EPA 624	5C20002	0.32	5.0	ND	1	03/20/05	03/20/05	
trans-1,2-Dichloroethene	EPA 624	5C20002	0.27	2.0	ND	1	03/20/05	03/20/05	
1,2-Dichloropropane	EPA 624	5C20002	0.35	2.0	ND	1	03/20/05	03/20/05	
cis-1,3-Dichloropropene	EPA 624	5C20002	0.22	2.0	ND	1	03/20/05	03/20/05	
trans-1,3-Dichloropropene	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Ethylbenzene	EPA 624	5C20002	0.25	2.0	ND	1	03/20/05	03/20/05	
Methylene chloride	EPA 624	5C20002	0.48	5.0	ND	1	03/20/05	03/20/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C20002	0.24	2.0	ND	1	03/20/05	03/20/05	
Tetrachloroethene	EPA 624	5C20002	0.32	2.0	ND	1	03/20/05	03/20/05	
Toluene	EPA 624	5C20002	0.36	2.0	ND	1	03/20/05	03/20/05	
1,1,1-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
1,1,2-Trichloroethane	EPA 624	5C20002	0.30	2.0	ND	1	03/20/05	03/20/05	
Trichloroethene	EPA 624	5C20002	0.26	2.0	ND	1	03/20/05	03/20/05	
Trichlorofluoromethane	EPA 624	5C20002	0.34	5.0	ND	1	03/20/05	03/20/05	
Vinyl chloride	EPA 624	5C20002	0.26	0.50	ND	1	03/20/05	03/20/05	
Xylenes, Total	EPA 624	5C20002	0.52	4.0	ND	1	03/20/05	03/20/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C20002	1.2	5.0	ND	1	03/20/05	03/20/05	
Surrogate: Dibromofluoromethane (80-120%)									112 %
Surrogate: Toluene-d8 (80-120%)									103 %
Surrogate: 4-Bromofluorobenzene (80-120%)									96 %

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Acrolein	EPA 624	5C20002	4.6	50	ND	1	03/20/05	03/20/05	R
Acrylonitrile	EPA 624	5C20002	5.1	50	ND	1	03/20/05	03/20/05	U
2-Chloroethyl vinyl ether	EPA 624	5C20002	1.3	5.0	ND	1	03/20/05	03/20/05	U
Surrogate: Dibromofluoromethane (80-120%)					116 %				
Surrogate: Toluene-d8 (80-120%)					103 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Rev Qual | Pur Qual  
 R | R

UNRECORDED

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011  
 Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	Raw Qual
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	Ind Sds
Sample ID: IOC1526-02 (DRAFT: Trip Blank - Water)									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	u
Cyclohexane	EPA 624 (MOD.)	5C20002	N/A	2.5	ND	1	03/20/05	03/20/05	u

**ALSO VALIDATED**

**LEVEL IV**

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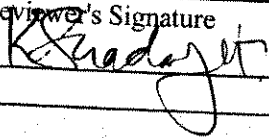
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO88  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526

No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer K. Shadowlight  
 Analysis/Method 1,4-Dioxane by 8260

Date April 8, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
<b>1. Case Narrative</b>	
<b>Deficiencies</b>	
<b>2. Out of Scope</b>	
<b>Analyses</b>	
<b>3. Analyses Not Conducted</b>	
<b>4. Missing Hardcopy</b>	
<b>Deliverables</b>	
<b>5. Incorrect Hardcopy</b>	
<b>Deliverables</b>	
<b>6. Deviations from Analysis</b>	
GC/MS Tune/Inst. Perform	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 8, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No. Del Mar, CA	Lab No. Del Mar, AZ	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	POC0620-01	water	8260B
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	POC0614-01	water	8260B

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were subcontracted to Del Mar (Phoenix) for 1,4-dioxane analysis. The samples were properly preserved. The COCs and transfer COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were signed by field and laboratory personnel. As the samples were couriered directly to the laboratory from the field, custody seals were not required. According to the transfer COCs, there were no custody seals present on the coolers received by Del Mar Analytical in Arizona. The EPA IDs were added to the sample result summary reports by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the samples were analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 03/19/05, was associated with these SDGs. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the  $r^2$  value was  $\geq 0.995$ . The laboratory reported the continuing calibration and the blank spike (P5C2203-BS1) from the same analysis. As the analysis cannot be reported as both a CCV and a blank spike, the reviewer reported P5C2203-BS1 as the continuing calibration. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The  $r^2$  value and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

One water method blank (P5C2203-BLK1) was associated with these SDGs. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5C2203-BS1/BS1D) with these SDGs; however, P5C2203-BS1 was reported as the CCV (see section 2.3); therefore, P5C2203-BS1D was evaluated as a single blank spike. The recovery for 1,4-dioxane was within the QC limits of 70-130%. The recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recoveries for the samples were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The samples in these SDGs had no associated trip blank. No qualifications were required.

#### 2.8.1.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

DATA VALIDATION REPORT

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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Del Mar Analytical - Irvine  
 17461 Derian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1523

Report Number: POC0620

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0620-01 (IOC1523-01 - Water)									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND 112%	1	03/22/05	03/22/05	Roy Qual 11 (Qual) (Det) (Code)
Surrogate: Dibromofluoromethane (80-125%)									

**AMEC VALIDATED**  
*Level III*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

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Del Mar Analytical - Irvine  
 17461 Derian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1526

Report Number: POC0614

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0614-01 (IOC1526-01 - Water) <i>Outfall oil Composite</i>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND	1	03/22/05	03/22/05	<i>u</i>
Surrogate: Dibromofluoromethane (80-125%) <i>117%</i>									

*By [Signature]*  
*Qual [Signature]*

**AMEC VALIDATED**

*Level IV*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*

### CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC120  
 Task Order 313150010  
 SDG No. IOC1523/1526

No. of Analyses 2

Laboratory Del Mar Analytical

Reviewer L. Jarusewic

Analysis/Method General Minerals

Date: <u>04/04/05</u>
Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>  Holding Times GC/MS Tune/Inst. Performance Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	<b>Qualifications applied for:</b> 1) Detects below the reporting limit 2) Method blank detects and negative results 3) Irreproducible cyanide initial calibration curve 4) Change of MDL to level of interference by reviewer
<b>COMMENTS<sup>b</sup></b>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
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J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUP: IOC1523, IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles (1,4-dioxane)  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: K. Shadowlight  
Date of Review: April 8, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method SW-846 8260B* and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No. Del Mar, CA	Lab No. Del Mar, AZ	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC1523-01	POC0620-01	water	8260B
Outfall 011 Composite	Outfall 011 Composite	IOC1526-01	POC0614-01	water	8260B



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the Del Mar within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were subcontracted to Del Mar (Phoenix) for 1,4-dioxane analysis. The samples were properly preserved. The COCs and transfer COCs noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were signed by field and laboratory personnel. As the samples were couriered directly to the laboratory from the field, custody seals were not required. According to the transfer COCs, there were no custody seals present on the coolers received by Del Mar Analytical in Arizona. The EPA IDs were added to the sample result summary reports by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The ion abundance windows were consistent with those specified in EPA Method 8260B. All ion abundances were within the established windows, and the samples were analyzed within 12 hours of the BFB injection time. No qualifications were required.

### 2.3 CALIBRATION

One initial calibration, dated 03/19/05, was associated with these SDGs. The average RRF for 1,4-dioxane was  $\geq 0.05$  and the  $r^2$  value was  $\geq 0.995$ . The laboratory reported the continuing calibration and the blank spike (P5C2203-BS1) from the same analysis. As the analysis cannot be reported as both a CCV and a blank spike, the reviewer reported P5C2203-BS1 as the continuing calibration. The RRF for 1,4-dioxane was  $\geq 0.05$  and the %D was  $\leq 20\%$ . The  $r^2$  value and average RRF for 1,4-dioxane in the initial calibration, and the %D and RRF for 1,4-dioxane in the continuing calibration were recalculated from the raw data, and no calculation or transcription errors were found. No qualifications were required.

## 2.4 BLANKS

One water method blank (P5C2203-BLK1) was associated with these SDGs. Target compound 1,4-dioxane was not detected in the method blank. The method blank raw data showed no evidence of a false negative. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory analyzed a blank spike/blank spike duplicate pair (P5C2203-BS1/BS1D) with these SDGs; however, P5C2203-BS1 was reported as the CCV (see section 2.3); therefore, P5C2203-BS1D was evaluated as a single blank spike. The recovery for 1,4-dioxane was within the QC limits of 70-130%. The recovery was recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples and QC were fortified with dibromofluoromethane. The surrogate was recovered within the laboratory QC limits of 80-125%. The surrogate recoveries for the samples were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy was based on blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

The samples in these SDGs had no associated trip blank. No qualifications were required.

#### 2.8.1.1 Field Blanks and Equipment Rinsates

The site samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs.

DATA VALIDATION REPORT

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. Internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for 1,4-dioxane by Method 8260B/SIM. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limit was supported by the lowest concentration of the initial calibration standards and by the undated MDL supplied by the laboratory. Compound quantitation was verified by recalculating blank spike and surrogate recoveries from the raw data. No calculation or transcription errors were noted. No qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

TICs are not typically reported for SIM methods.

## 2.13 SYSTEM PERFORMANCE

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



# Del Mar Analytical

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 9454 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8366 FAX (619) 505-9689  
 8932 Smith Rd. Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 788-3621

Del Mar Analytical - Irvine  
 17461 Derian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1523

Report Number: POC0620

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0620-01 (IOC1523-01 - Water) <i>Outfall 011 Grab</i>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND 112%	1	03/22/05	03/22/05	<i>Key Qual</i> / <i>True Value</i>
Surrogate: Dibromofluoromethane (80-125%)									

**AMEC VALIDATED**  
*Level III*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

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# Del Mar Analytical

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 5494 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-8636  
 9830 South 51st St., Suite 5-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2620 E. Sunset Rd., #5, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3021

Del Mar Analytical - Irvine  
 17461 Derian Ave. Suite 100  
 Irvine, CA 92614  
 Attention: Michele Harper

Project ID: IOC1526

Report Number: POC0614

Sampled: 03/18/05  
 Received: 03/22/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POC0614-01 (IOC1526-01 - Water) <i>Outfall oil Composite</i>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5C2203	0.49	1.0	ND	1	03/22/05	03/22/05	<i>u</i>
Surrogate: Dibromofluoromethane (80-125%) <i>117%</i>									

### AMEC VALIDATED

*Level IV*

Del Mar Analytical - Phoenix  
 Karen Maxwell  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*



## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.



**\*#** Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOB1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 4, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 218.6, 120.1, 160.2, 160.5, and 180.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C*, and validation guidelines outlined in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	Water	General Minerals
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	Water	General Minerals

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for all analyses present in these SDGs except fluoride for Outfall 011-Composite. The fluoride analysis was requested in a memo from MWH personnel dated 03/21/05 Outfall 011-Composite. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the dates of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for surfactants, turbidity, nitrate/nitrite, biological oxygen demand, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ , except for cyanide. The reviewer could not reproduce the cyanide initial calibration curve. The  $r^2$  obtained by the reviewer was marginally less than 0.995; therefore, nondetected cyanide in samples Outfall 011-Grab and Outfall 011-Composite were qualified as estimated, "UJ." Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total suspended solids, or total settleable solids. The total cyanide reporting limit check standard was recovered within the control limits of 70-130%. No further qualifications were required.

### 2.3 BLANKS

Turbidity was detected in method blank 5C19032-BLK1 at 0.060 NTU; however, the method blank result was insufficient to qualify the Outfall 011-Grab and Outfall 011-Composite results. Fluoride was

detected in the method blank 5C18104-BLK1 at 0.103 mg/L; therefore, fluoride detected in Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." Cyanide was reported in method blank 5C21083-BLK1 at -0.0062 mg/L; therefore, nondetected cyanide in samples Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." The remaining method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No further qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, oil and grease, and total recoverable hydrocarbons only) recoveries and RPDs were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.

## **2.6 LABORATORY DUPLICATES**

A laboratory duplicate analysis was performed on sample Outfall 011-Grab for residual chlorine. The RPD was within the control limits of  $\leq 20\%$  and no qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Cyanide in Outfall 011-Grab and Outfall 011-Composite was reported in the raw data at -0.0053 and -0.0064 mg/L, respectively, and the method blank associated with Outfall 011-Grab and Outfall 011-Composite was reported at -0.0062 mg/L. Due to these negative results, the reviewer raised the MDL and the reporting limit on the Form Is to the level of interference. BOD and surfactant in Outfall 011-Grab and surfactant in Outfall 011-Composite detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	U

REV. QUAL  
 QUAL. CODE

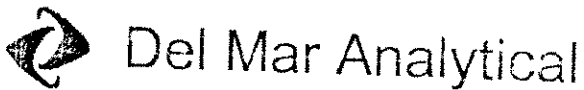
### AMEC VALIDATED

### LEVEL IV

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 DRAFT REPORT  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Ourfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.										
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	ND	1	03/22/05	03/22/05	U	
Biochemical Oxygen Demand	EPA 405.1	5C18070	0.59	2.0	1.6	1	03/18/05	03/23/05	J	
Chloride	EPA 300.0	5C18104	0.26	0.50	15	1	03/18/05	03/18/05	J	DNR
Chromium VI	EPA 218.6	5C18067	0.00010	0.0010	ND	1	03/18/05	03/18/05	U	
Total Cyanide	EPA 335.2	5C21083	0.0022	0.0050	ND	1	03/21/05	03/21/05	U	
Fluoride	EPA 300.0	5C18104	0.10	0.50	0.36	1	03/18/05	03/18/05	U	B, C, J
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/18/05	U	B
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	U	
Residual Chlorine	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	↓	
Sulfate	EPA 300.0	5C18104	0.18	0.50	42	1	03/18/05	03/18/05	↓	
Surfactants (MBAS)	SM5540-C	5C18107	0.044	0.10	0.080	1	03/18/05	03/18/05	J	DNR
Total Dissolved Solids	SM2540C	5C21073	10	10	220	1	03/21/05	03/21/05	J	
Total Organic Carbon	EPA 415.1	5C22101	0.25	1.0	13	1	03/22/05	03/22/05		
Total Suspended Solids	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	U	

REV QUAL  
 QUAL CODE

J 4/4/05

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.									
Reporting Units: ml/hr									
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	U

REV QUAL  
 QUAL CODE

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 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Data	
									Qualifiers	Qualifiers
									REV	QUAL
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.										
Reporting Units: NTU										
Turbidity	EPA 180.1	5C19032	0.040	1.0	3.1	1	03/19/05	03/19/05		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	
									Qualifiers	REV QUAL
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont.										
Reporting Units: umhos/cm										
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	360	1	03/21/05	03/21/05		

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05

Received: 03/18/05

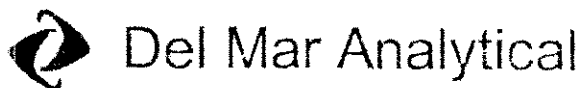
## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV QUAL	QUAL CODE
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: mg/l										
Total Recoverable Hydrocarbons	EPA 418.1	5C22091	0.31	1.0	ND	1	03/22/05	03/22/05	U	

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 9630 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0951  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C22089	0.30	0.50	0.56	1	03/22/05	03/22/05	
Biochemical Oxygen Demand	EPA 405.1	5C18070	0.59	2.0	3.8	1	03/18/05	03/23/05	
Chloride	EPA 300.0	5C18104	0.26	0.50	15	1	03/18/05	03/19/05	
Chromium VI	EPA 218.6	5C18067	0.0010	0.0010	ND	1	03/18/05	03/18/05	u
Total Cyanide	EPA 335.2	5C21083	<del>0.0022</del>	<del>0.0050</del>	ND	1	03/21/05	03/21/05	u
Fluoride	EPA 300.0	5C18104	0.10	0.50	0.36	1	03/18/05	03/19/05	u
Nitrate/Nitrite-N	EPA 300.0	5C18104	0.072	0.11	ND	1	03/18/05	03/19/05	u
Oil & Grease	EPA 413.1	5C21062	0.94	5.0	ND	1	03/21/05	03/21/05	u
Residual Chlorine	EPA 330.5	5C19030	0.10	0.10	ND	1	03/19/05	03/19/05	↓
Sulfate	EPA 300.0	5C18104	0.18	0.50	41	1	03/18/05	03/19/05	
Surfactants (MBAS)	SM5540-C	5C18107	0.044	0.10	0.064	1	03/18/05	03/18/05	
Total Dissolved Solids	SM2540C	5C21073	10	10	230	1	03/21/05	03/21/05	
Total Organic Carbon	EPA 415.1	5C22101	0.25	1.0	13	1	03/22/05	03/22/05	
Total Suspended Solids	EPA 160.2	5C21068	10	10	ND	1	03/21/05	03/21/05	u

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JH/4/05

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
										REV QUAL
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ml/hr										
Total Settleable Solids	EPA 160.5	5C19045	0.10	0.10	ND	1	03/19/05	03/19/05	U	QUAL COD

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05

Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: NTU										
Turbidity	EPA 180.1	5C19032	0.040	1.0	2.4	1	03/19/05	03/19/05		REV QUAL QUAL CODE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C21077	1.0	1.0	350	1	03/21/05	03/21/05	REV QUAL CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
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 DATA SUBJECT TO CHANGE

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711WC123  
 Task Order 313150010  
 SDG No. IOC1523, IOC1526  
 No. of Analyses 2

Laboratory Del Mar Analytical  
 Reviewer L. Jarusewic  
 Analysis/Method Perchlorate

Date: 04/06/05  
 Reviewer's Signature *L. Jarusewic*

<b>ACTION ITEMS*</b>	
1. <b>Case Narrative Deficiencies</b>	
2. <b>Out of Scope Analyses</b>	
3. <b>Analyses Not Conducted</b>	
4. <b>Missing Hardcopy Deliverables</b>	
5. <b>Incorrect Hardcopy Deliverables</b>	
6. <b>Deviations from Analysis Protocol, e.g.,</b>	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification and Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<small>* Subcontracted analytical laboratory is not meeting contract and/or method requirements.                      ** Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</small>	

### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DF1PP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	Not applicable.
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
S	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

**\*#**

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

---



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUPS: IOC1523 & IOC1526

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC1523, IOC1526  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 6, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 314.0, and 120.1*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC1523-01	Water	Perchlorate
Outfall 011-Composite	Outfall 011-Composite	IOC1526-01	Water	Perchlorate



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV, ICCS, and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## 2.6 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## 2.8 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.9 ICP SERIAL DILUTION

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## 2.10 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## 2.11 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.11.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.11.2 Field Duplicates

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1523

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC1523-01 (DRAFT: Outfall 011 GRAB - Water) - cont. Reporting Units: ug/l									
Perchlorate	EPA 314.0	5C18121	0.80	4.0	ND	1	03/18/05	03/19/05	U

REV. QUAL  
 CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: Outfall 011

Report Number: IOC1526

Sampled: 03/18/05  
 Received: 03/18/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC1526-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Perchlorate	EPA 314.0	5C18121	0.80	4.0	ND	1	03/18/05	03/19/05	U

REV  
 QUAL  
 CODE

# AMEC VALIDATED

# LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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**APPENDIX A**

**Section 45**

Outfall 011, March 25, 2005

Del Mar Analytical Laboratory Report



### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/25/05  
Received: 03/25/05  
Issued: 04/13/05 17:34

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 5 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

### CASE NARRATIVE

- SAMPLE RECEIPT: Samples were received intact, at 2°C, on ice and with chain of custody documentation.
- HOLDING TIMES: All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
- PRESERVATION: Samples requiring preservation were verified prior to sample analysis.
- QA/QC CRITERIA: All analyses met method criteria, except as noted in the report with data qualifiers. The percent recovery for benzidine in the BS/BSD was below method acceptance limits. Benzidine is known to be a problematic compound and according to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor. All results reported for benzidine are potentially biased low and can be considered estimates only. Results for benzidine are reported with 'L2' qualifier. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported. The sample was then reanalyzed for 2,4-Dinitrophenol and the results are reported as an RE1. Also, there was a low BSD recovery for the original batch for Oil & Grease and the lab re-extracted and re-analyzed the sample.
- COMMENTS: Results that fall between the MDL and RL are 'J' flagged.
- SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

### LABORATORY ID

IOC2064-01  
IOC2064-02

### CLIENT ID

Outfall 011 Composite  
Trip Blank

### MATRIX

Water  
Water

Reviewed By:

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

## CORRECTIVE ACTION REPORT

Department: Extractions  
Method: EPA 625  
QC Batch: 5C28041

Date: 03/31/2005  
Matrix: Water

### Identification and Definition of Problem:

The percent recovery for benzidine in the LCS was below method acceptance limits.

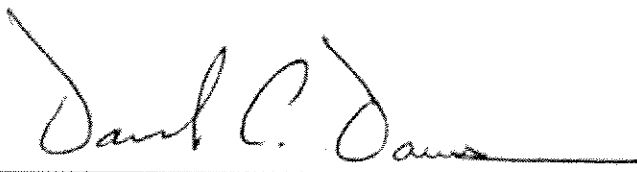
### Determination of the Cause of the Problem:

Benzidine is known to be a problematic compound. According to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor.

### Corrective Action Taken:

All results reported for benzidine are potentially biased low and can be considered estimates only.

Quality Assurance Approval:

  
Dave Dawes

Date: 04/08/2005 03:42 PM

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager





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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: mg/l</b>									
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.943	03/26/05	03/28/05	
<i>Surrogate: n-Octacosane (40-125%)</i>					65 %				

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	
Surrogate: 4-BFB (FID) (65-140%)					102 %				
<b>Sample ID: IOC2064-02 (Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	
Surrogate: 4-BFB (FID) (65-140%)					88 %				

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 Michele Harper  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-02 (Trip Blank - Water)</b>									
<b>Reporting Units: ug/l</b>									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					93 %				

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOC2064-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					93 %				

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
<b>Sample ID: IOC2064-02 (Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water)</b>									
<b>Reporting Units: ug/l</b>									
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	
Aniline	EPA 625	5C28041	2.9	10	ND	0.943	03/28/05	03/31/05	
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	
Benzidine	EPA 625	5C28041	2.4	5.0	ND	0.943	03/28/05	03/31/05	L2
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.943	03/28/05	03/31/05	
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.943	03/28/05	03/31/05	
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.943	03/28/05	03/31/05	
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.943	03/28/05	03/31/05	
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.943	03/28/05	03/31/05	
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.943	03/28/05	03/31/05	
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.943	03/28/05	03/31/05	
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.943	03/28/05	03/31/05	
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.943	03/28/05	03/31/05	
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	
<b>Butyl benzyl phthalate</b>	EPA 625	5C28041	0.34	5.0	<b>0.70</b>	0.943	03/28/05	03/31/05	J
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.943	03/28/05	03/31/05	
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.943	03/28/05	03/31/05	
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.943	03/28/05	03/31/05	
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	
Di-n-butyl phthalate	EPA 625	5C28041	0.26	2.0	ND	0.943	03/28/05	03/31/05	
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.943	03/28/05	03/31/05	
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.943	03/28/05	03/31/05	
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.943	03/28/05	03/31/05	
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.943	03/28/05	03/31/05	
<b>Diethyl phthalate</b>	EPA 625	5C28041	0.12	1.0	<b>0.26</b>	0.943	03/28/05	03/31/05	J
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.943	03/28/05	03/31/05	
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.943	03/28/05	03/31/05	
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.943	03/28/05	03/31/05	
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	03/31/05	N-1
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.943	03/28/05	03/31/05	
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.943	03/28/05	03/31/05	
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.943	03/28/05	03/31/05	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.943	03/28/05	03/31/05	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.943	03/28/05	03/31/05	
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.943	03/28/05	03/31/05	
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.943	03/28/05	03/31/05	
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.943	03/28/05	03/31/05	
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.943	03/28/05	03/31/05	
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.943	03/28/05	03/31/05	
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.943	03/28/05	03/31/05	
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.943	03/28/05	03/31/05	
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.943	03/28/05	03/31/05	
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.943	03/28/05	03/31/05	
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.943	03/28/05	03/31/05	
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.943	03/28/05	03/31/05	
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.943	03/28/05	03/31/05	
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.943	03/28/05	03/31/05	
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.943	03/28/05	03/31/05	
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.943	03/28/05	03/31/05	
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.943	03/28/05	03/31/05	
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.943	03/28/05	03/31/05	
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.943	03/28/05	03/31/05	
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.943	03/28/05	03/31/05	
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	
Surrogate: 2-Fluorophenol (30-120%)									63 %
Surrogate: Phenol-d6 (35-120%)									66 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									87 %
Surrogate: Nitrobenzene-d5 (45-120%)									67 %
Surrogate: 2-Fluorobiphenyl (45-120%)									70 %
Surrogate: Terphenyl-d14 (45-120%)									83 %

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01RE1 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	04/11/05	
Surrogate: 2-Fluorophenol (30-120%)					61 %				
Surrogate: Phenol-d6 (35-120%)					66 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					89 %				
Surrogate: Nitrobenzene-d5 (45-120%)					66 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					71 %				
Surrogate: Terphenyl-d14 (45-120%)					81 %				

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.952	03/28/05	03/29/05	
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/29/05	
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.952	03/28/05	03/29/05	
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.952	03/28/05	03/29/05	
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.952	03/28/05	03/29/05	
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.952	03/28/05	03/29/05	
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05	
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.952	03/28/05	03/29/05	
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.952	03/28/05	03/29/05	
Surrogate: Tetrachloro-m-xylene (35-115%)					35 %				
Surrogate: Decachlorobiphenyl (45-120%)					40 %				ZX

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.952	03/28/05	03/30/05	
<i>Surrogate: Decachlorobiphenyl (45-120%)</i>					45 %				

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Sampled: 03/25/05  
 Received: 03/25/05

**METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
Barium	EPA 200.8	5C25116	0.00014	0.0010	0.024	1	03/25/05	03/28/05	
Boron	EPA 200.7	5C25111	0.0074	0.050	0.095	1	03/25/05	03/27/05	
Iron	EPA 200.8	5C25116	0.0032	0.010	0.43	1	03/25/05	03/28/05	

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## METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: ug/l									
Antimony	EPA 200.8	5C25116	0.18	2.0	0.29	1	03/25/05	03/28/05	J
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.6	1	03/25/05	03/28/05	
Beryllium	EPA 200.8	5C25116	0.037	0.50	ND	1	03/25/05	03/28/05	
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.20	1	03/25/05	03/28/05	J
Chromium	EPA 200.8	5C25116	0.26	2.0	1.4	1	03/25/05	03/28/05	B, J
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05	J
Copper	EPA 200.8	5C25116	0.49	2.0	3.7	1	03/25/05	03/28/05	
Lead	EPA 200.8	5C25116	0.13	1.0	0.43	1	03/25/05	03/28/05	J
Manganese	EPA 200.8	5C25116	0.44	1.0	41	1	03/25/05	03/28/05	
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/26/05	03/26/05	
Nickel	EPA 200.8	5C25116	0.15	2.0	3.5	1	03/25/05	03/28/05	
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05	
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05	
Thallium	EPA 200.8	5C25116	0.075	1.0	ND	1	03/25/05	03/28/05	J
Vanadium	EPA 200.8	5C25116	0.86	2.0	1.2	1	03/25/05	03/28/05	J
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: mg/l</b>									
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	ND	1	03/28/05	03/28/05	
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	<b>1.1</b>	1	03/25/05	03/30/05	J
Chloride	EPA 300.0	5C25048	0.26	0.50	<b>9.2</b>	1	03/25/05	03/25/05	
Fluoride	EPA 300.0	5C25048	0.10	0.50	<b>0.25</b>	1	03/25/05	03/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	<b>0.15</b>	1	03/25/05	03/25/05	
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	
Sulfate	EPA 300.0	5C25048	0.18	0.50	<b>22</b>	1	03/25/05	03/25/05	
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	
Total Dissolved Solids	SM2540C	5C28078	10	10	<b>140</b>	1	03/28/05	03/28/05	
Total Organic Carbon	EPA 415.1	5C28077	0.25	1.0	<b>10</b>	1	03/28/05	03/28/05	
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	

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 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01RE1 (Outfall 011 Composite - Water) - cont.</b>									
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	ND	1	03/28/05	03/28/05	

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 Outfall 011  
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Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ml/vhr</b>									
Total Settleable Solids	EPA 160.5	5C25105	0.10	0.10	ND	1	03/25/05	03/25/05	

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 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.2	1	03/26/05	03/26/05	

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Sampled: 03/25/05  
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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
<b>Reporting Units: ug/l</b>									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	

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## INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C28081	1.0	1.0	220	1	03/28/05	03/28/05	

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 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: ug/l									
1,4-Dioxane	EPA 8260B	P5D0112	0.49	1.0	ND 117 %	1	04/01/05	04/01/05	
Surrogate: Dibromofluoromethane (80-125%)									

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Sampled: 03/25/05  
 Received: 03/25/05

## SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
<b>Sample ID: Outfall 011 Composite (IOC2064-01) - Water</b>					
EPA 160.5	2	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 20:50	03/25/2005 21:50
EPA 180.1	2	03/25/2005 14:40	03/25/2005 18:30	03/26/2005 13:00	03/26/2005 14:00
EPA 218.6	1	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 21:25	03/25/2005 21:26
EPA 300.0	2	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 20:00	03/25/2005 20:33
EPA 330.5	1	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 21:00	03/25/2005 21:15
EPA 405.1	2	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 21:30	03/30/2005 11:30
EPA 624	3	03/25/2005 14:40	03/25/2005 18:30	03/27/2005 00:00	03/27/2005 14:21
SM5540-C	2	03/25/2005 14:40	03/25/2005 18:30	03/25/2005 21:24	03/25/2005 22:05
<b>Sample ID: Trip Blank (IOC2064-02) - Water</b>					
EPA 624	3	03/25/2005 15:20	03/25/2005 18:30	03/27/2005 00:00	03/27/2005 14:52

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Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Qualifiers
<b>Batch: 5C26002 Extracted: 03/26/05</b>										
<b>Blank Analyzed: 03/26/2005 (5C26002-BLK1)</b>										
Total Recoverable Hydrocarbons	ND	1.0	0.31	mg/l						
<b>LCS Analyzed: 03/26/2005 (5C26002-BS1)</b>										
Total Recoverable Hydrocarbons	4.72	1.0	0.31	mg/l	5.00		94	65-120		M-NR1
<b>LCS Dup Analyzed: 03/26/2005 (5C26002-BSD1)</b>										
Total Recoverable Hydrocarbons	4.84	1.0	0.31	mg/l	5.00		97	65-120	3	20

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26001 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C26001-BLK1)</b>											
EFH (C13 - C22)	ND	0.50	0.082	mg/l							
EFH (C13 - C40)	ND	0.50	0.082	mg/l							
Surrogate: n-Octacosane	0.123			mg/l	0.200		62	40-125			
<b>LCS Analyzed: 03/28/2005 (5C26001-BS1)</b>											
EFH (C13 - C40)	0.348	0.50	0.082	mg/l	0.775		45	40-120			J
Surrogate: n-Octacosane	0.0990			mg/l	0.200		50	40-125			
<b>LCS Dup Analyzed: 03/28/2005 (5C26001-BSD1)</b>											
EFH (C13 - C40)	0.332	0.50	0.082	mg/l	0.775		43	40-120	5	25	J
Surrogate: n-Octacosane	0.0940			mg/l	0.200		47	40-125			

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**METHOD BLANK/QC DATA**

**VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26026 Extracted: 03/26/05</b>										
<b>Blank Analyzed: 03/26/2005 (5C26026-BLK1)</b>										
GRO (C4 - C12)	ND	0.10	0.050	mg/l						
Surrogate: 4-BFB (FID)	0.0103			mg/l	0.0100		103		65-140	
<b>LCS Analyzed: 03/26/2005 (5C26026-BS1)</b>										
GRO (C4 - C12)	0.742	0.10	0.050	mg/l	0.800		93		70-140	
Surrogate: 4-BFB (FID)	0.0301			mg/l	0.0300		100		65-140	
<b>Matrix Spike Analyzed: 03/26/2005 (5C26026-MS1) Source: IOC1437-01</b>										
GRO (C4 - C12)	101	20	10	mg/l	44.0	49	118		60-140	
Surrogate: 4-BFB (FID)	2.71			mg/l	2.00		136		65-140	
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C26026-MSD1) Source: IOC1437-01</b>										
GRO (C4 - C12)	100	20	10	mg/l	44.0	49	116	1	60-140	20
Surrogate: 4-BFB (FID)	2.69			mg/l	2.00		134		65-140	

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD RPD	Data Qualifiers
<b>Batch: SC27003 Extracted: 03/27/05</b>										
<b>Blank Analyzed: 03/27/2005 (SC27003-BLK1)</b>										
Benzene	ND	1.0	0.28	ug/l						
Bromodichloromethane	ND	2.0	0.30	ug/l						
Bromoform	ND	5.0	0.32	ug/l						
Bromomethane	ND	5.0	0.34	ug/l						
Carbon tetrachloride	ND	0.50	0.28	ug/l						
Chlorobenzene	ND	2.0	0.36	ug/l						
Chloroethane	ND	5.0	0.33	ug/l						
Chloroform	ND	2.0	0.33	ug/l						
Chloromethane	ND	5.0	0.30	ug/l						
Dibromochloromethane	ND	2.0	0.28	ug/l						
1,2-Dichlorobenzene	ND	2.0	0.32	ug/l						
1,3-Dichlorobenzene	ND	2.0	0.35	ug/l						
1,4-Dichlorobenzene	ND	2.0	0.37	ug/l						
1,1-Dichloroethane	ND	2.0	0.27	ug/l						
1,2-Dichloroethane	ND	0.50	0.28	ug/l						
1,1-Dichloroethene	ND	5.0	0.32	ug/l						
trans-1,2-Dichloroethene	ND	2.0	0.27	ug/l						
1,2-Dichloropropane	ND	2.0	0.35	ug/l						
cis-1,3-Dichloropropene	ND	2.0	0.22	ug/l						
trans-1,3-Dichloropropene	ND	2.0	0.24	ug/l						
Ethylbenzene	ND	2.0	0.25	ug/l						
Methylene chloride	ND	5.0	0.48	ug/l						
1,1,2,2-Tetrachloroethane	ND	2.0	0.24	ug/l						
Tetrachloroethene	ND	2.0	0.32	ug/l						
Toluene	ND	2.0	0.36	ug/l						
1,1,1-Trichloroethane	ND	2.0	0.30	ug/l						
1,1,2-Trichloroethane	ND	2.0	0.30	ug/l						
Trichloroethene	ND	2.0	0.26	ug/l						
Trichlorofluoromethane	ND	5.0	0.34	ug/l						
Vinyl chloride	ND	0.50	0.26	ug/l						
Xylenes, Total	ND	4.0	0.52	ug/l						
Trichlorotrifluoroethane (Freon 113)	ND	5.0	1.2	ug/l						
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105		80-120	
Surrogate: Toluene-d8	25.2			ug/l	25.0		101		80-120	
Surrogate: 4-Bromofluorobenzene	22.8			ug/l	25.0		91		80-120	

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>LCS Analyzed: 03/27/2005 (5C27003-BS1)</b>											
Benzene	24.0	1.0	0.28	ug/l	25.0		96	70-120			
Bromodichloromethane	23.4	2.0	0.30	ug/l	25.0		94	70-140			
Bromoform	22.6	5.0	0.32	ug/l	25.0		90	55-135			
Bromomethane	25.8	5.0	0.34	ug/l	25.0		103	60-140			
Carbon tetrachloride	24.2	0.50	0.28	ug/l	25.0		97	70-140			
Chlorobenzene	23.6	2.0	0.36	ug/l	25.0		94	80-125			
Chloroethane	24.1	5.0	0.33	ug/l	25.0		96	60-145			
Chloroform	25.1	2.0	0.33	ug/l	25.0		100	75-130			
Chloromethane	25.4	5.0	0.30	ug/l	25.0		102	40-145			
Dibromochloromethane	23.2	2.0	0.28	ug/l	25.0		93	65-145			
1,2-Dichlorobenzene	23.8	2.0	0.32	ug/l	25.0		95	80-120			
1,3-Dichlorobenzene	23.6	2.0	0.35	ug/l	25.0		94	80-120			
1,4-Dichlorobenzene	23.6	2.0	0.37	ug/l	25.0		94	80-120			
1,1-Dichloroethane	25.2	2.0	0.27	ug/l	25.0		101	70-135			
1,2-Dichloroethane	26.3	0.50	0.28	ug/l	25.0		105	60-150			
1,1-Dichloroethene	24.2	5.0	0.32	ug/l	25.0		97	75-135			
trans-1,2-Dichloroethene	24.8	2.0	0.27	ug/l	25.0		99	70-130			
1,2-Dichloropropane	24.4	2.0	0.35	ug/l	25.0		98	70-120			
cis-1,3-Dichloropropene	23.8	2.0	0.22	ug/l	25.0		95	75-130			
trans-1,3-Dichloropropene	23.5	2.0	0.24	ug/l	25.0		94	75-135			
Ethylbenzene	24.2	2.0	0.25	ug/l	25.0		97	80-120			
Methylene chloride	25.3	5.0	0.48	ug/l	25.0		101	60-135			
1,1,2,2-Tetrachloroethane	23.2	2.0	0.24	ug/l	25.0		93	60-135			
Tetrachloroethene	23.4	2.0	0.32	ug/l	25.0		94	75-125			
Toluene	23.8	2.0	0.36	ug/l	25.0		95	75-120			
1,1,1-Trichloroethane	24.6	2.0	0.30	ug/l	25.0		98	75-140			
1,1,2-Trichloroethane	23.4	2.0	0.30	ug/l	25.0		94	70-125			
Trichloroethene	23.9	2.0	0.26	ug/l	25.0		96	80-120			
Trichlorofluoromethane	25.9	5.0	0.34	ug/l	25.0		104	65-145			
Vinyl chloride	21.4	0.50	0.26	ug/l	25.0		86	50-130			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Matrix Spike Analyzed: 03/27/2005 (5C27003-MS1)</b>						<b>Source: IOC2063-01</b>					
Benzene	22.4	1.0	0.28	ug/l	25.0	ND	90	70-120			
Bromodichloromethane	22.6	2.0	0.30	ug/l	25.0	ND	90	70-140			
Bromoform	23.6	5.0	0.32	ug/l	25.0	ND	94	55-140			
Bromomethane	23.5	5.0	0.34	ug/l	25.0	ND	94	50-145			
Carbon tetrachloride	22.0	0.50	0.28	ug/l	25.0	ND	88	70-145			
Chlorobenzene	22.2	2.0	0.36	ug/l	25.0	ND	89	80-125			
Chloroethane	21.3	5.0	0.33	ug/l	25.0	ND	85	50-145			
Chloroform	23.4	2.0	0.33	ug/l	25.0	ND	94	70-135			
Chloromethane	22.6	5.0	0.30	ug/l	25.0	ND	90	35-145			
Dibromochloromethane	23.3	2.0	0.28	ug/l	25.0	ND	93	65-145			
1,2-Dichlorobenzene	22.9	2.0	0.32	ug/l	25.0	ND	92	75-130			
1,3-Dichlorobenzene	22.0	2.0	0.35	ug/l	25.0	ND	88	75-130			
1,4-Dichlorobenzene	22.4	2.0	0.37	ug/l	25.0	ND	90	80-120			
1,1-Dichloroethane	23.3	2.0	0.27	ug/l	25.0	ND	93	65-135			
1,2-Dichloroethane	25.8	0.50	0.28	ug/l	25.0	ND	103	60-150			
1,1-Dichloroethene	22.6	5.0	0.32	ug/l	25.0	ND	90	65-140			
trans-1,2-Dichloroethene	23.0	2.0	0.27	ug/l	25.0	ND	92	65-135			
1,2-Dichloropropane	23.5	2.0	0.35	ug/l	25.0	ND	94	65-130			
cis-1,3-Dichloropropene	23.2	2.0	0.22	ug/l	25.0	ND	93	70-140			
trans-1,3-Dichloropropene	23.6	2.0	0.24	ug/l	25.0	ND	94	70-140			
Ethylbenzene	21.8	2.0	0.25	ug/l	25.0	ND	87	70-130			
Methylene chloride	24.4	5.0	0.48	ug/l	25.0	ND	98	60-135			
1,1,2,2-Tetrachloroethane	25.4	2.0	0.24	ug/l	25.0	ND	102	60-145			
Tetrachloroethene	21.2	2.0	0.32	ug/l	25.0	ND	85	70-130			
Toluene	22.3	2.0	0.36	ug/l	25.0	ND	89	70-120			
1,1,1-Trichloroethane	22.1	2.0	0.30	ug/l	25.0	ND	88	75-140			
1,1,2-Trichloroethane	24.3	2.0	0.30	ug/l	25.0	ND	97	60-135			
Trichloroethene	22.2	2.0	0.26	ug/l	25.0	ND	89	70-125			
Trichlorofluoromethane	23.4	5.0	0.34	ug/l	25.0	ND	94	55-145			
Vinyl chloride	19.0	0.50	0.26	ug/l	25.0	ND	76	40-135			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			

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## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS (EPA 624)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Matrix Spike Dup Analyzed: 03/27/2005 (5C27003-MSD1)</b>						<b>Source: IOC2063-01</b>					
Benzene	23.1	1.0	0.28	ug/l	25.0	ND	92	70-120	3	20	
Bromodichloromethane	23.6	2.0	0.30	ug/l	25.0	ND	94	70-140	4	20	
Bromoform	25.2	5.0	0.32	ug/l	25.0	ND	101	55-140	7	25	
Bromomethane	23.9	5.0	0.34	ug/l	25.0	ND	96	50-145	2	25	
Carbon tetrachloride	23.0	0.50	0.28	ug/l	25.0	ND	92	70-145	4	25	
Chlorobenzene	23.0	2.0	0.36	ug/l	25.0	ND	92	80-125	4	20	
Chloroethane	22.3	5.0	0.33	ug/l	25.0	ND	89	50-145	5	25	
Chloroform	24.0	2.0	0.33	ug/l	25.0	ND	96	70-135	3	20	
Chloromethane	23.0	5.0	0.30	ug/l	25.0	ND	92	35-145	2	25	
Dibromochloromethane	24.4	2.0	0.28	ug/l	25.0	ND	98	65-145	5	25	
1,2-Dichlorobenzene	23.5	2.0	0.32	ug/l	25.0	ND	94	75-130	3	20	
1,3-Dichlorobenzene	22.7	2.0	0.35	ug/l	25.0	ND	91	75-130	3	20	
1,4-Dichlorobenzene	23.1	2.0	0.37	ug/l	25.0	ND	92	80-120	3	20	
1,1-Dichloroethane	23.9	2.0	0.27	ug/l	25.0	ND	96	65-135	3	20	
1,2-Dichloroethane	26.6	0.50	0.28	ug/l	25.0	ND	106	60-150	3	20	
1,1-Dichloroethene	23.4	5.0	0.32	ug/l	25.0	ND	94	65-140	3	20	
trans-1,2-Dichloroethene	23.7	2.0	0.27	ug/l	25.0	ND	95	65-135	3	20	
1,2-Dichloropropane	24.1	2.0	0.35	ug/l	25.0	ND	96	65-130	3	20	
cis-1,3-Dichloropropene	23.9	2.0	0.22	ug/l	25.0	ND	96	70-140	3	20	
trans-1,3-Dichloropropene	24.4	2.0	0.24	ug/l	25.0	ND	98	70-140	3	25	
Ethylbenzene	22.6	2.0	0.25	ug/l	25.0	ND	90	70-130	4	20	
Methylene chloride	25.4	5.0	0.48	ug/l	25.0	ND	102	60-135	4	20	
1,1,2,2-Tetrachloroethane	26.3	2.0	0.24	ug/l	25.0	ND	105	60-145	3	30	
Tetrachloroethene	22.2	2.0	0.32	ug/l	25.0	ND	89	70-130	5	20	
Toluene	22.9	2.0	0.36	ug/l	25.0	ND	92	70-120	3	20	
1,1,1-Trichloroethane	22.7	2.0	0.30	ug/l	25.0	ND	91	75-140	3	20	
1,1,2-Trichloroethane	24.9	2.0	0.30	ug/l	25.0	ND	100	60-135	2	25	
Trichloroethene	22.9	2.0	0.26	ug/l	25.0	ND	92	70-125	3	20	
Trichlorofluoromethane	23.9	5.0	0.34	ug/l	25.0	ND	96	55-145	2	25	
Vinyl chloride	19.2	0.50	0.26	ug/l	25.0	ND	77	40-135	1	30	
Surrogate: Dibromofluoromethane	26.7			ug/l	25.0		107	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			

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**METHOD BLANK/QC DATA**

**PURGEABLES BY GC/MS (EPA 624)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Blank Analyzed: 03/27/2005 (5C27003-BLK1)</b>											
Acrolein	ND	50	4.6	ug/l							
Acrylonitrile	ND	50	5.1	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	1.3	ug/l							
Surrogate: Dibromofluoromethane	26.2			ug/l	25.0		105	80-120			
Surrogate: Toluene-d8	25.2			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	22.8			ug/l	25.0		91	80-120			
<b>LCS Analyzed: 03/27/2005 (5C27003-BS1)</b>											
2-Chloroethyl vinyl ether	24.8	5.0	1.3	ug/l	25.0		99	20-175			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.3			ug/l	25.0		101	80-120			
Surrogate: 4-Bromofluorobenzene	24.8			ug/l	25.0		99	80-120			
<b>Matrix Spike Analyzed: 03/27/2005 (5C27003-MS1) Source: IOC2063-01</b>											
2-Chloroethyl vinyl ether	26.6	5.0	1.3	ug/l	25.0	ND	106	20-175			
Surrogate: Dibromofluoromethane	26.6			ug/l	25.0		106	80-120			
Surrogate: Toluene-d8	25.1			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.2			ug/l	25.0		97	80-120			
<b>Matrix Spike Dup Analyzed: 03/27/2005 (5C27003-MSD1) Source: IOC2063-01</b>											
2-Chloroethyl vinyl ether	27.1	5.0	1.3	ug/l	25.0	ND	108	20-175	2	25	
Surrogate: Dibromofluoromethane	26.7			ug/l	25.0		107	80-120			
Surrogate: Toluene-d8	25.0			ug/l	25.0		100	80-120			
Surrogate: 4-Bromofluorobenzene	24.5			ug/l	25.0		98	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD	Data Qualifiers
<b>Batch: 5C27003 Extracted: 03/27/05</b>											
<b>Blank Analyzed: 03/27/2005 (5C27003-BLK1)</b>											
Cyclohexane	ND	2.5	N/A	ug/l							
1,2-Dichloro-1,1,2-trifluoroethane	ND	2.5	N/A	ug/l							

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Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>											
Acenaphthene	ND	0.50	0.10	ug/l							
Acenaphthylene	ND	0.50	0.10	ug/l							
Aniline	ND	10	2.9	ug/l							
Anthracene	ND	0.50	0.083	ug/l							
Benzidine	ND	5.0	2.4	ug/l							
Benzoic acid	ND	20	3.7	ug/l							
Benzo(a)anthracene	ND	5.0	0.038	ug/l							
Benzo(a)pyrene	ND	2.0	0.14	ug/l							
Benzo(b)fluoranthene	ND	2.0	0.050	ug/l							
Benzo(g,h,i)perylene	ND	5.0	0.059	ug/l							
Benzo(k)fluoranthene	ND	0.50	0.053	ug/l							
Benzyl alcohol	ND	5.0	0.21	ug/l							
Bis(2-chloroethoxy)methane	ND	0.50	0.072	ug/l							
Bis(2-chloroethyl)ether	ND	0.50	0.084	ug/l							
Bis(2-chloroisopropyl)ether	ND	0.50	0.11	ug/l							
Bis(2-ethylhexyl)phthalate	ND	5.0	1.1	ug/l							
4-Bromophenyl phenyl ether	ND	1.0	0.12	ug/l							
Butyl benzyl phthalate	0.760	5.0	0.34	ug/l							J
4-Chloroaniline	ND	2.0	0.20	ug/l							
2-Chloronaphthalene	ND	0.50	0.059	ug/l							
4-Chloro-3-methylphenol	ND	2.0	0.34	ug/l							
4-Chlorophenyl phenyl ether	ND	0.50	0.056	ug/l							
2-Chlorophenol	ND	1.0	0.12	ug/l							
Chrysene	ND	0.50	0.072	ug/l							
Dibenz(a,h)anthracene	ND	0.50	0.083	ug/l							
Dibenzofuran	ND	0.50	0.075	ug/l							
Di-n-butyl phthalate	0.300	2.0	0.26	ug/l							J
1,2-Dichlorobenzene	ND	0.50	0.11	ug/l							
1,3-Dichlorobenzene	ND	0.50	0.13	ug/l							
1,4-Dichlorobenzene	ND	0.50	0.050	ug/l							
3,3-Dichlorobenzidine	ND	5.0	0.93	ug/l							
2,4-Dichlorophenol	ND	2.0	0.21	ug/l							
Diethyl phthalate	0.220	1.0	0.12	ug/l							J
2,4-Dimethylphenol	ND	2.0	0.31	ug/l							
Dimethyl phthalate	ND	0.50	0.081	ug/l							

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**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>											
4,6-Dinitro-2-methylphenol	ND	5.0	0.38	ug/l							
2,4-Dinitrophenol	ND	5.0	2.7	ug/l							N-1
2,4-Dinitrotoluene	ND	5.0	0.23	ug/l							
2,6-Dinitrotoluene	ND	5.0	0.24	ug/l							
Di-n-octyl phthalate	ND	5.0	0.17	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	1.0	0.087	ug/l							
Fluoranthene	ND	0.50	0.089	ug/l							
Fluorene	ND	0.50	0.075	ug/l							
Hexachlorobenzene	ND	1.0	0.13	ug/l							
Hexachlorobutadiene	ND	2.0	0.38	ug/l							
Hexachlorocyclopentadiene	ND	5.0	1.8	ug/l							
Hexachloroethane	ND	3.0	0.51	ug/l							
Indeno(1,2,3-cd)pyrene	ND	2.0	0.19	ug/l							
Isophorone	ND	1.0	0.059	ug/l							
2-Methylnaphthalene	ND	1.0	0.13	ug/l							
2-Methylphenol	ND	2.0	0.28	ug/l							
4-Methylphenol	ND	5.0	0.20	ug/l							
Naphthalene	ND	1.0	0.13	ug/l							
2-Nitroaniline	ND	5.0	0.18	ug/l							
3-Nitroaniline	ND	5.0	0.35	ug/l							
4-Nitroaniline	ND	5.0	0.49	ug/l							
Nitrobenzene	ND	1.0	0.10	ug/l							
2-Nitrophenol	ND	2.0	0.23	ug/l							
4-Nitrophenol	ND	5.0	0.73	ug/l							
N-Nitrosodimethylamine	ND	2.0	0.22	ug/l							
N-Nitroso-di-n-propylamine	ND	2.0	0.18	ug/l							
N-Nitrosodiphenylamine	ND	1.0	0.077	ug/l							
Pentachlorophenol	ND	2.0	0.78	ug/l							
Phenanthrene	ND	0.50	0.071	ug/l							
Phenol	ND	1.0	0.14	ug/l							
Pyrene	ND	0.50	0.059	ug/l							
1,2,4-Trichlorobenzene	ND	1.0	0.10	ug/l							
2,4,5-Trichlorophenol	ND	2.0	0.075	ug/l							
2,4,6-Trichlorophenol	ND	1.0	0.10	ug/l							
Surrogate: 2-Fluorophenol	13.6			ug/l	20.0		68	30-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/31/2005 (5C28041-BLK1)</b>										
Surrogate: Phenol-d6	13.7			ug/l	20.0		68		35-120	
Surrogate: 2,4,6-Tribromophenol	16.5			ug/l	20.0		82		45-120	
Surrogate: Nitrobenzene-d5	6.94			ug/l	10.0		69		45-120	
Surrogate: 2-Fluorobiphenyl	7.28			ug/l	10.0		73		45-120	
Surrogate: Terphenyl-d14	8.40			ug/l	10.0		84		45-120	
<b>Blank Analyzed: 04/11/2005 (5C28041-BLK2)</b>										
2,4-Dinitrophenol	ND	5.0	2.7	ug/l						
Surrogate: 2-Fluorobiphenyl	12.9			ug/l	20.0		64		30-120	
Surrogate: Phenol-d6	13.6			ug/l	20.0		68		35-120	
Surrogate: 2,4,6-Tribromophenol	17.1			ug/l	20.0		86		45-120	
Surrogate: Nitrobenzene-d5	6.98			ug/l	10.0		70		45-120	
Surrogate: 2-Fluorobiphenyl	7.68			ug/l	10.0		77		45-120	
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81		45-120	
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>										
Acenaphthene	8.28	0.50	0.10	ug/l	10.0		83		55-120	
Acenaphthylene	8.44	0.50	0.10	ug/l	10.0		84		55-120	
Aniline	7.32	10	2.9	ug/l	10.0		73		35-120	J
Anthracene	8.48	0.50	0.083	ug/l	10.0		85		55-120	
Benzidine	ND	5.0	2.4	ug/l	10.0				20-160	L2
Benzoic acid	6.74	20	3.7	ug/l	10.0		67		35-120	J
Benzo(a)anthracene	9.52	5.0	0.038	ug/l	10.0		95		60-120	
Benzo(a)pyrene	8.70	2.0	0.14	ug/l	10.0		87		55-120	
Benzo(b)fluoranthene	9.32	2.0	0.050	ug/l	10.0		93		50-120	
Benzo(g,h,i)perylene	8.16	5.0	0.059	ug/l	10.0		82		40-125	
Benzo(k)fluoranthene	9.24	0.50	0.053	ug/l	10.0		92		50-120	
Benzyl alcohol	7.62	5.0	0.21	ug/l	10.0		76		45-120	
Bis(2-chloroethoxy)methane	7.98	0.50	0.072	ug/l	10.0		80		55-120	
Bis(2-chloroethyl)ether	6.98	0.50	0.084	ug/l	10.0		70		50-120	
Bis(2-chloroisopropyl)ether	7.26	0.50	0.11	ug/l	10.0		73		45-120	
Bis(2-ethylhexyl)phthalate	9.16	5.0	1.1	ug/l	10.0		92		60-130	
4-Bromophenyl phenyl ether	8.10	1.0	0.12	ug/l	10.0		81		50-120	
Butyl benzyl phthalate	9.66	5.0	0.34	ug/l	10.0		97		55-125	
4-Chloroaniline	6.60	2.0	0.20	ug/l	10.0		66		50-120	
2-Chloronaphthalene	8.52	0.50	0.059	ug/l	10.0		85		55-120	

M-NR1

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**METHOD BLANK/QC DATA**

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>											
4-Chloro-3-methylphenol	7.18	2.0	0.34	ug/l	10.0		72	60-120			M-NR1
4-Chlorophenyl phenyl ether	8.88	0.50	0.056	ug/l	10.0		89	55-120			
2-Chlorophenol	7.12	1.0	0.12	ug/l	10.0		71	45-120			
Chrysene	9.14	0.50	0.072	ug/l	10.0		91	60-120			
Dibenz(a,h)anthracene	7.06	0.50	0.083	ug/l	10.0		71	45-130			
Dibenzofuran	8.18	0.50	0.075	ug/l	10.0		82	60-120			
Di-n-butyl phthalate	9.02	2.0	0.26	ug/l	10.0		90	55-125			
1,2-Dichlorobenzene	6.26	0.50	0.11	ug/l	10.0		63	35-120			
1,3-Dichlorobenzene	6.26	0.50	0.13	ug/l	10.0		63	35-120			
1,4-Dichlorobenzene	6.18	0.50	0.050	ug/l	10.0		62	35-120			
3,3-Dichlorobenzidine	6.98	5.0	0.93	ug/l	10.0		70	45-130			
2,4-Dichlorophenol	7.68	2.0	0.21	ug/l	10.0		77	55-120			
Diethyl phthalate	8.18	1.0	0.12	ug/l	10.0		82	55-120			
2,4-Dimethylphenol	5.28	2.0	0.31	ug/l	10.0		53	30-120			
Dimethyl phthalate	8.76	0.50	0.081	ug/l	10.0		88	60-120			
4,6-Dinitro-2-methylphenol	9.40	5.0	0.38	ug/l	10.0		94	50-120			
2,4-Dinitrophenol	8.70	5.0	2.7	ug/l	10.0		87	40-120			N-I
2,4-Dinitrotoluene	8.00	5.0	0.23	ug/l	10.0		80	60-120			
2,6-Dinitrotoluene	8.28	5.0	0.24	ug/l	10.0		83	60-120			
Di-n-octyl phthalate	9.46	5.0	0.17	ug/l	10.0		95	60-130			
1,2-Diphenylhydrazine/Azobenzene	8.78	1.0	0.087	ug/l	10.0		88	60-120			
Fluoranthene	9.26	0.50	0.089	ug/l	10.0		93	55-120			
Fluorene	9.18	0.50	0.075	ug/l	10.0		92	60-120			
Hexachlorobenzene	8.42	1.0	0.13	ug/l	10.0		84	50-120			
Hexachlorobutadiene	6.40	2.0	0.38	ug/l	10.0		64	40-120			
Hexachlorocyclopentadiene	7.30	5.0	1.8	ug/l	10.0		73	15-120			
Hexachloroethane	6.26	3.0	0.51	ug/l	10.0		63	35-120			
Indeno(1,2,3-cd)pyrene	7.72	2.0	0.19	ug/l	10.0		77	40-130			
Isophorone	7.42	1.0	0.059	ug/l	10.0		74	50-120			
2-Methylnaphthalene	7.88	1.0	0.13	ug/l	10.0		79	50-120			
2-Methylphenol	6.98	2.0	0.28	ug/l	10.0		70	45-120			
4-Methylphenol	7.12	5.0	0.20	ug/l	10.0		71	45-120			
Naphthalene	7.36	1.0	0.13	ug/l	10.0		74	50-120			
2-Nitroaniline	8.62	5.0	0.18	ug/l	10.0		86	60-120			
3-Nitroaniline	7.82	5.0	0.35	ug/l	10.0		78	55-120			

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 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Analyzed: 03/31/2005 (5C28041-BS1)</b>											
4-Nitroaniline	8.16	5.0	0.49	ug/l	10.0		82	50-125			M-NR1
Nitrobenzene	6.90	1.0	0.10	ug/l	10.0		69	50-120			
2-Nitrophenol	7.58	2.0	0.23	ug/l	10.0		76	55-120			
4-Nitrophenol	7.60	5.0	0.73	ug/l	10.0		76	45-120			
N-Nitrosodimethylamine	7.40	2.0	0.22	ug/l	10.0		74	40-120			
N-Nitroso-di-n-propylamine	7.22	2.0	0.18	ug/l	10.0		72	45-120			
N-Nitrosodiphenylamine	7.98	1.0	0.077	ug/l	10.0		80	55-120			
Pentachlorophenol	8.86	2.0	0.78	ug/l	10.0		89	50-120			
Phenanthrene	8.56	0.50	0.071	ug/l	10.0		86	55-120			
Phenol	8.12	1.0	0.14	ug/l	10.0		81	45-120			
Pyrene	9.44	0.50	0.059	ug/l	10.0		94	50-120			
1,2,4-Trichlorobenzene	6.52	1.0	0.10	ug/l	10.0		65	45-120			
2,4,5-Trichlorophenol	8.30	2.0	0.075	ug/l	10.0		83	60-120			
2,4,6-Trichlorophenol	8.76	1.0	0.10	ug/l	10.0		88	60-120			
Surrogate: 2-Fluorophenol	13.3			ug/l	20.0		66	30-120			
Surrogate: Phenol-d6	13.1			ug/l	20.0		66	35-120			
Surrogate: 2,4,6-Tribromophenol	16.0			ug/l	20.0		80	45-120			
Surrogate: Nitrobenzene-d5	6.70			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.58			ug/l	10.0		76	45-120			
Surrogate: Terphenyl-d14	8.10			ug/l	10.0		81	45-120			
<b>LCS Analyzed: 04/11/2005 (5C28041-BS2)</b>											
2,4-Dinitrophenol	8.72	5.0	2.7	ug/l	10.0		87	40-120			
Surrogate: 2-Fluorophenol	13.0			ug/l	20.0		65	30-120			
Surrogate: Phenol-d6	13.4			ug/l	20.0		67	35-120			
Surrogate: 2,4,6-Tribromophenol	16.7			ug/l	20.0		84	45-120			
Surrogate: Nitrobenzene-d5	6.72			ug/l	10.0		67	45-120			
Surrogate: 2-Fluorobiphenyl	7.14			ug/l	10.0		71	45-120			
Surrogate: Terphenyl-d14	7.92			ug/l	10.0		79	45-120			

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 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
Acenaphthene	8.72	0.50	0.10	ug/l	10.0	87	55-120	5	20		
Acenaphthylene	8.94	0.50	0.10	ug/l	10.0	89	55-120	6	20		
Aniline	7.42	10	2.9	ug/l	10.0	74	35-120	1	25		J
Anthracene	9.00	0.50	0.083	ug/l	10.0	90	55-120	6	20		
Benzidine	ND	5.0	2.4	ug/l	10.0		20-160		35		L2
Benzoic acid	7.72	20	3.7	ug/l	10.0	77	35-120	14	30		J
Benzo(a)anthracene	10.0	5.0	0.038	ug/l	10.0	100	60-120	5	20		
Benzo(a)pyrene	9.12	2.0	0.14	ug/l	10.0	91	55-120	5	25		
Benzo(b)fluoranthene	9.82	2.0	0.050	ug/l	10.0	98	50-120	5	25		
Benzo(g,h,i)perylene	8.40	5.0	0.059	ug/l	10.0	84	40-125	3	25		
Benzo(k)fluoranthene	9.86	0.50	0.053	ug/l	10.0	99	50-120	6	20		
Benzyl alcohol	8.10	5.0	0.21	ug/l	10.0	81	45-120	6	20		
Bis(2-chloroethoxy)methane	8.56	0.50	0.072	ug/l	10.0	86	55-120	7	20		
Bis(2-chloroethyl)ether	7.40	0.50	0.084	ug/l	10.0	74	50-120	6	20		
Bis(2-chloroisopropyl)ether	7.66	0.50	0.11	ug/l	10.0	77	45-120	5	20		
Bis(2-ethylhexyl)phthalate	9.30	5.0	1.1	ug/l	10.0	93	60-130	2	20		
4-Bromophenyl phenyl ether	8.54	1.0	0.12	ug/l	10.0	85	50-120	5	25		
Buryl benzyl phthalate	9.60	5.0	0.34	ug/l	10.0	96	55-125	1	20		
4-Chloroaniline	7.20	2.0	0.20	ug/l	10.0	72	50-120	9	25		
2-Chloronaphthalene	8.94	0.50	0.059	ug/l	10.0	89	55-120	5	20		
4-Chloro-3-methylphenol	7.48	2.0	0.34	ug/l	10.0	75	60-120	4	25		
4-Chlorophenyl phenyl ether	9.62	0.50	0.056	ug/l	10.0	96	55-120	8	20		
2-Chlorophenol	7.62	1.0	0.12	ug/l	10.0	76	45-120	7	25		
Chrysene	9.44	0.50	0.072	ug/l	10.0	94	60-120	3	20		
Dibenz(a,h)anthracene	8.20	0.50	0.083	ug/l	10.0	82	45-130	15	25		
Dibenzofuran	8.70	0.50	0.075	ug/l	10.0	87	60-120	6	20		
Di-n-butyl phthalate	9.38	2.0	0.26	ug/l	10.0	94	55-125	4	20		
1,2-Dichlorobenzene	6.86	0.50	0.11	ug/l	10.0	69	35-120	9	25		
1,3-Dichlorobenzene	6.68	0.50	0.13	ug/l	10.0	67	35-120	6	25		
1,4-Dichlorobenzene	6.62	0.50	0.050	ug/l	10.0	66	35-120	7	25		
3,3-Dichlorobenzidine	8.16	5.0	0.93	ug/l	10.0	82	45-130	16	25		
2,4-Dichlorophenol	7.94	2.0	0.21	ug/l	10.0	79	55-120	3	20		
Diethyl phthalate	8.76	1.0	0.12	ug/l	10.0	88	55-120	7	20		
2,4-Dimethylphenol	5.42	2.0	0.31	ug/l	10.0	54	30-120	3	25		
Dimethyl phthalate	9.26	0.50	0.081	ug/l	10.0	93	60-120	6	20		

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	Data Limit	Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
4,6-Dinitro-2-methylphenol	9.54	5.0	0.38	ug/l	10.0		95	50-120	1	25	
2,4-Dinitrophenol	8.94	5.0	2.7	ug/l	10.0		89	40-120	3	25	N-1
2,4-Dinitrotoluene	8.46	5.0	0.23	ug/l	10.0		85	60-120	6	20	
2,6-Dinitrotoluene	8.62	5.0	0.24	ug/l	10.0		86	60-120	4	20	
Di-n-octyl phthalate	10.0	5.0	0.17	ug/l	10.0		100	60-130	6	20	
1,2-Diphenylhydrazine/Azobenzene	9.68	1.0	0.087	ug/l	10.0		97	60-120	10	25	
Fluoranthene	9.68	0.50	0.089	ug/l	10.0		97	55-120	4	20	
Fluorene	9.80	0.50	0.075	ug/l	10.0		98	60-120	7	20	
Hexachlorobenzene	8.88	1.0	0.13	ug/l	10.0		89	50-120	5	20	
Hexachlorobutadiene	6.94	2.0	0.38	ug/l	10.0		69	40-120	8	25	
Hexachlorocyclopentadiene	8.62	5.0	1.8	ug/l	10.0		86	15-120	17	30	
Hexachloroethane	6.78	3.0	0.51	ug/l	10.0		68	35-120	8	25	
Indeno(1,2,3-cd)pyrene	8.56	2.0	0.19	ug/l	10.0		86	40-130	10	25	
Isophorone	7.52	1.0	0.059	ug/l	10.0		75	50-120	1	20	
2-Methylnaphthalene	8.46	1.0	0.13	ug/l	10.0		85	50-120	7	20	
2-Methylphenol	7.30	2.0	0.28	ug/l	10.0		73	45-120	4	20	
4-Methylphenol	7.48	5.0	0.20	ug/l	10.0		75	45-120	5	20	
Naphthalene	7.94	1.0	0.13	ug/l	10.0		79	50-120	8	20	
2-Nitroaniline	9.28	5.0	0.18	ug/l	10.0		93	60-120	7	20	
3-Nitroaniline	8.46	5.0	0.35	ug/l	10.0		85	55-120	8	25	
4-Nitroaniline	8.60	5.0	0.49	ug/l	10.0		86	50-125	5	20	
Nitrobenzene	7.28	1.0	0.10	ug/l	10.0		73	50-120	5	25	
2-Nitrophenol	7.92	2.0	0.23	ug/l	10.0		79	55-120	4	25	
4-Nitrophenol	8.70	5.0	0.73	ug/l	10.0		87	45-120	13	25	
N-Nitrosodimethylamine	7.56	2.0	0.22	ug/l	10.0		76	40-120	2	20	
N-Nitroso-di-n-propylamine	7.68	2.0	0.18	ug/l	10.0		77	45-120	6	20	
N-Nitrosodiphenylamine	8.36	1.0	0.077	ug/l	10.0		84	55-120	5	20	
Pentachlorophenol	9.04	2.0	0.78	ug/l	10.0		90	50-120	2	25	
Phenanthrene	9.06	0.50	0.071	ug/l	10.0		91	55-120	6	20	
Phenol	8.62	1.0	0.14	ug/l	10.0		86	45-120	6	25	
Pyrene	9.74	0.50	0.059	ug/l	10.0		97	50-120	3	25	
1,2,4-Trichlorobenzene	7.02	1.0	0.10	ug/l	10.0		70	45-120	7	20	
2,4,5-Trichlorophenol	8.36	2.0	0.075	ug/l	10.0		84	60-120	1	20	
2,4,6-Trichlorophenol	9.06	1.0	0.10	ug/l	10.0		91	60-120	3	20	
Surrogate: 2-Fluorophenol	13.5			ug/l	20.0		68	30-120			

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MWH-Pasadena/Boeing  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28041 Extracted: 03/28/05</b>											
<b>LCS Dup Analyzed: 03/31/2005 (5C28041-BSD1)</b>											
Surrogate: Phenol-d6	13.7			ug/l	20.0		68	35-120			
Surrogate: 2,4,6-Tribromophenol	16.7			ug/l	20.0		84	45-120			
Surrogate: Nitrobenzene-d5	7.00			ug/l	10.0		70	45-120			
Surrogate: 2-Fluorobiphenyl	7.96			ug/l	10.0		80	45-120			
Surrogate: Terphenyl-d14	8.22			ug/l	10.0		82	45-120			
<b>LCS Dup Analyzed: 04/11/2005 (5C28041-BSD2)</b>											
2,4-Dinitrophenol	8.86	5.0	2.7	ug/l	10.0		89	40-120	2	25	
Surrogate: 2-Fluorophenol	13.2			ug/l	20.0		66	30-120			
Surrogate: Phenol-d6	14.3			ug/l	20.0		72	35-120			
Surrogate: 2,4,6-Tribromophenol	17.2			ug/l	20.0		86	45-120			
Surrogate: Nitrobenzene-d5	7.02			ug/l	10.0		70	45-120			
Surrogate: 2-Fluorobiphenyl	7.52			ug/l	10.0		75	45-120			
Surrogate: Terphenyl-d14	7.66			ug/l	10.0		77	45-120			

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 Report Number: IOC2064

Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28048 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/29/2005-03/30/2005 (5C28048-BLK1)</b>										
Aldrin	ND	0.10	0.030	ug/l						
alpha-BHC	ND	0.10	0.015	ug/l						
beta-BHC	ND	0.10	0.015	ug/l						
delta-BHC	ND	0.20	0.020	ug/l						
gamma-BHC (Lindane)	ND	0.10	0.020	ug/l						
Chlordane	ND	1.0	0.20	ug/l						
4,4'-DDD	ND	0.10	0.020	ug/l						
4,4'-DDE	ND	0.10	0.025	ug/l						
4,4'-DDT	ND	0.10	0.030	ug/l						
Dieldrin	ND	0.10	0.015	ug/l						
Endosulfan I	ND	0.10	0.015	ug/l						
Endosulfan II	ND	0.10	0.040	ug/l						
Endosulfan sulfate	ND	0.20	0.015	ug/l						
Endrin	ND	0.10	0.020	ug/l						
Endrin aldehyde	ND	0.10	0.045	ug/l						
Endrin ketone	ND	0.10	0.020	ug/l						
Heptachlor	ND	0.10	0.030	ug/l						
Heptachlor epoxide	ND	0.10	0.020	ug/l						
Methoxychlor	ND	0.10	0.035	ug/l						
Toxaphene	ND	5.0	1.5	ug/l						
Surrogate: Tetrachloro-m-xylene	0.350			ug/l	0.500		70	35-115		
Surrogate: Decachlorobiphenyl	0.383			ug/l	0.500		77	45-120		

### LCS Analyzed: 03/29/2005 (5C28048-BS1)

Aldrin	0.347	0.10	0.030	ug/l	0.500		69	40-115		
alpha-BHC	0.372	0.10	0.015	ug/l	0.500		74	45-115		
beta-BHC	0.377	0.10	0.015	ug/l	0.500		75	50-115		
delta-BHC	0.382	0.20	0.020	ug/l	0.500		76	55-120		
gamma-BHC (Lindane)	0.373	0.10	0.020	ug/l	0.500		75	45-115		
4,4'-DDD	0.420	0.10	0.020	ug/l	0.500		84	60-120		
4,4'-DDE	0.417	0.10	0.025	ug/l	0.500		83	55-120		
4,4'-DDT	0.437	0.10	0.030	ug/l	0.500		87	60-120		
Dieldrin	0.405	0.10	0.015	ug/l	0.500		81	55-120		
Endosulfan I	0.388	0.10	0.015	ug/l	0.500		78	50-115		
Endosulfan II	0.396	0.10	0.040	ug/l	0.500		79	60-125		
Endosulfan sulfate	0.396	0.20	0.015	ug/l	0.500		79	60-120		

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Sampled: 03/25/05  
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## METHOD BLANK/QC DATA

### ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28048 Extracted: 03/28/05</b>											
<b>LCS Analyzed: 03/29/2005 (5C28048-BS1)</b>											
Endrin	0.420	0.10	0.020	ug/l	0.500		84	55-125			
Endrin aldehyde	0.382	0.10	0.045	ug/l	0.500		76	55-115			
Endrin ketone	0.402	0.10	0.020	ug/l	0.500		80	60-115			
Heptachlor	0.371	0.10	0.030	ug/l	0.500		74	45-115			
Heptachlor epoxide	0.388	0.10	0.020	ug/l	0.500		78	50-115			
Methoxychlor	0.399	0.10	0.035	ug/l	0.500		80	60-120			
Surrogate: Tetrachloro-m-xylene	0.337			ug/l	0.500		67	35-115			
Surrogate: Decachlorobiphenyl	0.372			ug/l	0.500		74	45-120			
<b>LCS Dup Analyzed: 03/29/2005 (5C28048-BSD1)</b>											
Aldrin	0.291	0.10	0.030	ug/l	0.500		58	40-115	18	30	
alpha-BHC	0.322	0.10	0.015	ug/l	0.500		64	45-115	14	30	
beta-BHC	0.345	0.10	0.015	ug/l	0.500		69	50-115	9	30	
delta-BHC	0.352	0.20	0.020	ug/l	0.500		70	55-120	8	30	
gamma-BHC (Lindane)	0.328	0.10	0.020	ug/l	0.500		66	45-115	13	30	
4,4'-DDD	0.397	0.10	0.020	ug/l	0.500		79	60-120	6	30	
4,4'-DDE	0.378	0.10	0.025	ug/l	0.500		76	55-120	10	30	
4,4'-DDT	0.531	0.10	0.030	ug/l	0.500		106	60-120	19	30	
Dieldrin	0.368	0.10	0.015	ug/l	0.500		74	55-120	10	30	
Endosulfan I	0.351	0.10	0.015	ug/l	0.500		70	50-115	10	30	
Endosulfan II	0.368	0.10	0.040	ug/l	0.500		74	60-125	7	30	
Endosulfan sulfate	0.373	0.20	0.015	ug/l	0.500		75	60-120	6	30	
Endrin	0.383	0.10	0.020	ug/l	0.500		77	55-125	9	30	
Endrin aldehyde	0.369	0.10	0.045	ug/l	0.500		74	55-115	3	30	
Endrin ketone	0.377	0.10	0.020	ug/l	0.500		75	60-115	6	30	
Heptachlor	0.320	0.10	0.030	ug/l	0.500		64	45-115	15	30	
Heptachlor epoxide	0.349	0.10	0.020	ug/l	0.500		70	50-115	11	30	
Methoxychlor	0.375	0.10	0.035	ug/l	0.500		75	60-120	6	30	
Surrogate: Tetrachloro-m-xylene	0.289			ug/l	0.500		58	35-115			
Surrogate: Decachlorobiphenyl	0.344			ug/l	0.500		69	45-120			

M-NR1

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### TOTAL PCBS (EPA 608)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28048 Extracted: 03/28/05</b>										
<b>Blank Analyzed: 03/29/2005-03/30/2005 (5C28048-BLK1)</b>										
Aroclor 1016	ND	1.0	0.20	ug/l						
Aroclor 1221	ND	1.0	0.10	ug/l						
Aroclor 1232	ND	1.0	0.15	ug/l						
Aroclor 1242	ND	1.0	0.15	ug/l						
Aroclor 1248	ND	1.0	0.25	ug/l						
Aroclor 1254	ND	1.0	0.25	ug/l						
Aroclor 1260	ND	1.0	0.40	ug/l						
Surrogate: Decachlorobiphenyl	0.407			ug/l	0.500		81 45-120			
<b>LCS Analyzed: 03/31/2005 (5C28048-BS2)</b>										
Aroclor 1016	6.06	2.0	0.40	ug/l	8.00		76 50-115			
Aroclor 1260	5.96	2.0	0.80	ug/l	8.00		74 55-115			
Surrogate: Decachlorobiphenyl	0.769			ug/l	1.00		77 45-120			
<b>LCS Dup Analyzed: 03/30/2005 (5C28048-BSD2)</b>										
Aroclor 1016	3.08	1.0	0.20	ug/l	4.00		77 50-115	65	30	R-7
Aroclor 1260	3.30	1.0	0.40	ug/l	4.00		82 55-115	57	25	R-7
Surrogate: Decachlorobiphenyl	0.431			ug/l	0.500		86 45-120			

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 Report Number: IOC2064

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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25111 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C25111-BLK1)</b>											
Boron	ND	0.050	0.0074	mg/l							
<b>LCS Analyzed: 03/26/2005 (5C25111-BS1)</b>											
Boron	0.450	0.050	0.0074	mg/l	0.500		90	85-115			
<b>Matrix Spike Analyzed: 03/26/2005 (5C25111-MS1)</b>											
						<b>Source: IOC1861-01</b>					
Boron	0.612	0.050	0.0074	mg/l	0.500	0.13	96	70-130			
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C25111-MSD1)</b>											
						<b>Source: IOC1861-01</b>					
Boron	0.642	0.050	0.0074	mg/l	0.500	0.13	102	70-130	5	20	
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C25116-BLK1)</b>											
Antimony	ND	2.0	0.18	ug/l							
Arsenic	ND	1.0	0.49	ug/l							
Barium	ND	0.0010	0.00014	mg/l							
Beryllium	ND	0.50	0.037	ug/l							
Cadmium	ND	1.0	0.015	ug/l							
Chromium	0.507	2.0	0.26	ug/l							J
Cobalt	ND	1.0	0.10	ug/l							
Copper	ND	2.0	0.49	ug/l							
Iron	0.00735	0.010	0.0032	mg/l							J
Lead	ND	1.0	0.13	ug/l							
Manganese	ND	1.0	0.44	ug/l							
Nickel	ND	2.0	0.15	ug/l							
Selenium	ND	2.0	0.36	ug/l							
Silver	ND	1.0	0.089	ug/l							
Thallium	ND	1.0	0.075	ug/l							
Vanadium	ND	2.0	0.86	ug/l							
Zinc	ND	20	3.1	ug/l							

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>LCS Analyzed: 03/28/2005 (5C25116-BS1)</b>											
Antimony	80.9	2.0	0.18	ug/l	80.0		101	85-115			
Arsenic	84.0	1.0	0.49	ug/l	80.0		105	85-115			
Barium	0.0810	0.0010	0.00014	mg/l	0.0800		101	85-115			
Beryllium	82.8	0.50	0.037	ug/l	80.0		104	85-115			
Cadmium	78.6	1.0	0.015	ug/l	80.0		98	85-115			
Chromium	79.4	2.0	0.26	ug/l	80.0		99	85-115			
Cobalt	78.3	1.0	0.10	ug/l	80.0		98	85-115			
Copper	75.2	2.0	0.49	ug/l	80.0		94	85-115			
Iron	0.796	0.010	0.0032	mg/l	0.800		100	85-115			
Lead	88.6	1.0	0.13	ug/l	80.0		111	85-115			
Manganese	80.3	1.0	0.44	ug/l	80.0		100	85-115			
Nickel	78.1	2.0	0.15	ug/l	80.0		98	85-115			
Selenium	80.6	2.0	0.36	ug/l	80.0		101	85-115			
Silver	87.8	1.0	0.089	ug/l	80.0		110	85-115			
Thallium	79.3	1.0	0.075	ug/l	80.0		99	85-115			
Vanadium	79.1	2.0	0.86	ug/l	80.0		99	85-115			
Zinc	75.9	20	3.1	ug/l	80.0		95	85-115			

					Source: IOC2062-01						
Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Antimony	83.2	2.0	0.18	ug/l	80.0	0.29	104	70-130			
Arsenic	85.1	1.0	0.49	ug/l	80.0	1.2	105	70-130			
Barium	0.121	0.0010	0.00014	mg/l	0.0800	0.036	106	70-130			
Beryllium	85.1	0.50	0.037	ug/l	80.0	ND	106	70-130			
Cadmium	79.5	1.0	0.015	ug/l	80.0	0.072	99	70-130			
Chromium	81.2	2.0	0.26	ug/l	80.0	2.2	99	70-130			
Cobalt	79.4	1.0	0.10	ug/l	80.0	0.58	99	70-130			
Copper	77.2	2.0	0.49	ug/l	80.0	3.0	93	70-130			
Iron	1.44	0.010	0.0032	mg/l	0.800	0.67	96	70-130			
Lead	86.8	1.0	0.13	ug/l	80.0	0.55	108	70-130			
Manganese	208	1.0	0.44	ug/l	80.0	100	135	70-130			MI
Nickel	79.1	2.0	0.15	ug/l	80.0	2.8	95	70-130			
Selenium	80.4	2.0	0.36	ug/l	80.0	ND	100	70-130			
Silver	85.1	1.0	0.089	ug/l	80.0	0.10	106	70-130			
Thallium	81.9	1.0	0.075	ug/l	80.0	0.15	102	70-130			
Vanadium	81.3	2.0	0.86	ug/l	80.0	1.5	100	70-130			
Zinc	84.8	20	3.1	ug/l	80.0	14	88	70-130			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25116 Extracted: 03/25/05</b>											
<b>Matrix Spike Dup Analyzed: 03/28/2005 (5C25116-MSD1)</b>						<b>Source: IOC2062-01</b>					
Antimony	81.5	2.0	0.18	ug/l	80.0	0.29	102	70-130	2	20	
Arsenic	84.9	1.0	0.49	ug/l	80.0	1.2	105	70-130	0	20	
Barium	0.119	0.0010	0.00014	mg/l	0.0800	0.036	104	70-130	2	20	
Beryllium	81.9	0.50	0.037	ug/l	80.0	ND	102	70-130	4	20	
Cadmium	78.0	1.0	0.015	ug/l	80.0	0.072	97	70-130	2	20	
Chromium	79.8	2.0	0.26	ug/l	80.0	2.2	97	70-130	2	20	
Cobalt	78.3	1.0	0.10	ug/l	80.0	0.58	97	70-130	1	20	
Copper	75.6	2.0	0.49	ug/l	80.0	3.0	91	70-130	2	20	
Iron	1.40	0.010	0.0032	mg/l	0.800	0.67	91	70-130	3	20	
Lead	87.0	1.0	0.13	ug/l	80.0	0.55	108	70-130	0	20	
Manganese	203	1.0	0.44	ug/l	80.0	100	129	70-130	2	20	
Nickel	78.1	2.0	0.15	ug/l	80.0	2.8	94	70-130	1	20	
Selenium	79.7	2.0	0.36	ug/l	80.0	ND	100	70-130	1	20	
Silver	85.1	1.0	0.089	ug/l	80.0	0.10	106	70-130	0	20	
Thallium	80.9	1.0	0.075	ug/l	80.0	0.15	101	70-130	1	20	
Vanadium	81.2	2.0	0.86	ug/l	80.0	1.5	100	70-130	0	20	
Zinc	83.4	20	3.1	ug/l	80.0	14	87	70-130	2	20	

### Batch: 5C26033 Extracted: 03/26/05

#### Blank Analyzed: 03/26/2005 (5C26033-BLK1)

Mercury	ND	0.20	0.063	ug/l
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#### LCS Analyzed: 03/26/2005 (5C26033-BS1)

Mercury	8.12	0.20	0.063	ug/l	8.00	102	85-115
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#### Matrix Spike Analyzed: 03/26/2005 (5C26033-MS1)

Mercury	7.56	0.20	0.063	ug/l	8.00	ND	94	70-130
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## METHOD BLANK/QC DATA

### METALS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C26033 Extracted: 03/26/05</b>											
<b>Matrix Spike Dup Analyzed: 03/26/2005 (5C26033-MSD1)</b>						<b>Source: IOC2062-01</b>					
Mercury	7.61	0.20	0.063	ug/l	8.00	ND	95	70-130	1	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25048 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25048-BLK1)</b>											
Chloride	ND	0.50	0.26	mg/l							
Fluoride	ND	0.50	0.10	mg/l							
Nitrate/Nitrite-N	ND	0.11	0.072	mg/l							
Sulfate	ND	0.50	0.18	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25048-BS1)</b>											
Chloride	4.97	0.50	0.26	mg/l	5.00		99	90-110			M-3
Fluoride	4.81	0.50	0.10	mg/l	5.00		96	90-110			
Sulfate	10.3	0.50	0.18	mg/l	10.0		103	90-110			M-3
<b>Matrix Spike Analyzed: 03/25/2005 (5C25048-MS1) Source: IOC2038-01</b>											
Fluoride	5.70	0.50	0.10	mg/l	5.00	0.88	96	80-120			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25048-MSD1) Source: IOC2038-01</b>											
Fluoride	5.70	0.50	0.10	mg/l	5.00	0.88	96	80-120	0	20	
<b>Batch: 5C25058 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25058-BLK1)</b>											
Chromium VI	ND	1.0	0.10	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25058-BS1)</b>											
Chromium VI	52.4	1.0	0.10	ug/l	50.0		105	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25058-MS1) Source: IOC2023-03</b>											
Chromium VI	45.3	1.0	0.10	ug/l	50.0	ND	91	90-110			

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25058 Extracted: 03/25/05</b>											
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25058-MSD1)</b>						<b>Source: IOC2023-03</b>					
Chromium VI	44.3	1.0	0.10	ug/l	50.0	ND	89	90-110	2	10	M2
<b>Batch: 5C25061 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25061-BLK1)</b>											
Perchlorate	ND	4.0	0.80	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25061-BS1)</b>											
Perchlorate	48.8	4.0	0.80	ug/l	50.0		98	85-115			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25061-MS1)</b>						<b>Source: IOC2024-01</b>					
Perchlorate	49.6	4.0	0.80	ug/l	50.0	1.2	97	80-120			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25061-MSD1)</b>						<b>Source: IOC2024-01</b>					
Perchlorate	49.9	4.0	0.80	ug/l	50.0	1.2	97	80-120	1	20	
<b>Batch: 5C25093 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/30/2005 (5C25093-BLK1)</b>											
Biochemical Oxygen Demand	ND	2.0	0.59	mg/l							
<b>LCS Analyzed: 03/30/2005 (5C25093-BS1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115			
<b>LCS Dup Analyzed: 03/30/2005 (5C25093-BSD1)</b>											
Biochemical Oxygen Demand	208	100	30	mg/l	198		105	85-115	0	20	

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## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25096 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25096-BLK1)</b>											
Surfactants (MBAS)	ND	0.10	0.044	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25096-BS1)</b>											
Surfactants (MBAS)	0.266	0.10	0.044	mg/l	0.250		106	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25096-MS1)</b>											
						<b>Source: IOC1920-01</b>					
Surfactants (MBAS)	0.245	0.10	0.044	mg/l	0.250	ND	98	50-125			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25096-MSD1)</b>											
						<b>Source: IOC1920-01</b>					
Surfactants (MBAS)	0.260	0.10	0.044	mg/l	0.250	ND	104	50-125	6	20	
<b>Batch: 5C25117 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25117-BLK1)</b>											
Total Suspended Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/25/2005 (5C25117-BS1)</b>											
Total Suspended Solids	949	10	10	mg/l	1000		95	85-115			
<b>Duplicate Analyzed: 03/25/2005 (5C25117-DUP1)</b>											
						<b>Source: IOC2063-01</b>					
Total Suspended Solids	ND	10	10	mg/l		ND				10	
<b>Batch: 5C25118 Extracted: 03/25/05</b>											
<b>Duplicate Analyzed: 03/25/2005 (5C25118-DUP1)</b>											
						<b>Source: IOC2063-01</b>					
Residual Chlorine	ND	0.10	0.10	mg/l		ND				20	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C25119 Extracted: 03/25/05</b>											
<b>Blank Analyzed: 03/25/2005 (5C25119-BLK1)</b>											
Total Cyanide	ND	5.0	2.2	ug/l							
<b>LCS Analyzed: 03/25/2005 (5C25119-BS1)</b>											
Total Cyanide	194	5.0	2.2	ug/l	200		97	90-110			
<b>Matrix Spike Analyzed: 03/25/2005 (5C25119-MS1)</b>											
						<b>Source: IOC2062-01</b>					
Total Cyanide	191	5.0	2.2	ug/l	200	ND	96	70-115			
<b>Matrix Spike Dup Analyzed: 03/25/2005 (5C25119-MSD1)</b>											
						<b>Source: IOC2062-01</b>					
Total Cyanide	195	5.0	2.2	ug/l	200	ND	98	70-115	2	15	
<b>Batch: 5C26056 Extracted: 03/26/05</b>											
<b>Blank Analyzed: 03/26/2005 (5C26056-BLK1)</b>											
Turbidity	0.0500	1.0	0.040	NTU							J
<b>Duplicate Analyzed: 03/26/2005 (5C26056-DUP1)</b>											
						<b>Source: IOC2062-01</b>					
Turbidity	11.9	1.0	0.040	NTU		12			1	20	
<b>Batch: 5C28067 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28067-BLK1)</b>											
Ammonia-N (Distilled)	ND	0.50	0.30	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28067-BS1)</b>											
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0		98	80-115			

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 Project Manager



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	RPD Limits	RPD RPD	RPD Limit	Data Qualifiers
<b>Batch: 5C28067 Extracted: 03/28/05</b>											
<b>Matrix Spike Analyzed: 03/28/2005 (5C28067-MS1)</b>						<b>Source: IOC2120-01</b>					
Ammonia-N (Distilled)	9.80	0.50	0.30	mg/l	10.0	ND	98	70-120			
<b>Matrix Spike Dup Analyzed: 03/28/2005 (5C28067-MSD1)</b>						<b>Source: IOC2120-01</b>					
Ammonia-N (Distilled)	8.96	0.50	0.30	mg/l	10.0	ND	90	70-120	9	15	
<b>Batch: 5C28069 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28069-BLK1)</b>											
Oil & Grease	ND	5.0	0.94	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28069-BS1)</b>											
Oil & Grease	19.7	5.0	0.94	mg/l	20.0		98	65-120			M-NR1
<b>LCS Dup Analyzed: 03/28/2005 (5C28069-BSD1)</b>											
Oil & Grease	19.1	5.0	0.94	mg/l	20.0		96	65-120	3	20	
<b>Batch: 5C28077 Extracted: 03/28/05</b>											
<b>Blank Analyzed: 03/28/2005 (5C28077-BLK1)</b>											
Total Organic Carbon	ND	1.0	0.25	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28077-BS1)</b>											
Total Organic Carbon	10.6	1.0	0.25	mg/l	10.0		106	90-110			
<b>Matrix Spike Analyzed: 03/28/2005 (5C28077-MS1)</b>						<b>Source: IOC2045-02</b>					
Total Organic Carbon	10.0	1.0	0.25	mg/l	5.00	4.8	104	80-120			

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### INORGANICS

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b><u>Batch: 5C28077 Extracted: 03/28/05</u></b>											
<b>Matrix Spike Dup Analyzed: 03/28/2005 (5C28077-MSD1)</b>						<b>Source: IOC2045-02</b>					
Total Organic Carbon	10.1	1.0	0.25	mg/l	5.00	4.8	106	80-120	1	20	
<b><u>Batch: 5C28078 Extracted: 03/28/05</u></b>											
<b>Blank Analyzed: 03/28/2005 (5C28078-BLK1)</b>											
Total Dissolved Solids	ND	10	10	mg/l							
<b>LCS Analyzed: 03/28/2005 (5C28078-BS1)</b>											
Total Dissolved Solids	.956	10	10	mg/l	1000		96	90-110			
<b>Duplicate Analyzed: 03/28/2005 (5C28078-DUP1)</b>						<b>Source: IOC1740-01</b>					
Total Dissolved Solids	288	10	10	mg/l		280			3	10	
<b><u>Batch: 5C28081 Extracted: 03/28/05</u></b>											
<b>Duplicate Analyzed: 03/28/2005 (5C28081-DUP1)</b>						<b>Source: IOC1740-01</b>					
Specific Conductance	507	1.0	1.0	umhos/cm		500			1	5	

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## METHOD BLANK/QC DATA

### 1,4-DIOXANE BY GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	MDL	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<b>Batch: P5D0112 Extracted: 04/01/05</b>											
<b>Blank Analyzed: 04/01/2005 (P5D0112-BLK1)</b>											
1,4-Dioxane	ND	1.0	0.49	ug/l							
Surrogate: Dibromofluoromethane	1.18			ug/l	1.00		118	80-125			
<b>LCS Analyzed: 04/01/2005 (P5D0112-BS1)</b>											
1,4-Dioxane	9.20	1.0	0.49	ug/l	10.0		92	70-130			
Surrogate: Dibromofluoromethane	1.16			ug/l	1.00		116	80-125			
<b>LCS Dup Analyzed: 04/01/2005 (P5D0112-BSD1)</b>											
1,4-Dioxane	9.55	1.0	0.49	ug/l	10.0		96	70-130	4	20	
Surrogate: Dibromofluoromethane	1.17			ug/l	1.00		117	80-125			
<b>Matrix Spike Analyzed: 04/01/2005 (P5D0112-MS1)</b>											
						<b>Source: POC0730-06</b>					
1,4-Dioxane	12.6	1.0	0.49	ug/l	10.0	3.4	92	70-150			
Surrogate: Dibromofluoromethane	1.22			ug/l	1.00		122	80-125			
<b>Matrix Spike Dup Analyzed: 04/01/2005 (P5D0112-MSD1)</b>											
						<b>Source: POC0730-06</b>					
1,4-Dioxane	12.9	1.0	0.49	ug/l	10.0	3.4	95	70-150	2	25	
Surrogate: Dibromofluoromethane	1.18			ug/l	1.00		118	80-125			

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 Michele Harper  
 Project Manager



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Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

### DATA QUALIFIERS AND DEFINITIONS

- B** Analyte was detected in the associated Method Blank.
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of unknown quality.
- L2** Laboratory Control Sample recovery was below method control limits.
- M1** The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M2** The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- N-1** See case narrative.
- R-7** LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.
- ZX** Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

### ADDITIONAL COMMENTS

**For TICs:**

All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library.

**For 1,2-Diphenylhydrazine:**

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

**For GRO (C4-C12):**

GRO (C4-C12) is quantitated against a gasoline standard. Quantitation begins immediately following the methanol peak.

**For Extractable Fuel Hydrocarbons (EFH, DRO, ORO) :**

Unless otherwise noted, Extractable Fuel Hydrocarbons (EFH, DRO, ORO) are quantitated against a Diesel Fuel Standard.

Del Mar Analytical, Irvine  
Michele Harper  
Project Manager



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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmlabs.com](http://www.dmlabs.com).*

### Subcontracted Laboratories

#### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOC2064-01

Analysis Performed: EDD + Level 4

Samples: IOC2064-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chrmic

Samples: IOC2064-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager



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MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

**Aquatic Testing Laboratories-SUB California Cert #1775**

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC2064-01

**Del Mar Analytical - Phoenix NELAC Cert #01109CA, California Cert #2446**

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC2064-01

**Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC2064-01

Analysis Performed: Gross Alpha  
Samples: IOC2064-01

Analysis Performed: Gross Beta  
Samples: IOC2064-01

Analysis Performed: Radium, Combined  
Samples: IOC2064-01

Analysis Performed: Strontium 90  
Samples: IOC2064-01

Analysis Performed: Tritium  
Samples: IOC2064-01

**Truesdail Laboratories-SUB California Cert #1237**

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC2064-01

Analysis Performed: Level 4 Data Package  
Samples: IOC2064-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager



IO(2064

CHAIN OF CUSTODY FORM

Client Name/Address:				ANALYSIS REQUIRED										Field readings:								
Project: Boeing-SSFL NPDES Outfall 011 - 13267 Perimeter Pond Flow Weight Composite Phone Number: (626) 568-6691 Fax Number: (626) 568-6515				Total Recoverable Metals: B, Cu, Pb, Ba, Fe, Mn, Sb, As, Bi, Cd, Ni, Se, Ag, Ti, Zn, Co, V, Cr, Hg Setttable Solids VOCs 624 + Xylenes + Freon 113 + Freon 123 A + PP list TCDD (and all congeners) Oil & Grease (EPA 413 1) Cyanide (total recoverable) BOD5(20 degrees C) Surfactants (MBAS) Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride Turbidity, TDS, TSS, Conductivity Ammonia-N, Titr (350 2) w/dist Alpha BHC (608) + PP list + 608-PCBS 2,4,6 Trichloropheno, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + PF list										Temp = 59.7 pH = 6.7 Comments: "Continued Analysis required on Page 2 of 2"								
Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	Total Recoverable Metals	Setttable Solids	VOCs 624 + Xylenes + Freon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413 1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350 2) w/dist	Alpha BHC (608) + PP list + 608-PCBS	2,4,6 Trichloropheno, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, Pentachlorophenol (EPA 625) + PF list	Temp	pH	Comments	
Outfall 011	W	1G Poly	2	None	3/25/05 12:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Outfall 011	W	1G Poly	2	None	3/25/05 12:20	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 12:40	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 1:00	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 1:20	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 1:40	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 2:00	X	X	X	X	X	X	X	X	X	X	X	X	X				
Outfall 011	W	1G Poly	2	None	3/25/05 2:20	X	X	X	X	X	X	X	X	X	X	X	X	X				
Trip Blank	W	VOAs	3	HCL																		
TRIP	W	VOAs	3	NONE																		
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
Andra Hays	3/25/05 19:25		Judy Lopez		3-25-05 15:20																	
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
Judy Lopez	3-25-05 18:30		Andra Hays		3-25-05 18:30																	
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
Andra Hays	3-25-05 18:30		Judy Lopez		3-25-05 18:30																	

Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.

**CHAIN OF CUSTODY FORM**

Version 02/23/05

Client Name/Address:

**MWH-Pasadena**  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Project:

Boeing-SSFL NPDES  
Outfall 011 -- 13267  
Perimeter Pond

Project Manager: Bronwyn Kelly

Flow-weight Composite

Phone Number:  
(626) 568-6691  
Fax Number:  
(626) 568-6515

Sampler:

*Randa Hays*

**ANALYSIS REQUIRED**

Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Sampling Date/Time	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2CVE	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Radium 228, Tritium	Comments
Outfall 011	W	1G Poly	-	None	3/25/05 12:00	X	X	X	X	X	X	X	X	X	X	**Required analysis continued from Page 1 of 2
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Outfall 011	W	1G Poly	-	None		X	X	X	X	X	X	X	X	X	X	
Trip Blank	W	VOAs	3	HCL							X					

Received By: *Randa Hays* Date/Time: 3/25/05 15:15  
 Received By: *Bronwyn Kelly* Date/Time: 3-25-05 15:20  
 Relinquished By: *Randa Hays* Date/Time: 3-25-05 18:30  
 Relinquished By: *Bronwyn Kelly* Date/Time: 3-25-05 18:30  
 Turn around Time: (check) 24 Hours  48 Hours  72 Hours  5 Days  10 Days  Normal   
 Perchlorate Only 72 Hours   
 Metals Only 72 Hours   
 Sample Integrity: (Check) Intact  On Ice

\* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA >15pCi/L



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

April 7, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/25/05  
 Del Mar Analytical Number: IOC2064

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

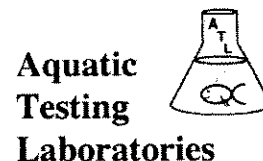
MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Composite	IOC2064-01	A-05032602-001/002	941101-1	25968-001	PENDING

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager

# LABORATORY REPORT



*"dedicated to providing quality aquatic toxicity testing"*

**Date:** April 2, 2005  
**Client:** Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614  
Attn: Michele Harper

4350 Transport Street, Unit 107  
Ventura, CA 93003  
(805) 650-0546 FAX (805) 650-0756  
CA DOHS ELAP Cert. No.: 1775

**Laboratory No.:** A-05032602-001/002  
**Sample I.D.:** IOC2064-01

**Sample Control:** The sample was received by ATL chilled, with the chain of custody record attached.

Date Sampled: 03/25/05  
Date Received: 03/26/05  
Date Tested: 03/26/05 to 04/01/05

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0),  
*Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002).

Attached are the test data generated from the analysis of your sample.

## Result Summary:

<b>Acute:</b>	<b>Survival</b>	<b>TUa</b>
Fathead Minnow:	100%	0.0
<b>Chronic:</b>	<b>NOEC</b>	<b>TUc</b>
<i>Ceriodaphnia</i> Survival:	100%	1.0
<i>Ceriodaphnia</i> Reproduction:	100%	1.0

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay  
Laboratory Director

# FATHEAD MINNOW PERCENT SURVIVAL TEST



Lab No.: A-05032602-001

Client/ID: Del Mar - IOC2064-01

Start Date: 03/26/2005

## TEST SUMMARY

Species: *Pimephales promelas*.

Age: 8 (1-14) days.

Regulations: NPDES.

Test solution volume: 250 ml.

Feeding: prior to renewal at 48 hrs.

Number of replicates: 2.

Dilution water: Moderately hard reconstituted water.

Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.

Test type: Static-Renewal.

Test Protocol: EPA-821-R-02-012.

Endpoints: Percent Survival at 96 hrs.

Test chamber: 600 ml beakers.

Temperature: 20 +/- 1°C.

Number of fish per chamber: 10.

QA/QC Batch No.: RT-050303.

## TEST DATA

		°C	DO	pH	# Dead		Analyst & Time of Readings
					A	B	
INITIAL	Control	20.0	9.1	8.1	0	0	JW 1000
	100%	19.4	10.1	7.7	0	0	
24 Hr	Control	19.4	7.2	7.9	0	0	JW 1000
	100%	19.4	7.4	7.9	0	0	
48 Hr	Control	19.8	6.0	7.7	0	0	JW 1000
	100%	19.7	7.0	7.9	0	0	
Renewal	Control	20.1	8.4	7.7	0	0	JW 1000
	100%	20.0	9.3	7.7	0	0	
72 Hr	Control	19.6	7.0	7.8	0	0	JW 1030
	100%	19.7	8.5	8.0	0	0	
96 Hr	Control	19.8	7.4	7.8	0	0	JW 1030
	100%	19.9	7.9	7.9	0	0	

**Comments:**

Sample as received: Chlorine: 0 mg/l; pH: 7.7; Conductivity: 200 umho; Temp: 4°C;

DO: 10.1 mg/l; Alkalinity: 67 mg/l; Hardness: 85 mg/l; NH<sub>3</sub>-N: 0.4 mg/l.

Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes /  No

Control: Alkalinity: 57 mg/l; Hardness: 95 mg/l; Conductivity: 300 umho.

Test solution aerated (not to exceed 100 bubbles/min) to maintain DO > 4.0 mg/l? Yes /  No

Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.

## RESULTS

Percent Survival In: Control: 100 %    100% Sample: 100 %

**CERIODAPHNIA CHRONIC BIOASSAY  
EPA METHOD 1002.0**



Lab No.: A-05032602  
Client/ID: Del Mar IOC2064-01

Date Tested: 03/26/05 to 04/01/05

**TEST SUMMARY**

Test type: Daily static-renewal.  
Species: *Ceriodaphnia dubia*.  
Age: < 24 hrs; all released within 8 hrs.  
Test vessel size: 30 ml.  
Number of test organisms per vessel: 1.  
Temperature: 25 +/- 1°C.  
Dilution water: Mod. hard reconstituted (MHRW).  
QA/QC Batch No.: RT-050326.

Endpoints: Survival and Reproduction.  
Source: In-laboratory culture.  
Food: .1 ml YTC, algae per day.  
Test solution volume: 15 ml.  
Number of replicates: 10.  
Photoperiod: 16/8 hrs. light/dark cycle.  
Test duration: 7 days.  
Statistics: ToxCalc computer program.

**RESULTS SUMMARY**

Sample Concentration	Percent Survival	Mean Number of Young Per Female
Control	100%	30.8
6.25%	100%	33.7
12.5%	100%	33.8
25%	100%	33.3
50%	100%	35.1
100%	100%	33.2

\* Statistically significantly less than control at P = 0.05 level.  
\*\* Reproduction data from concentrations greater than survival NOEC are excluded from statistical analysis.

**CHRONIC TOXICITY**

Parameter	Survival	Growth
NOEC	100%	100%
TUc	1.0	1.0

**QA/QC TEST ACCEPTABILITY**

Parameter	Result
Control survival ≥80%	Pass (100% survival)
≥15 young per surviving control female average	Pass (30.8 young)
≥60% surviving controls had 3 broods	Pass (100% with 3 broods)
PMSD < 47% for reproduction; if > 47% and no toxicity at IWC, the test must be repeated	Pass (PMSD = 10.9%)
Statistically significantly different concentrations relative difference > 13%	NA - No stat. sig. diff. concentrations
Concentration response relationship acceptable	Pass (slight inverse response at conc. tested)



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 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689  
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Suncoast Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3821

**SUBCONTRACT ORDER - PROJECT # IOC2064**

**SENDING LABORATORY:**  
 Del Mar Analytical, Irvine  
 17461 Derian Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**  
 Aquatic Testing Laboratories-SUB  
 4350 Transport Street, Unit 107  
 Ventura, CA 93003  
 Phone : (805) 650-0546  
 Fax: (805) 650-0756

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2064-01 Water	Sampled: 03/25/05 14:40	Instant Notification
Bioassay-7 dy Chrmic	03/27/05 02:40	ceriodaphnia, 13267
Bioassay-Acute 96hr	03/27/05 02:40	fathead minnow, 13267

**Containers Supplied:**  
 1 gal Poly (IOC2064-01AR)  
 1 gal Poly (IOC2064-01AS)

**SAMPLE INTEGRITY:**

All containers intact:  Yes  No  
 Sample labels/COC agree:  Yes  No  
 Samples Received On Ice:  Yes  No  
 Custody Seals Present:  Yes  No  
 Samples Preserved Properly:  Yes  No  
 Samples Received at (temp): 4°C

Released By: [Signature] Date: 3-26-05 Time: 742 Received By: [Signature] Date: 3-26-05 Time: 5:00 PM  
 Released By: [Signature] Date: 3-26-05 Time: 742 Received By: [Signature] Date: 3-26-05 Time: 07:42

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

March 31, 2005

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

*Client:* Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

*Attention:* Michele Harper

*Project Name:* IOC2064  
*Date Received:* 03/28/05

*Truesdail Project:* 941101

## Samples Cross-reference

<u>Truesdail ID</u>	<u>Client ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Time Sampled</u>	<u>Analysis Requested</u>
941101-1	IOC2064-01	Water	03/25/05	1440	Hydrazines by EPA 8315M

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager



# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Project Name:** IOC2064

**Truesdail Project:** 941101

**Date Received:** 03/28/05

## Case Narrative

**Sample Receipt** The sample was received in good condition and no anomalies were noted during check-in. The sample was kept in a locked refrigerator until analysis. Thereafter, it is being kept in ambient storage for an additional 2 months before disposal.

**Analysis** The analysis was performed as requested on the chain-of-custody.

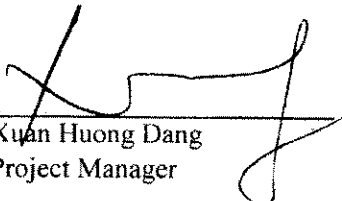
**Quality Control** The analytical results for each batch of samples performed include a minimum of one set of laboratory control sample/laboratory control sample duplicate (LCS/LCSD), one matrix spike (MS) and a reagent blank (Method blank). Any exceptions or problems would be noted in the "comments" section.

**Comments** The test results in this report meet all quality assurance requirements set forth by the method specification and all quality control recoveries were within the laboratory acceptance limits. No anomalies or nonconformance events occurred during the course of analysis.

The analytes were quantitated down to the Method Detection Limit (J flags) per client's request.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
K.R.P. Iyer  
Quality Control/Quality Assurance Officer

  
Xuan Huong Dang  
Project Manager



# REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2064  
**P.O. Number:** IOC2064  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

## Analytical Results

Sample ID	Sample Description	Monomethyl		Unsymmetrical Dimethyl		Hydrazine
		Hydrazine	Hydrazine	Hydrazine	Hydrazine	
704871-MB	Method Blank	ND	ND	ND	ND	ND
941101	IOC2064-01	ND	ND	ND	ND	ND
MDL		1.2	0.27	0.39		
PQL		5.0	5.0	1.0		

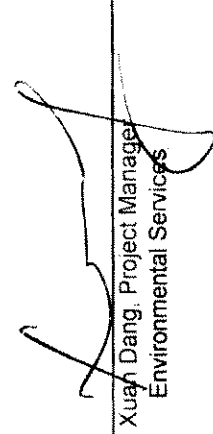
MDL: Method Detection Limit, ug/L

PQL: Practical Quantitation Limit, ug/L

ND: Not Detected at or above the MDL value.

N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING: FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1937

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 FAX (714) 730-6462 www.truesdail.com

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Client Contact:** Michele Harper  
Liquid / 1 Sample  
**Sample ID:** IOC2064  
**P.O. Number:** IOC2064  
**Method Number:** 8315 (Modified)  
**Run Batch No.:** Extraction: 3024, Analysis: 380  
**Investigation:** Hydrazines in Liquid

## REPORT

**QC Lab. No.:** 704871  
**Project Lab. No.:** 941101  
**Spiked Sample ID:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** ug/L  
**Reported By:** JS

### Quality Control/Quality Assurance Calibration Report

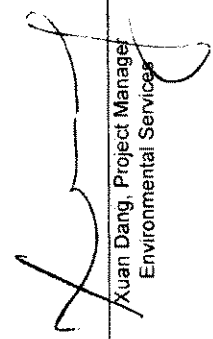
Parameter	Theoretical Value (ug/L)		Measured Value (ug/L)		% Rec.		Control Limits	Flag
	Value	ug/L	Value	ug/L	%	Rec.		
Monomethyl Hydrazine	50.0	50.0	45.0	45.0	90.1	90.1	85-115	PASS
u-Dimethyl Hydrazine	50.0	50.0	42.9	42.9	85.7	85.7	85-115	PASS
Hydrazine	10.0	10.0	9.88	9.88	98.8	98.8	85-115	PASS

### Quality Control/Quality Assurance Spikes Report

Parameter	Spiked Conc.		Recovered Concentration		Percent Recovery (%)		MSD	% D	Flag	Control Limits	Accuracy
	ug/L	MS	MSD	Sample	MSD	% D					
Monomethyl Hydrazine	50.0	45.0	40.4	0.0	90.0	80.8	10.7%	10.7%	PASS	20	0-150
u-Dimethyl Hydrazine	50.0	44.5	41.1	0.0	88.9	82.1	7.94%	7.94%	PASS	20	0-150
Hydrazine	10.0	7.90	7.65	0.0	79.0	76.5	3.24%	3.24%	PASS	20	0-150

ICV: Initial Calibration Verification  
QCS: Quality Control Standard  
LCS: Laboratory Control Spike  
MS: Matrix Spike  
%D: Percent Difference  
Flag: "Pass" if within Control Limits, otherwise "Fail"

Note: Results based on detector #1 (UV=365nm) data.

  
Xuan Dang, Project Manager  
Environmental Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.



Del Mar Analytical

941 101

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 9630 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Sunaet Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

### SUBCONTRACT ORDER - PROJECT # IOC2064

<b>SENDING LABORATORY:</b> Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	<b>RECEIVING LABORATORY:</b> Truesdail Laboratories-SUB 14201 Franklin Avenue Tustin, CA 92680 Phone : (714) 730-6239 Fax: (714) 730-6462
---	--

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2064-01 Water	Sampled: 03/25/05 14:40	Instant Notification
Hydrazine-OUT	03/28/05 14:40	J flags, Sub Truesdail for Monomethylhydrazine
Level 4 Data Package	04/22/05 14:40	
<b>Containers Supplied:</b>		
1 L Amber (IOC2064-01AM)		
1 L Amber (IOC2064-01AN)		

Rec'd 03/28/05  
s7d 941101

# RUSH

## ALERT !! Level IV QC

### For Sample Conditions See Form Attached

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: [Signature] Date: 3-28-05 Time: 8:05 Received By: Rub Sherita Date: 3-28-05 Time: 8:05

Released By: Rub Sherita Date: 3-28-05 Time: 9:12 Received By: [Signature] Date: 3/28/05 Time: 9:12



TRUESDAIL LABORATORIES, INC.

# Sample Integrity & Analysis Discrepancy Form

Client: Del Mar

Lab # 941101

Date Delivered: 03/28/05 Time: 9:12 By:  Mail  Field Service  Client

1. Was a Chain of Custody received and signed?  Yes  No  N/A
2. Does Customer require an acknowledgement of the COC?  Yes  No  N/A
3. Are there any special requirements or notes on the COC?  Yes  No  N/A
4. If a letter was sent with the COC, does it match the COC?  Yes  No  N/A
5. Were all requested analyses understood and acceptable?  Yes  No  N/A
6. Were samples received in a chilled condition?  
Temperature (if yes)? 4°C  Yes  No  N/A
7. Were samples received intact  
(i.e. broken bottles, leaks, air bubbles, etc.)?  Yes  No  N/A
8. Were sample custody seals intact?  Yes  No  N/A
9. Does the number of samples received agree with COC?  Yes  No  N/A
10. Did sample labels correspond with the client ID's?  Yes  No  N/A
11. Did sample labels indicate proper preservation?  
Preserved (if yes) by:  Truesdail  Client  Yes  No  N/A
12. Were samples pH checked? pH = \_\_\_\_\_  Yes  No  N/A
13. Were all analyses within holding time at time of receipt?  
If not, notify the Project Manager.  Yes  No  N/A
14. Have Project due dates been checked and accepted?  
Turn Around Time (TAT):  RUSH  Std  Yes  No  N/A
15. **Sample Matrix:**  Liquid  Drinking Water  Ground Water  Waste Water  
 Sludge  Soil  Wipe  Paint  Solid  Other Water

**ALERT!!  
Level IV QC**

**RUSH**

16. Comments: \_\_\_\_\_

17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Stuber

## Internal Chain of Custody Logbook

Lab Number: 941101  
 Client Name: Del Mar

Storage Temperature: 4.0C

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature
				3/28/05	9:30		L. Stokun	<i>[Signature]</i>
	Hydrazine	3-28-05	1130	3-28-05	1430	200	ROGER	<i>[Signature]</i>

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials

Bottle I.D.	Analysis Done	Date Out	Time Out	Date In	Time In	Amount Taken (g or ml)	Printed Name	Signature

Storage Date	Shelf No. For Storage	Printed Name	Initials	Discharge Date	Printed Name	Initials



April 02, 2005

**Alta Project I.D.: 25968**

Ms. Michele Harper  
Del Mar Analytical, Irvine  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on March 29, 2005 under your Project Name "IOC2064". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A rush turnaround time was provided for this work.

Results qualified with an "A" are lower than the EPA Method 1613 Minimum Level, and above the lower calibration limit.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at [mmaier@altalab.com](mailto:mmaier@altalab.com). Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in cursive script that reads "Martha M. Maier".

Martha M. Maier  
Director of HRMS Services



**Alta Analytical Laboratory Inc.**

1104 Windfield Way  
El Dorado Hills, CA 95762  
FAX (916) 673-0106  
(916) 933-1640



**Section I: Sample Inventory Report**

**Date Received: 3/29/2005**

Alta Lab. ID

Client Sample ID

25968-001

IOC2064-01



**SECTION II**



Method Blank		EPA Method 1613						
Matrix: Aqueous	QC Batch No.: 6653	Lab Sample: 0-MB001	Date Analyzed DB-5: 31-Mar-05	Date Analyzed DB-225: NA				
Sample Size: 1.000 L	Date Extracted: 30-Mar-05							
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000554			13C-2,3,7,8-TCDD	85.8	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000438			13C-1,2,3,7,8-PeCDD	89.3	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.000000693			13C-1,2,3,4,7,8-HxCDD	78.7	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.000000669			13C-1,2,3,6,7,8-HxCDD	92.3	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.000000673			13C-1,2,3,4,6,7,8-HpCDD	77.2	23 - 140	
1,2,3,4,6,7,8-HpCDD	ND	0.000000795			13C-OCDD	50.0	17 - 157	
OCDD	ND	0.00000232			13C-2,3,7,8-TCDF	91.1	24 - 169	
2,3,7,8-TCDF	ND	0.00000436			13C-1,2,3,7,8-PeCDF	89.9	24 - 185	
1,2,3,7,8-PeCDF	ND	0.00000695			13C-2,3,4,7,8-PeCDF	96.8	21 - 178	
2,3,4,7,8-PeCDF	ND	0.00000592			13C-1,2,3,4,7,8-HxCDF	77.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.00000264			13C-1,2,3,6,7,8-HxCDF	87.0	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.00000253			13C-2,3,4,6,7,8-HxCDF	84.8	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.00000263			13C-1,2,3,7,8,9-HxCDF	80.9	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.00000408			13C-1,2,3,4,6,7,8-HpCDF	72.1	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000381			13C-1,2,3,4,7,8,9-HpCDF	76.9	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000359			13C-OCDF	57.9	17 - 157	
OCDF	ND	0.00000147			CRS 37Cl-2,3,7,8-TCDD	90.5	35 - 197	
<b>Totals</b>								
Total TCDD	ND	0.000000554						
Total PeCDD	ND	0.000000438						
Total HxCDD	ND	0.000000677						
Total HpCDD	ND	0.000000795						
Total TCDF	ND	0.000000436						
Total PeCDF	ND	0.000000642						
Total HxCDF	ND	0.000000291						
Total HpCDF	ND	0.000000450						

Footnotes  
a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.

Analyst: RAS  
Approved By: William J. Luksemburg 01-Apr-2005 14:54



OPR Results		EPA Method 1613				
Matrix:	Aqueous	QC Batch No.:	6653	Lab Sample:	0-OPR001	
Sample Size:	1.000 L	Date Extracted:	30-Mar-05	Date Analyzed DB-5:	31-Mar-05	
				Date Analyzed DB-225:	NA	
Analyte	Spike Conc.	Conc. (ng/mL)	OPR Limits	Labeled Standard	%R	LCL-UCL
2,3,7,8-TCDD	10.0	10.9	6.7 - 15.8	<u>IS</u> 13C-2,3,7,8-TCDD	68.5	25 - 164
1,2,3,7,8-PeCDD	50.0	53.3	35 - 71	13C-1,2,3,7,8-PeCDD	68.2	25 - 181
1,2,3,4,7,8-HxCDD	50.0	52.0	35 - 82	13C-1,2,3,4,7,8-HxCDD	88.5	32 - 141
1,2,3,6,7,8-HxCDD	50.0	53.5	38 - 67	13C-1,2,3,6,7,8-HxCDD	101	28 - 130
1,2,3,7,8,9-HxCDD	50.0	41.0	32 - 81	13C-1,2,3,4,6,7,8-HpCDD	70.5	23 - 140
1,2,3,4,6,7,8-HpCDD	50.0	52.7	35 - 70	13C-OCDD	38.0	17 - 157
OCDD	100	111	78 - 144	13C-2,3,7,8-TCDF	75.2	24 - 169
2,3,7,8-TCDF	10.0	10.4	7.5 - 15.8	13C-1,2,3,7,8-PeCDF	66.3	24 - 185
1,2,3,7,8-PeCDF	50.0	50.2	40 - 67	13C-2,3,4,7,8-PeCDF	72.3	21 - 178
2,3,4,7,8-PeCDF	50.0	50.4	34 - 80	13C-1,2,3,4,7,8-HxCDF	88.8	26 - 152
1,2,3,4,7,8-HxCDF	50.0	49.9	36 - 67	13C-1,2,3,6,7,8-HxCDF	97.3	26 - 123
1,2,3,6,7,8-HxCDF	50.0	50.1	42 - 65	13C-2,3,4,6,7,8-HxCDF	86.3	28 - 136
2,3,4,6,7,8-HxCDF	50.0	50.5	35 - 78	13C-1,2,3,7,8,9-HxCDF	84.2	29 - 147
1,2,3,7,8,9-HxCDF	50.0	49.3	39 - 65	13C-1,2,3,4,6,7,8-HpCDF	69.1	28 - 143
1,2,3,4,6,7,8-HpCDF	50.0	50.3	41 - 61	13C-1,2,3,4,7,8,9-HpCDF	76.9	26 - 138
1,2,3,4,7,8,9-HpCDF	50.0	48.9	39 - 69	13C-OCDF	49.3	17 - 157
OCDF	100	99.5	63 - 170	<u>CRS</u> 37Cl-2,3,7,8-TCDD	74.7	35 - 197

Analyst: RAS  
 Approved By: William J. Luksemburg 01-Apr-2005 13:51



Sample ID: IOC2064-01		EPA Method 1613			
Client Data		Sample Data		Laboratory Data	
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25968-001
Project:	IOC2064	Sample Size:	1.021 L	QC Batch No.:	6653
Date Collected:	25-Mar-05			Date Analyzed DB-5:	31-Mar-05
Time Collected:	1440			Date Analyzed DB-225:	NA
		DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R
Analyte	Conc. (ug/L)				LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.000000545		13C-2,3,7,8-TCDD	80.2 25 - 164
1,2,3,7,8-PeCDD	ND	0.000000449		13C-1,2,3,7,8-PeCDD	87.4 25 - 181
1,2,3,4,7,8-HxCDD	ND	0.000000740		13C-1,2,3,4,7,8-HxCDD	73.9 32 - 141
1,2,3,6,7,8-HxCDD	ND	0.000000754		13C-1,2,3,6,7,8-HxCDD	82.8 28 - 130
1,2,3,7,8,9-HxCDD	ND	0.000000740		13C-1,2,3,4,6,7,8-HpCDD	75.8 23 - 140
1,2,3,4,6,7,8-HpCDD	0.00000734		J	13C-OCDD	53.0 17 - 157
OCDD	0.0000692		A	13C-2,3,7,8-TCDF	86.2 24 - 169
2,3,7,8-TCDF	ND	0.000000447		13C-1,2,3,7,8-PeCDF	88.1 24 - 185
1,2,3,7,8-PeCDF	ND	0.000000850		13C-2,3,4,7,8-PeCDF	89.8 21 - 178
2,3,4,7,8-PeCDF	ND	0.000000779		13C-1,2,3,4,7,8-HxCDF	75.8 26 - 152
1,2,3,4,7,8-HxCDF	ND	0.000000247		13C-1,2,3,6,7,8-HxCDF	83.5 26 - 123
1,2,3,6,7,8-HxCDF	ND	0.000000238		13C-2,3,4,6,7,8-HxCDF	81.2 28 - 136
2,3,4,6,7,8-HxCDF	ND	0.000000255		13C-1,2,3,7,8,9-HxCDF	81.6 29 - 147
1,2,3,7,8,9-HxCDF	ND	0.000000391		13C-1,2,3,4,6,7,8-HpCDF	73.7 28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.000000989	0.000000989	13C-1,2,3,4,7,8,9-HpCDF	76.0 26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.000000531		13C-OCDF	61.6 17 - 157
OCDF	0.00000273		J	CRS 37Cl-2,3,7,8-TCDD	88.5 35 - 197
<b>Totals</b>					
Total TCDD	ND	0.000000545			
Total PeCDD	ND	0.000000449			
Total HxCDD	0.000000761				
Total HpCDD	0.00000734		0.0000168		
Total TCDF	0.00000125				
Total PeCDF	ND	0.000000814			
Total HxCDF	0.000000716				
Total HpCDF	0.00000125		0.00000224		
<b>Footnotes</b>					
a. Sample specific estimated detection limit.					
b. Estimated maximum possible concentration.					
c. Method detection limit.					
d. Lower control limit - upper control limit.					

Analyst: RAS

Approved By: William J. Luksemburg 01-Apr-2005 14:54

**APPENDIX**

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## DATA QUALIFIERS & ABBREVIATIONS

<b>B</b>	<b>This compound was also detected in the method blank.</b>
<b>D</b>	<b>The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.</b>
<b>H</b>	<b>The signal-to-noise ratio is greater than 10:1.</b>
<b>I</b>	<b>Chemical Interference</b>
<b>J</b>	<b>The amount detected is below the Lower Calibration Limit of the instrument.</b>
<b>P</b>	<b>Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit.</b>
<b>*</b>	<b>See Cover Letter</b>
<b>Conc.</b>	<b>Concentration</b>
<b>DL</b>	<b>Sample-specific estimated detection limit</b>
<b>MDL</b>	<b>The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.</b>
<b>EMPC</b>	<b>Estimated Maximum Possible Concentration</b>
<b>NA</b>	<b>Not applicable</b>
<b>RL</b>	<b>Reporting Limit – concentrations that correspond to low calibration point</b>
<b>ND</b>	<b>Not Detected</b>
<b>TEQ</b>	<b>Toxic Equivalency</b>

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.



## CURRENT CERTIFICATIONS

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**NELAP** — (Primary AA: California, Certificate No. 02102CA)  
**Department of the Navy**  
**U.S. Army Corps of Engineers**  
**U.S. EPA Region 5**  
**Bureau of Reclamation — Mid-Pacific Region** — (MP-470, Res-1.10)  
**Commonwealth of Kentucky** — (Certificate No. 90063)  
**Commonwealth of Virginia** — (Certificate No. 00013)  
**State of Alaska, Department of Environmental Conservation** — (Certificate No. OS-00197)  
**State of Arizona** — (Certificate No. AZ0639)  
**State of Arkansas, Department of Health** — (Approval granted through CA certification)  
**State of Arkansas, Department of Environmental Quality**  
**State of California** — (Certificate No. 1640)  
**State of Colorado**  
**State of Connecticut** — (Certificate No. PH-0182)  
**State of Florida** — (Certificate No. 87456)  
**State of Louisiana, Department of Health and Hospitals** — (Certificate No. LA000014)  
**State of Louisiana, Department of Environmental Quality**  
**State of Maine**  
**State of Michigan** (Certificate No. 81178087)  
**State of Mississippi** — (Approval granted through CA certification)  
**State of Nevada** — (Certificate No. CA413)  
**State of New Jersey** — (Certificate No. CA003)  
**State of New York, Department of Health** — (Certificate No. 11411)  
**State of North Carolina** — (Certification No. 06700)  
**State of North Dakota, Department of Health** — (Certificate No. R-078)  
**State of New Mexico**  
**State of Oklahoma** — (D9919)  
**State of Oregon** — (Certificate No. CA413)  
**State of Pennsylvania** — (Certificate No. 68-490)  
**State of South Carolina** — (Certificate No. 87002001)  
**State of Tennessee** — (Certificate No. 02996)  
**State of Texas** — (Certificate No. TX247-1000A)  
**State of Utah** — (Certificate No. E-201)  
**State of Washington** — (Certification No. C091)  
**State of Wisconsin** — (Certificate No. 998036160)  
**State of Wyoming** — (USEPA Region 8 Ref: 8TMS-Q)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228  
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 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851  
 2520 E. Suncel Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3820 Fax (702) 798-3021

### SUBCONTRACT ORDER - PROJECT # IOC2064

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper	Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone: (916) 933-1640 Fax: (916) 933-0940  <i>25968</i> <i>0.4°C</i>

Standard TAT is requested unless specific due date is requested => Due Date: 5 day Initials: \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2064-01 Water	Sampled: 03/25/05 14:40	Instant Notification
1613-Dioxin-HR	04/01/05 14:40	J flags, 17 congeners, no TEQ, sub to Pace-MN
EDD + Level 4	04/22/05 14:40	Excel EDD email to pm, Include Std logs for Lvl IV
<b>Containers Supplied:</b>		
1 L Amber (IOC2064-01G)		
1 L Amber (IOC2064-01H)		

SAMPLE INTEGRITY:					
All containers intact:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice::	<input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp):	_____


 Released By \_\_\_\_\_ Date 3-28-04 Time 1700 Received By Bettina A. Benedict Date 3/29/05 Time 0915

Released By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received By \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_



STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 25968

1. Date Samples Arrived: <u>03/29/05 0915</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
2. Time / Date logged in: <u>1040 3/29/05</u> Initials: <u>BBB</u> Location: <u>WR-2</u>			
3. Samples Arrived By: (circle) <u>FedEx</u> UPS World Courier Other:			
4. Shipping Preservation: (circle) <u>Ice</u> <u>Blue Ice</u> / Dry Ice / None Temp °C <u>0.4°C</u>			
5. Shipping Container(s) Intact? If not, describe condition in comment section.	YES	NO	NA
6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section.	✓		
7. Shipping Documentation Present? (circle) Shipping Label <u>Airbill</u> Tracking Number <u>7904 7641 3782</u>	✓		
8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section.			✓
9. Sample Container Intact? If no, indicate sample condition in comment section.	✓		
10. Chain of Custody (COC) or other Sample Documentation Present?	✓		
11. COC/Documentation Acceptable? If no, complete COC Anomaly Form.	✓		
12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed			
13. Container(s) and/or Bottle(s) Requested?			✓
14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted			✓

Comments:

STANDARD OPERATING PROCEDURE

Attachment 10.B.4

Client: Del Mar Chain of Custody Anomaly / Sample Acceptance Form  
Project Number: 25968  
Contact: Michele Harper Date Received: 3/29/05  
Fax Number: 949 260 3297 Documented by/date: CB/B 3/29/05

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis. Thank You. (Fax #916-673-0106)

The following information or item is needed to proceed with the analysis:

- Completed Chain-of-Custody
- Test Method Requested
- Analyte List Requested
- Preservative
- Sample Identification
- Sample Collection Date /Time
- Collector's Name
- Sample Type
- Sample Location

The following anomalies were noted. Authorization is needed to proceed with the analysis:

Temperature outside $\pm 2^{\circ}\text{C}$ range	Samples Affected: _____
Temp _____ $^{\circ}\text{C}$	Ice Present? Yes No
Sample ID Discrepancy	Samples Affected: _____
Sample holding time missed	Samples Affected: _____
Custody seals broken	Samples Affected: _____
Insufficient Sample Size	Samples Affected: _____
Sample Container(s) Broken	Samples Affected: _____
Incorrect Container Type	Samples Affected: _____
Other _____	
_____	
_____	

**Client Authorization:**  
Proceed With Analysis: YES NO Signature and Date: \_\_\_\_\_ 4/1/05  
Client Comments/Instructions: "L.H." per email





### LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project: 13267 (Study 1)  
Outfall 011

Sampled: 03/25/05  
Received: 03/25/05  
Issued: 04/13/05 17:34

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 5 pages, are included and are an integral part of this report.  
This entire report was reviewed and approved for release.*

### CASE NARRATIVE

**SAMPLE RECEIPT:** Samples were received intact, at 2°C, on ice and with chain of custody documentation.

**HOLDING TIMES:** All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.

**PRESERVATION:** Samples requiring preservation were verified prior to sample analysis.

**QA/QC CRITERIA:** All analyses met method criteria, except as noted in the report with data qualifiers. The percent recovery for benzidine in the BS/BSD was below method acceptance limits. Benzidine is known to be a problematic compound and according to the EPA, it can be subject to oxidative losses during solvent extraction and its chromatographic behavior is poor. All results reported for benzidine are potentially biased low and can be considered estimates only. Results for benzidine are reported with 'L2' qualifier. The ICAL %RSD failed the acceptance limit for 2,4-Dinitrophenol. Instrument sensitivity was acceptable based upon the response for 2,4-Dinitrophenol at the low ICAL level. The CCV and BS/BSD met acceptance limits for the analyte. Affected samples were 'ND' for this analyte, without J-flag detection. Therefore, since acceptable sensitivity is represented by the instrument and the extraction procedure, the analyte was flagged with 'N-1' and reported. The sample was then reanalyzed for 2,4-Dinitrophenol and the results are reported as an RE1. Also, there was a low BSD recovery for the original batch for Oil & Grease and the lab re-extracted and re-analyzed the sample.

**COMMENTS:** Results that fall between the MDL and RL are 'J' flagged.

**SUBCONTRACTED:** Refer to the last page for specific subcontract laboratory information included in this report.



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9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

**LABORATORY ID**

IOC2064-01  
IOC2064-02

**CLIENT ID**

Outfall 011 Composite  
Trip Blank

**MATRIX**

Water  
Water

Reviewed By:

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*



# Del Mar Analytical

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## Certification Summary

### Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
EPA 120.1	Water	X	X
EPA 160.2	Water	X	X
EPA 160.5	Water	X	X
EPA 180.1	Water	X	X
EPA 200.7	Water	X	X
EPA 200.8	Water	X	X
EPA 218.6	Water	X	X
EPA 245.1	Water	X	X
EPA 300.0	Water	X	X
EPA 314.0	Water	X	X
EPA 330.5	Water	X	X
EPA 335.2	Water	X	X
EPA 350.2	Water	X	X
EPA 405.1	Water	X	X
EPA 413.1	Water	X	X
EPA 415.1	Water	X	X
EPA 418.1	Water	X	X
EPA 608	Water	X	X
EPA 624 (MOD.)	Water	X	X
EPA 624	Water	X	X
EPA 625	Water	X	X
EPA 8015 Mod.	Water	X	X
EPA 8015B	Water	X	X
SM2540C	Water	X	X
SM5540-C	Water	X	X

*Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at [www.dmalabs.com](http://www.dmalabs.com).*

### Subcontracted Laboratories

#### Alta Analytical California Cert #1640

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR

Samples: IOC2064-01

Analysis Performed: EDD + Level 4

Samples: IOC2064-01

#### Aquatic Testing Laboratories-SUB California Cert #1775

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-7 dy Chmic

Samples: IOC2064-01

### Del Mar Analytical, Irvine

Michele Harper  
 Project Manager

*The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.*



# Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297  
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046  
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (650) 505-8596 FAX (650) 505-9689  
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101  
Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
Outfall 011  
Report Number: IOC2064

Sampled: 03/25/05  
Received: 03/25/05

## **Aquatic Testing Laboratories-SUB** *California Cert #1775*

4350 Transport Street, Unit 107 - Ventura, CA 93003

Analysis Performed: Bioassay-Acute 96hr  
Samples: IOC2064-01

## **Del Mar Analytical - Phoenix** *NELAC Cert #01109CA, California Cert #2446*

9830 S. 51st Street, Suite B-120 - Phoenix, AZ 85044

Method Performed: EPA 8260B  
Samples: IOC2064-01

## **Eberline Services - SUB**

2030 Wright Avenue - Richmond, CA 94804

Analysis Performed: EDD + Level 4  
Samples: IOC2064-01

Analysis Performed: Gross Alpha  
Samples: IOC2064-01

Analysis Performed: Gross Beta  
Samples: IOC2064-01

Analysis Performed: Radium, Combined  
Samples: IOC2064-01

Analysis Performed: Strontium 90  
Samples: IOC2064-01

Analysis Performed: Tritium  
Samples: IOC2064-01

## **Truesdail Laboratories-SUB** *California Cert #1237*

14201 Franklin Avenue - Tustin, CA 92680

Analysis Performed: Hydrazine  
Samples: IOC2064-01

Analysis Performed: Level 4 Data Package  
Samples: IOC2064-01

**Del Mar Analytical, Irvine**  
Michele Harper  
Project Manager

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**IOC2064 <Page 59 of 59>**

IOC 2064  
Page 1 of 2

**CHAIN OF CUSTODY FORM**

Del Mar Analytical Version 02/23/05

Client Name/Address:		Project:		ANALYSIS REQUIRED												Field readings:										
MWH-Pasadena 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101		Boeing-SSFL NPDES Outfall 011 -- 13267 Perimeter Pond		Sample Description	Container Type	# of Cont.	Sample Matrix	Sampling Date/Time	Preservative	Total Recoverable Metals: B, Cu, Pb, Ba, Fe, Mn, Sb, As, Be, Cd, Ni, Se, Ag, Ti, Zn, Co, V, Cr, Hg	Settleable Solids	VOCs 624 + Xylenes + Treon 113 + Freon 123 A + PP list	TCDD (and all congeners)	Oil & Grease (EPA 413.1)	Cyanide (total recoverable)	BOD5(20 degrees C)	Surfactants (MBAS)	Cl, SO4, NO3+NO2-N, Perchlorate, Fluoride	Turbidity, TDS, TSS, Conductivity	Ammonia-N, Titr (350.2) w/dist	Alpha BHC (608) + PP list + 608-PCBs	2,4,6 Trichlorophenol, 2,4 Dinitrotoluene, Bis(2- ethylhexyl)phthalate, NDMA, perchlorophenol (EPA 625) + PF list	Temp = 59.7 pH = 6.7			
Project Manager: Bronwyn Kelly		Flow Weight Composite Phone Number: (626) 568-6691 Fax Number: (626) 568-6515																						Comments **Continued Analysis required on Page 2 of 2		
Outfall 011	W	1G Poly	2	3/25/05 12:00	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3749200 Flow (gpm) = 111			
Outfall 011	W	1G Poly	2	3/25/05 12:20	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3746300 Flow (gpm) = 103			
Outfall 011	W	1G Poly	2	3/25/05 12:40	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3748400 Flow (gpm) = 96			
Outfall 011	W	1G Poly	2	3/25/05 1:00	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3750700 Flow (gpm) = 103			
Outfall 011	W	1G Poly	2	3/25/05 1:20	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3753100 Flow (gpm) = 134			
Outfall 011	W	1G Poly	2	3/25/05 1:40	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3755500 Flow (gpm) = 110			
Outfall 011	W	1G Poly	2	3/25/05 2:00	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3757600 Flow (gpm) = 93			
Outfall 011	W	1G Poly	2	3/25/05 2:20	None	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Total Flow (gals) = 3761300 Flow (gpm) = 102			
Trip Blank	W	VOAs	3		HCL	X																				
TRP	W	VOAs	3		NONE																					
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:			
Andra Hays	3/25/05 19:25		Guy Jumper		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20		3-25-05 15:20			
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
Guy Jumper	3-25-05 18:30		2-2		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30		3/25/05 18:30			
Relinquished By	Date/Time:		Received By		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:		Date/Time:	
			MH																							

Note: Composite by flow weighted averages and analyze according to 13267 Sampling protocol.



**CHAIN OF CUSTODY FORM**

Version 02/23/05

**Del Mar Analytical**

Client Name/Address:

MWH-Pasadena  
300 North Lake Avenue, Suite 1200  
Pasadena, CA 91101

Project:

Boeing-SSFL NPDES  
Outfall 011 -- 13267  
Perimeter Pond

Flow-weight Composite

Project Manager: Bronwyn Kelly

Phone Number:  
(626) 568-6691  
Fax Number:  
(626) 568-6515

Samples: *Linda Hays*

**ANALYSIS REQUIRED**

Sample Description	Sample Matrix	Container Type	# of Cont.	Preservative	Residual Chlorine	TOC, 1, 4 Dioxane	Chromium VI (218.6)	Total Rec. Petroleum Hydrocarbons (EPA 418.1)	Diesel	8015 (GRO)	Monomethylhydrazine	624-Mod A+A+2C/E	Acute and Chronic toxicity-bioassays	Gross Alpha, Gross Beta, Tritium (906.0), Sr-90 (905.0), Radium 228, Tritium	Comments	
																Sampling Date/Time
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X	**Required analysis continued from Page 1 of 2	
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Outfall 011	W	1G Poly	-	None	X	X	X	X	X	X	X	X	X	X		
Trip Blank	W	VOAS	3	HCL	X					X						
Relinquished By <i>Linda Hays</i>	Date/Time: 3/25/05 15:15				Received By <i>Linda Hays</i>				Date/Time: 3-25-05 15:20				Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ 72 Hours _____ Normal _____ Perchlorate Only 72 Hours _____ Metals Only 72 Hours _____			
Relinquished By <i>Linda Hays</i>	Date/Time: 3-25-05 18:30				Received By <i>Linda Hays</i>				Date/Time: 3/25/05 18:30				Sample Integrity: (Check) On Ice: <input checked="" type="checkbox"/>			

\* ANALYZE FOR TOTAL COMBINED RA-226 & 228 ONLY IF GROSS ALPHA >15pCi/L



2852 Alton Ave., Irvine CA 92606 (949) 261-1022 FAX (949) 261-1228  
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 9830 South 51st St., Suite 8-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 13, 2005

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101

Attention: Bronwyn Kelly  
 Project: 13267 (Study 1)/Outfall 011  
 Sampled: 03/25/05  
 Del Mar Analytical Number: IOC2064

Dear Ms. Kelly:

Aquatic Testing Laboratories performed Fathead Minnow 96 hr Percent Survival Bioassay (EPA Method 2000.0), *Ceriodaphnia dubia* Survival and Reproduction Test (EPA Method 1002), Truesdail Laboratories tested Hydrazines by EPA 8315 M, Alta Analytical performed EPA Method 1613 by Dioxin and Eberline Services performed Gross Alpha/Gross Beta (EPA 900.0), Tritium (H-3, EPA 906.0), Strontium-90 (Sr-90, EPA 905.0), Radium 226 (EPA 903.1), and Radium 228 (904.0) for the project referenced above. Please use the following cross-reference table when reviewing your results.

MWH ID	DEL MAR ID	ATL ID	TRUESDAIL ID	ALTA ID	EBERLINE ID
Outfall 011 Composite	IOC2064-01	A-05032602-001/002	941101-1	25968-001	R503232-8383

Attached are the original reports from the subcontract laboratories. If you have any questions or require further assistance, please do not hesitate to contact me.

Sincerely yours,  
 DEL MAR ANALYTICAL

Michele Harper  
 Project Manager



**EBERLINE**  
SERVICES

May 11, 2005

Ms. Michele Harper  
Project Manager  
Del Mar Analytical  
17461 Derian Avenue, Suite 100  
Irvine, CA 92614

Reference: Del Mar Analytical Project No. IOC2064  
Eberline Services NELAP Cert #01120CA (exp. 01/31/06)  
Eberline Services Report R503232-8383

Dear Ms. Harper:

Enclosed are results from the analyses of one water sample received at Eberline Services on March 29, 2005. The sample was analyzed according to the accompanying Del Mar Analytical Subcontract Order Form. The requested analyses were gross alpha/gross beta (EPA900.0), tritium (H-3, EPA906.0), strontium-90 (Sr-90, EPA905.0), Ra-226 (EPA903.1), and Ra-228 (EPA904.0). The QC LCS, blank analyses, sample duplicates, and matrix spike samples results were within the limits defined in Eberline Services Quality Control Procedures Manual. Analyses that involve the yielding of an analytical tracer or carrier, such as Ra-228, do not require matrix spike analyses to be performed. No problems encountered during the analyses.

Please call me if you have any questions concerning this report.

Regards,

*M. Mannion*

Melissa Mannion  
Senior Program Manager

*MM/mjv*

Enclosure: Report  
Subcontract Form  
Receipt checklist  
Invoice


Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503232-01</u>	Contract <u>PROJECT# IOC2064</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab						
<u>Sample ID</u>	<u>Sample ID</u>	<u>Collected</u>	<u>Analyzed</u>	<u>Nuclide</u>	<u>Results + 2σ</u>	<u>Units</u>	<u>MDA</u>
IOC2064-01	8383-001	03/25/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
			04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
			05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
			04/21/05	H3	83.4 ± 170	pCi/L	278
			04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
			04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

Certified by <u></u>
Report Date <u>05/11/05</u>
Page 1

# Eberline Services

## QC RESULTS

SDG <u>8383</u> Work Order <u>R503232-01</u> Received Date <u>03/29/05</u>	Client <u>DEL MAR ANAL</u> Contract <u>PROJECT# IOC2064</u> Matrix <u>WATER</u>
--	---

Lab	Sample ID	Nuclide	Results	Units	Amount Added	MDA	Evaluation
<u>LCS</u>							
	8381-003	GrossAlpha	10.7 ± 1.2	pCi/Smpl	11.2	0.420	96% recovery
		Gross Beta	12.2 ± 0.81	pCi/Smpl	12.0	0.550	102% recovery
		H3	235 ± 25	pCi/Smpl	257	27.4	91% recovery
		Ra226	5.10 ± 0.17	pCi/Smpl	5.59	0.047	91% recovery
		Sr90	12.4 ± 0.68	pCi/Smpl	11.1	0.283	112% recovery
<u>BLANK</u>							
	8381-004	GrossAlpha	-0.073 ± 0.14	pCi/Smpl	NA	0.379	<MDA
		Gross Beta	0.067 ± 0.34	pCi/Smpl	NA	0.586	<MDA
		H3	-0.412 ± 16	pCi/Smpl	NA	27.5	<MDA
		Ra226	0.018 ± 0.024	pCi/Smpl	NA	0.040	<MDA
		Sr90	-0.007 ± 0.14	pCi/Smpl	NA	0.280	<MDA
<u>LCS</u>							
	9489-003	Ra228	11.0 ± 0.61	pCi/Smpl	10.1	0.763	109% recovery
<u>BLANK</u>							
	9489-004	Ra228	-0.361 ± 0.30	pCi/Smpl	NA	0.821	<MDA

<u>DUPLICATES</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8381-005	GrossAlpha	1.15 ± 0.86	1.15
	Gross Beta	2.13 ± 1.2	1.82
	H3	66.7 ± 160	278
	Ra226	0.186 ± 0.20	0.326
	Sr90	-0.125 ± 0.23	0.504
9489-005	Ra228	0.001 ± 0.14	0.400

<u>ORIGINALS</u>				3σ
Sample ID	Results ± 2σ	MDA	RPD (Tot)	Eval
8381-001	0.510 ± 0.59	0.852	77	194 satis.
	2.97 ± 1.3	1.84	33	109 satis.
	-16.7 ± 160	279	-	0 satis.
	-0.229 ± 0.19	0.396	-	0 satis.
	-0.052 ± 0.37	0.658	-	0 satis.
9489-002	-0.077 ± 0.15	0.414	-	0 satis.

<u>SPIKED SAMPLE</u>			
Sample ID	Nuclide	Results ± 2σ	MDA
8381-006	GrossAlpha	87.8 ± 5.8	0.847
	Gross Beta	79.5 ± 3.6	1.79
	H3	18000 ± 600	290
	Ra226	128 ± 2.6	0.359

<u>ORIGINAL SAMPLE</u>					
Sample ID	Results ± 2σ	MDA	Added	%Recv	
8381-001	0.510 ± 0.59	0.852	76.6	114	
	2.97 ± 1.3	1.84	73.7	104	
	-16.7 ± 160	279	18800	96	
	-0.229 ± 0.19	0.396	123	104	

Certified by *[Signature]*  
 Report Date 05/11/05  
 Page 2



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 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

## SUBCONTRACT ORDER - PROJECT # IOC2064

**SENDING LABORATORY:**

Del Mar Analytical, Irvine  
 17461 Denan Avenue, Suite 100  
 Irvine, CA 92614  
 Phone: (949) 261-1022  
 Fax: (949) 261-1228  
 Project Manager: Michele Harper

**RECEIVING LABORATORY:**

Eberline Services  
 2030 Wright Avenue  
 Richmond, CA 94804  
 Phone: (510) 235-2633  
 Fax: (510) 235-0438

Standard TAT is requested unless specific due date is requested => **Due Date:** 3 weeks **Initials:** \_\_\_\_\_

Analysis	Expiration	Comments
Sample ID: IOC2064-01 Water	Sampled: 03/25/05 14:40	<b>Instant Notification</b> Analyze as received, do not preserve
EDD + Level 4-OUT	04/22/05 14:40	**LEVEL IV QC, ACCESS 7 EDD**
Gross Alpha-O	03/25/06 14:40	900.0
Gross Beta-O	03/25/06 14:40	900.0 <sup>903.1</sup> <i>mcm</i>
Radium, Combined-O	03/25/06 14:40	EPA-903.0 & 904.0 <i>3/31/5</i>
Strontium 90-O	03/25/06 14:40	905.0
Tritium-O	03/25/06 14:40	906

**Containers Supplied:**

- 1 L Amber (IOC2064-01AT)
- 1 L Amber (IOC2064-01AU)
- 1 L Amber (IOC2064-01AV)
- 1 L Amber (IOC2064-01AW)
- ~~1 L Amber (IOC2064-01AX)~~
- ~~1 L Amber (IOC2064-01AY)~~
- ~~1 L Amber (IOC2064-01AZ) *WZ*~~
- ~~1 L Amber (IOC2064-01BA)~~
- 40 ml Voa Vial (IOC2064-01BB)
- 40 ml Voa Vial (IOC2064-01BC)
- 40 ml Voa Vial (IOC2064-01BD)
- 40 ml Voa Vial (IOC2064-01BE)

**SAMPLE INTEGRITY:**

All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No	Samples Received at (temp): _____

Released By: [Signature] Date: 3-28-05 Time: 1700 Received By: SON THAI Date: 03/29/05 Time: 10:00 AM

Released By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**RICHMOND, CA LABORATORY**



**SAMPLE RECEIPT CHECKLIST**

Client: DEL MAR City: IRVINE State: CA  
 Date/Time received: 03/29/05 CoC No.: IOC 2064  
 Container I.D. No.: # 2 Requested TAT (Days): 3 Weeks P.O. Received Yes [ ] No [ ]

- INSPECTION**
1. Custody seals on shipping container intact? Yes [  ] No [ ] N/A [ ]
  2. Custody seals on shipping container dated & signed? Yes [  ] No [ ] N/A [ ]
  3. Custody seals on sample containers intact? Yes [ ] No [  ] N/A [ ]
  4. Custody seals on sample containers dated & signed? Yes [ ] No [  ] N/A [ ]
  5. Packing material is: Wet [  ] Dry [ ]
  6. Number of samples in shipping container: 1 Sample Matrix: water
  7. Number of containers per sample: 8 (Or see CoC \_\_\_\_\_)
  8. Samples are in correct container? Yes [  ] No [ ]
  9. Paperwork agrees with samples? Yes [  ] No [ ]
  10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [ ]
  11. Samples are: In good condition [  ] Leaking [ ] Broken Container [ ] Missing [ ]
  12. Samples are: Preserved [ ] Not preserved [  ] pH 7 Preservative \_\_\_\_\_
  13. Describe any anomalies: \_\_\_\_\_
  14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_
  15. Inspected by TS Date: 03/29/05 Time: 10:00 AM

Customer Sample No.	cpm	mR/hr	wipe	Customer Sample No.	cpm	mR/hr	wipe

Ion Chamber Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Alpha Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_  
 Beta/Gamma Meter Ser. No. \_\_\_\_\_ Calibration date \_\_\_\_\_


TS 03/29/05  
10:00 AM

**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711DF40  
 Task Order 313150010  
 SDG No. Multiple  
 No. of Analyses 5

Laboratory Alta  
 Reviewer H. Chang  
 Analysis/Method Dioxins & Furans /1613

Date: April 7, 2005  
 Reviewer's Signature 

ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Detects below the method calibration level were qualified "J." EMPCs were qualified "UJ." Ether interference was qualified "UJ."
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	





# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOC0871, IOC2062, IOC2063,  
IOC2064, IOC2093

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC0871, IOC2062, IOC2063, IOC2064, IOC2093  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 5  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 7, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample Identification**

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
Outfall 018	IOC0871-01	25975-001	water	1613
Outfall 002	IOC2062-01	25969-001	water	1613
Outfall 011	IOC2063-01	25967-001	water	1613
Outfall 011 Composite	IOC2064-01	25968-001	water	1613
Outfall 001	IOC2093-01	25970-001	water	1613

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples in these SDGs were received at Del Mar with cooler temperatures within the QC limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$  with the exception of sample Outfall 002 which was received at  $8^{\circ}\text{C}$ . The samples were received at  $0.4^{\circ}\text{C}$  at Alta. According to the laboratory login sheets, all samples were received intact and in good condition at both laboratories. Due to non-volatile nature of the target compounds and since all samples were received intact, no qualifications were required.

#### 2.1.2 Chain of Custody

The COCs and transfer COCs were legible and signed by the appropriate field and laboratory personnel, and accounted for the analyses presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The coolers received by Alta had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

### 2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

#### 2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

#### 2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

## 2.3 CALIBRATION

### 2.3.1 Initial Calibration

There was one initial calibration, analyzed 01/21/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs  $\leq 20\%$  for the 16 native compounds (calibration by isotope dilution) and  $\leq 35\%$  for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

### 2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning and end of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standards instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

## 2.4 BLANKS

One method blank (0\_6653\_MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (0\_6653\_OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

## 2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

### 2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

## 2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

## 2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

## 2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any results reported as Estimated Maximum Possible Concentration (EMPC) were qualified as estimated nondetects, "UJ." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J;" however, as Alta analyzed an additional calibration standard, the results below the lower MCL but above the lower calibration level were flagged with "A" laboratory qualifier. These results were qualified as estimated, "J," by the reviewer.

2,3,7,8-TCDF was detected in sample Outfall 018; however, no confirmation was performed since the level of the detect was below the calibration range. This compound was qualified as estimated, "J."

The Total TCDF result in sample Outfall 011 was reported with "D" laboratory qualifier due to the presence of ether. Total TCDF was qualified as "J" in this sample. No further qualifications were required.



Sample ID: IOC2063-01 *Outfall 011*

EPA Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25967-001		
Project:	IOC2063	Sample Size:	1.004 L	QC Batch No.:	6653		
Date Collected:	25-Mar-05			Date Analyzed DB-5:	31-Mar-05		
Time Collected:	1200			Date Analyzed DB-225:	NA		
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000460		13C-2,3,7,8-TCDD	76.4	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000455		13C-1,2,3,7,8-PeCDD	78.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.000000622		13C-1,2,3,4,7,8-HxCDD	91.7	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.000000621		13C-1,2,3,6,7,8-HxCDD	102	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.000000615		13C-1,2,3,4,6,7,8-HpCDD	75.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.00000655			13C-OCDD	44.5	17 - 157	
OCDD	0.0000599			13C-2,3,7,8-TCDF	84.2	24 - 169	
2,3,7,8-TCDF	ND	0.000000565	J	13C-1,2,3,7,8-PeCDF	79.2	24 - 185	
1,2,3,7,8-PeCDF	ND	0.000000632	A	13C-2,3,4,7,8-PeCDF	83.7	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000534		13C-1,2,3,4,7,8-HxCDF	95.1	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000299		13C-1,2,3,6,7,8-HxCDF	102	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000299		13C-2,3,4,6,7,8-HxCDF	91.8	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000361		13C-1,2,3,7,8,9-HxCDF	87.9	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.000000543		13C-1,2,3,4,6,7,8-HpCDF	73.0	28 - 143	
1,2,3,4,6,7,8-HpCDF	0.0000185		J	13C-1,2,3,4,7,8,9-HpCDF	81.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND			13C-OCDF	50.4	17 - 157	
OCDF	0.0000290		J	CRS 37Cl-2,3,7,8-TCDD	80.8	35 - 197	
Totals							
Total TCDD	ND	0.000000460					
Total PeCDD	ND	0.000000455					
Total HxCDD	ND	0.00000115					
Total HpCDD	0.0000159						
Total TCDF	0.00000161						
Total PeCDF	ND		D				
Total HxCDF	0.000000737		0.000000896				
Total HpCDF	0.00000328		0.00000117				

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

Analyst: RAS

Approved By: William J. Luksemburg 01-Apr-2005 14:54

**AMEC VALIDATED**

LEVEL IV

Project 25967



Sample ID: IOC2064-01		Outfall Oil Composite		EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Aqueous	Lab Sample:	25968-001		
Project:	IOC2064	Sample Size:	1.021 L	QC Batch No.:	6653		
Date Collected:	25-Mar-05			Date Analyzed DB-5:	31-Mar-05		
Time Collected:	1440			Date Analyzed DB-225; NA			
Analyte	Conc. (ug/L)	DL <sup>a</sup>	EMPC <sup>b</sup>	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.000000545		IS 13C-2,3,7,8-TCDD	80.2	25 - 164	
1,2,3,7,8-PeCDD	ND	0.000000449		13C-1,2,3,7,8-PeCDD	87.4	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.000000740		13C-1,2,3,4,7,8-HxCDD	73.9	32 - 141	
1,2,3,6,7,8-HxCDD	ND	0.000000754		13C-1,2,3,6,7,8-HxCDD	82.8	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.000000740		13C-1,2,3,4,6,7,8-HpCDD	75.8	23 - 140	
1,2,3,4,6,7,8-HpCDD	0.00000734			13C-OCDD	53.0	17 - 157	
OCDD	0.0000692			13C-2,3,7,8-TCDF	86.2	24 - 169	
2,3,7,8-TCDF	ND	0.000000447		13C-1,2,3,7,8-PeCDF	88.1	24 - 185	
1,2,3,7,8-PeCDF	ND	0.000000850		13C-2,3,4,7,8-PeCDF	89.8	21 - 178	
2,3,4,7,8-PeCDF	ND	0.000000779		13C-1,2,3,4,7,8-HxCDF	75.8	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.000000247		13C-1,2,3,6,7,8-HxCDF	83.5	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.000000238		13C-2,3,4,6,7,8-HxCDF	81.2	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.000000255		13C-1,2,3,7,8,9-HxCDF	81.6	29 - 147	
1,2,3,7,8,9-HxCDF	ND	0.000000391		13C-1,2,3,4,6,7,8-HpCDF	73.7	28 - 143	
1,2,3,4,6,7,8-HpCDF	ND	0.000000989	0.000000989	13C-1,2,3,4,7,8,9-HpCDF	76.0	26 - 138	
1,2,3,4,7,8,9-HpCDF	ND	0.000000531		13C-OCDF	61.6	17 - 157	
OCDF	0.00000273			CBS 37Cl-2,3,7,8-TCDD	86.5	35 - 197	
<b>Totals</b>							
Total TCDD	ND	0.000000545					
Total PeCDD	ND	0.000000449					
Total HxCDD	0.000000761						
Total HpCDD	0.00000734		0.0000168				
Total TCDF	0.00000125						
Total PeCDF	ND	0.000000814					
Total HxCDF	0.000000716						
Total HpCDF	0.00000125		0.00000224				

a. Sample specific estimated detection limit.  
 b. Estimated maximum possible concentration.  
 c. Method detection limit.  
 d. Lower control limit - upper control limit.

**Footnotes**

Analyst: RAS  
 Approved By: William J. Luksemburg 01-Apr-2005 14:54

**AMEC VALIDATED**  
 LEVEL IV



## **APPENDIX A**

### **Section 46**

Outfall 011, March 25, 2005

MEC<sup>X</sup> Data Validation Reports



### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: HYDRAZINES

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Hydrazines  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review (2/94)*, and USEPA SW-846 Method 8315. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

EPA ID	Del Mar ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	IOC2063-01	941100	water	Hydrazines by 8315
Outfall 011 Composite	IOC2064-01	941101	water	Hydrazines by 8315



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical and the subcontract laboratory, Truesdail Laboratories, within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The case narratives for these SDGs noted that the samples were received intact at both laboratories. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs from the field to Del Mar were signed and dated by field and laboratory personnel, and the transfer COCs from Del Mar to Truesdail Laboratories were signed and dated by personnel from both laboratories. Both the original COCs and transfer COCs requested only monomethyl hydrazine analysis; however, unsymmetrical dimethyl hydrazine and hydrazine were also reported. As the samples were transported to Del Mar and then to Truesdail by courier, no custody seals were required. Truesdail Laboratories did not list the Outfall 011 IDs on the Form Is; therefore, the reviewer hand-corrected the Form Is to include this information. No qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analysis. The samples were extraction within the three-day holding time and analyzed within three days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The five-point initial calibration were analyzed 03/29/05, with correlation coefficients of  $\geq 0.995$  for the hydrazines. The ICV and CCV bracketing the sample analyses had recoveries for the hydrazines within the QC limits of 85-115%. No qualifications were required.

### 2.3 BLANKS

One method blank was analyzed with these SDGs. The results reported on the method blank summary form and in the raw data for the instrument and method blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

## **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

One laboratory control sample/laboratory control sample duplicate was analyzed with these SDGs. The hydrazines were recovered within the laboratory-established control limits of 70%-130%, and the RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## **2.5 SURROGATES RECOVERY**

Surrogates were not utilized in this analysis. No qualifications were required.

## **2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MSD/MSD analyses were performed on Outfall 011 Composite. The hydrazines were recovered within the laboratory-established control limits of 0%-150%; however, both recoveries were  $\geq 10\%$ . The RPDs were within the control limit of  $\leq 20\%$ . No qualifications were required.

## **2.7 FIELD QC SAMPLES**

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### **2.7.1 Field Blanks and Equipment Rinsates**

The site samples in these SDGs had no associated field QC. No qualifications were required.

### **2.7.2 Field Duplicates**

There were no field duplicate samples in these SDGs.

## **2.8 COMPOUND IDENTIFICATION**

The samples were analyzed by HPLC for monomethyl hydrazine, unsymmetrical dimethyl hydrazine, and hydrazine by Method 8315. Compound identification was verified, and review of the raw data indicated no compound identification errors. No qualifications were required.

## **2.9 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified from the raw data at a Level IV data validation by recalculating LCS/LCSD and MS/MSD detects, as there were no sample detects. No compound quantitation problems were noted. The hydrazine reporting limits were supported by the lower levels of the initial calibration. No qualifications were required.

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Established 1931

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(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper

**Sample:** Liquid / 1 Sample

**Project Name:** IOC2063

**P.O. Number:** IOC2063

**Method Number:** 8316 (Modified)

**Investigation:** Hydrazines in Liquid

**Laboratory No:** 941100

**Report Date:** March 30, 2005

**Sampling Date:** March 25, 2005

**Receiving Date:** March 28, 2005

**Extraction Date:** March 28, 2005

**Analysis Date:** March 29, 2005

**Units:** µg/L

**Dilution Factor:** 1

**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Qual Code	Rev Code	Qual Code	Rev Code	Qual Code	Rev Code
704871-MB	Method Blank	ND	*	ND	*	ND	*
941100	Outfall oil Grab IOC2063-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*JS* 4/6/05

MDL: Method Detection Limit, ug/L  
PQL: Practical Quantitation Limit, ug/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

**LEVEL IV**

*[Signature]*  
Xuan Dang, Project Manager  
Environmental Services

**AMEC VALIDATED**

Analysis Not Validated

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## REPORT

**Client:** Del Mar Analytical  
17461 Derian Ave., Suite 100  
Irvine, CA 92614

**Attention:** Michele Harper  
**Sample:** Liquid / 1 Sample  
**Project Name:** IOC2064  
**P.O. Number:** IOC2084  
**Method Number:** 8315 (Modified)  
**Investigation:** Hydrazines in Liquid

**Laboratory No.:** 941101  
**Report Date:** March 30, 2005  
**Sampling Date:** March 25, 2005  
**Receiving Date:** March 28, 2005  
**Extraction Date:** March 28, 2005  
**Analysis Date:** March 29, 2005  
**Units:** µg/L  
**Dilution Factor:** 1  
**Reported By:** JS

Page 1 of 1

### Analytical Results

Sample ID	Sample Description	Monomethyl Hydrazine		Unsymmetrical Dimethyl Hydrazine		Hydrazine	
		Res. Qual. Code	* U	Res. Qual. Code	* U	Res. Qual. Code	* U
704871-MB	Method Blank	ND	*	ND	*	ND	*
941101	Outfall Oil Composite IOC2064-01	ND	U	ND	U	ND	U
MDL		1.2		0.27		0.39	
PQL		5.0		5.0		1.0	

*PM 4/1/05*

MDL: Method Detection Limit, µg/L  
PQL: Practical Quantitation Limit, µg/L  
ND: Not Detected at or above the MDL value.  
N/A: Not Applicable

Note: Results based on detector #1 (UV=365nm) data.

Xuan Dang, Project Manager  
Environmental Services

**AMEC VALIDATED**

**LEVEL IV**

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from these laboratories.

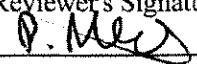
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711MT74  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Del Mar  
 Reviewer P. Meeks  
 Analysis/Method Metals

Date: 04/11/05  
 Reviewer's Signature  


**ACTION ITEMS<sup>a</sup>**

1. Case Narrative	
Deficiencies	
2. Out of Scope	
Analyses	
3. Analyses Not	
Conducted	
4. Missing Hardcopy	
Deliverables	
5. Incorrect Hardcopy	
Deliverables	
6. Deviations from	Qualifications were applied for:
Analysis Protocol, e.g.,	1. Detects in the method blank and CCBs
Holding Times	2. ICSAB recovery outlier
GC/MS Tune/Inst.	3. Reporting limit check standard recovery outlier
Performance	4. Detects below the reporting limit
Calibrations	
Blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard	
Performance	
Compound Identification	
and Quantitation	
System Performance	

**COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.

### Data Qualifier Reference Table

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Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

---

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES  
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC---Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Metals  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 6010B for Inductively Coupled Plasma*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	ILM04
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	ILM04

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. Duplicate samples were submitted for the samples in these SDGs; however, duplicate analyses were not required. No sample qualifications were required.

#### 2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals, and 28 days for mercury. No qualifications were required.

### 2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

### 2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP/MS metals and 80-120% for mercury. Antimony and nickel were not recovered in the 0.2 ppb reporting limit check standard; therefore nondetected antimony in both site samples (see section 2.4) was qualified as estimated, "UJ." As nickel was detected in both samples above the 2.0 µg/L reporting limit and was recovered within the control limits in the 2.0 ppb reporting limit check standard, no qualifications were required. The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No further sample qualifications were required.

## 2.4 BLANKS

Antimony, boron and thallium were detected in bracketing CCBs at 0.422 µg/L, 0.0207 mg/L, and 0.0895 µg/L, respectively; therefore, antimony and boron detected in both site samples and thallium detected in Outfall 011 Grab were qualified as estimated, "UJ." Chromium was detected in method blank 5C25116-BLK1 at 0.516 µg/L; therefore, chromium detected in both site samples was qualified as estimated, "UJ." No further qualifications were required due to the method and calibration blank results.

## 2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride, and barium, beryllium, selenium, thallium, vanadium, antimony and lead were not spiked into the ICSAB solution. Arsenic was recovered below the control limit in the ICSAB, therefore, arsenic detected in both site samples was qualified as estimated, "J." Manganese, cobalt copper, zinc, and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix affects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride.

ICSA and ICSAB analyses were included in the raw data for the boron ICP analyses, but were not run on the days the site samples were analyzed. The recoveries for the interferents and the other spiked analytes were within the control limits of 80-120%. No further qualifications were required.

## 2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5C25116-BS1 and the ICP LCS sample was identified as 5C25111-BS1. The mercury LCS sample was identified as 5C26033-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established ICP, ICP/MS, and mercury control limits of 85-115%. No qualifications were required.

## 2.7 LABORATORY DUPLICATES

No MS/MSD analyses were performed in association with the samples in these SDG; therefore, no assessment was made with respect to this criterion.

## 2.8 MATRIX SPIKE

No MS/MSD analyses were performed in association with the samples in these SDG; therefore, no assessment was made with respect to this criterion. Method accuracy was evaluated based on LCS results. No qualifications were required.

## 2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## 2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## 2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

## 2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## 2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Barium	EPA 200.8	5C25116	0.00014	0.0010	0.024	1	03/25/05	03/28/05	Rev Qual   Qual Code
Boron	EPA 200.7	5C25111	0.0074	0.050	0.095	1	03/25/05	03/27/05	UJ   B
Iron	EPA 200.8	5C25116	0.0032	0.010	0.43	1	03/25/05	03/28/05	

# AMEC VALIDATED

# LEVEL IV

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: METALS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
Antimony	EPA 200.8	5C25116	0.18	2.0	0.29	1	03/25/05	03/28/05	U J J	X3, B
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.6	1	03/25/05	03/28/05	J	I
Beryllium	EPA 200.8	5C25116	0.037	0.50	ND	1	03/25/05	03/28/05	U	
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.20	1	03/25/05	03/28/05	J J	DNC
Chromium	EPA 200.8	5C25116	0.26	2.0	1.4	1	03/25/05	03/28/05	U J B, J	B
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05	J J	DNC
Copper	EPA 200.8	5C25116	0.49	2.0	3.7	1	03/25/05	03/28/05		
Lead	EPA 200.8	5C25116	0.13	1.0	0.43	1	03/25/05	03/28/05	J J	DNC
Manganese	EPA 200.8	5C25116	0.44	1.0	41	1	03/25/05	03/28/05		
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/26/05	03/26/05	U	
Nickel	EPA 200.8	5C25116	0.15	2.0	3.5	1	03/25/05	03/28/05		
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05	U	
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05		
Thallium	EPA 200.8	5C25116	0.075	1.0	ND	1	03/25/05	03/28/05		
Vanadium	EPA 200.8	5C25116	0.86	2.0	1.2	1	03/25/05	03/28/05	J J	DNC
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05	J J	DNC

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: mg/l										
Barium	EPA 200.8	5C25116	0.00014	0.0010	0.023	1	03/25/05	03/28/05	US	B
Boron	EPA 200.7	5C25111	0.0074	0.050	0.092	1	03/25/05	03/27/05		
Iron	EPA 200.8	5C25116	0.0032	0.010	0.43	1	03/25/05	03/28/05		

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# LEVEL IV

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: METALS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Antimony	EPA 200.8	5C25116	0.18	2.0	0.34	1	03/25/05	03/28/05	UJ J	#3, B
Arsenic	EPA 200.8	5C25116	0.49	1.0	2.7	1	03/25/05	03/28/05	J	I
Beryllium	EPA 200.8	5C25116	0.037	0.50	0.041	1	03/25/05	03/28/05	J J	DNG
Cadmium	EPA 200.8	5C25116	0.015	1.0	0.22	1	03/25/05	03/28/05	J J	DNG
Chromium	EPA 200.8	5C25116	0.26	2.0	1.2	1	03/25/05	03/28/05	UJ B, J	B
Cobalt	EPA 200.8	5C25116	0.10	1.0	0.29	1	03/25/05	03/28/05	J J	DNG
Copper	EPA 200.8	5C25116	0.49	2.0	3.9	1	03/25/05	03/28/05	J J	DNG
Lead	EPA 200.8	5C25116	0.13	1.0	0.46	1	03/25/05	03/28/05	J J	DNG
Manganese	EPA 200.8	5C25116	0.44	1.0	36	1	03/25/05	03/28/05		
Mercury	EPA 245.1	5C26033	0.063	0.20	ND	1	03/26/05	03/26/05	U	
Nickel	EPA 200.8	5C25116	0.15	2.0	3.4	1	03/25/05	03/28/05		
Selenium	EPA 200.8	5C25116	0.36	2.0	ND	1	03/25/05	03/28/05	U	
Silver	EPA 200.8	5C25116	0.089	1.0	ND	1	03/25/05	03/28/05	J J	B
Thallium	EPA 200.8	5C25116	0.075	1.0	0.21	1	03/25/05	03/28/05	J J	
Vanadium	EPA 200.8	5C25116	0.86	2.0	ND	1	03/25/05	03/28/05	J J	DNG
Zinc	EPA 200.8	5C25116	3.1	20	13	1	03/25/05	03/28/05	J J	

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
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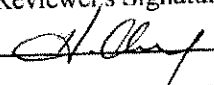
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711PP34  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 2

Laboratory Del Mar  
 Reviewer H. Chang  
 Analysis/Method Pesticides & PCBs/608

Date: April 10, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Hardcopy Deliverables	
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Perform Calibrations Blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification and Quantitation System Performance	Samples were qualified "UJ" for low surrogate recoveries.
COMMENTS <sup>b</sup>	
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PESTICIDES

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Pesticides/PCBs  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 10, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedures (DVP-4, Rev.2)*, *EPA Method 608*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary form as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

*DATA VALIDATION REPORT*

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	608
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	608

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analyses presented in these SDGs. As the sample was couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 PESTICIDES INSTRUMENT PERFORMANCE

No resolution check standards or breakdown check standards are required by Method 608 for pesticides, and according to the raw data provided, a resolution check standard was not analyzed by the laboratory. The laboratory did analyze a breakdown check standard with a breakdown of  $\leq 20\%$  for individual components (4,4'-DDT and endrin) and  $\leq 30\%$  for the total, as suggested in the National Functional Guidelines. A review of the raw data indicated that the analytical run time was of sufficient length to provide adequate standard separation. The two analytical columns used in the analyses were within the guidelines specified in the methods.

According to the laboratory SOP and the initial calibration raw data, the retention time windows are  $\pm 0.10$  minutes for both surrogates and target compound calibration standards. A review of the raw data indicated that the laboratory retention time criteria were met for the surrogates and pesticide calibration standards. No qualifications were required.

### 2.3 CALIBRATION

#### 2.3.1 Analytical Sequence

Based on the data provided, the analytical sequences were in accordance with the requirements of Method 608. No qualifications were required.

### 2.3.2 Initial Calibration

There was one initial calibration dated 03/24/05 associated with the pesticide analysis of the sample, which consisted of six point calibrations for all pesticide target compounds on two analytical columns. The %RSDs were within the EPA Method 608 QC limit of  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. There was one initial calibration dated 03/28/05 associated with the PCB analysis of the samples which consisted of five points for Aroclor 1016 and Aroclor 1260. The average %RSDs for the individual peaks of Aroclor 1016 and Aroclor 1260 were  $\leq 10\%$  or the  $r^2$  values were  $\geq 0.995$  on both analytical columns. An ICV was analyzed immediately following each of the initial calibrations. The %Ds for all target compounds were within the QC limits of 15% on both analytical columns. A representative number of %RSDs and ICV %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.3.3 Continuing Calibration

In the continuing calibrations bracketing the pesticide analysis of the sample, all %Ds were  $\leq 15\%$  with the exception of %Ds for alpha-BHC, gamma-chlordane, dieldrin, and 4,4'DDD on channel B for one of the closing CCVs. No qualifications were required since channel A was used as the primary column and there were no detects on the primary column. Of the continuing calibrations associated with the PCB analysis of the sample, all %Ds were  $\leq 15\%$  for Aroclor 1016 and Aroclor 1260. A representative number of %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.4 BLANKS

### 2.4.1 Instrument Blanks

An instrument blank was analyzed at the beginning of each analytical sequence. Cross-contamination was not evident in the samples. No qualifications were necessary.

### 2.4.2 Method Blanks

Two water method blanks, one for pesticides (5C28048-BLK1) and one for PCBs (5C28048-BLK2) were extracted and analyzed with these SDG. There were no pesticide target compounds or Aroclors detected in the corresponding method blank. Review of the chromatograms showed no false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two pairs of blank spike and blank spike duplicate, one for pesticides (5C28048-BS1/BSD1) and one for PCBs (5C28048-BS2/BSD2) was extracted and analyzed with this SDG. The recoveries for all spiked pesticide target compounds and Aroclors were within the laboratory-established QC limits and the RPDs were  $\leq 30\%$  for pesticides. RPDs for Aroclors 1016 and 1260 were above the QC limits of 30% and 25%, respectively. No qualifications were required since there were no detects for Aroclors in the samples.

The laboratory indicated that the PCB blank spike was double spiked and was reanalyzed at 2 $\times$  dilution. The original analysis of the BS was not provided. The 2 $\times$  dilution showed comparable



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levels to the BSD analysis. A representative number of recoveries were checked from the raw data, and no calculation or transcription errors were noted.

## 2.6 SURROGATE RECOVERY

The sample and all QC samples were fortified with the surrogate compounds decachlorobiphenyl and tetrachloro-m-xylene. Surrogate recoveries for the pesticide and PCB analyses of both samples were below the laboratory-established QC limits. In sample Outfall 011 Composite, the surrogate recovery was reported as acceptable, however, the raw data indicated that it was slightly below the QC limits. All pesticides and PCBs were qualified as estimated nondetects, "UJ," in both samples. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

There were no MS/MSD analyses performed on the sample in this SDG. Method accuracy was assessed based on the blank spike results. No qualifications were required.

## 2.8 SAMPLE CLEANUP PERFORMANCE

According to the laboratory extraction benchsheets, no cleanups were performed on the extracts for pesticides. The extracts for PCBs were acid washed. No qualifications were required.

## 2.9 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated sample. The following are findings associated with field QC samples:

### 2.9.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with the sample in this SDG. No qualifications were required.

### 2.9.2 Field Duplicates

There were no field duplicate samples associated with the sample in this SDG.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for pesticides and PCBs by EPA Method 608. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the sample in this SDG. No qualifications were required.

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## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs by recalculating any sample detects, and a representative number of blank spike and surrogate recoveries. Reporting limits were supported by the low level standards of the initial calibrations and the laboratory MDL studies. The water reporting limits were not adjusted for sample amount on the result summaries; however, the dilution factor listed on the summaries reflected the sample volume extracted. No qualifications were required.



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 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Rev	Qual
									Qual	Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05	↓	S
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05		
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05		
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.971	03/28/05	03/29/05		
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05		
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/29/05		
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05		
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.971	03/28/05	03/29/05		
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05		
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05		
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.971	03/28/05	03/29/05		
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.971	03/28/05	03/29/05		
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.971	03/28/05	03/29/05		
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05		
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.971	03/28/05	03/29/05		
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05		
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.971	03/28/05	03/29/05		
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.971	03/28/05	03/29/05		
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.971	03/28/05	03/29/05		
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.971	03/28/05	03/29/05		
Surrogate: Tetrachloro- <i>m</i> -xylene (35-115%)					31 %				ZX	
Surrogate: Decachlorobiphenyl (45-120%)					36 %				ZX	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: TOTAL PCBs (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: ug/l										
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.971	03/28/05	03/30/05	UJ	S
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.971	03/28/05	03/30/05	↓	↓
Surrogate: Decachlorobiphenyl (45-120%)					40 %					ZX

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ORGANOCHLORINE PESTICIDES (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: ug/l										
Aldrin	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05	US	S
alpha-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05		
beta-BHC	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05		
delta-BHC	EPA 608	5C28048	0.020	0.20	ND	0.952	03/28/05	03/29/05		
gamma-BHC (Lindane)	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05		
Chlordane	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/29/05		
4,4'-DDD	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05		
4,4'-DDE	EPA 608	5C28048	0.025	0.10	ND	0.952	03/28/05	03/29/05		
4,4'-DDT	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05		
Dieldrin	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05		
Endosulfan I	EPA 608	5C28048	0.015	0.10	ND	0.952	03/28/05	03/29/05		
Endosulfan II	EPA 608	5C28048	0.040	0.10	ND	0.952	03/28/05	03/29/05		
Endosulfan sulfate	EPA 608	5C28048	0.015	0.20	ND	0.952	03/28/05	03/29/05		
Endrin	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05		
Endrin aldehyde	EPA 608	5C28048	0.045	0.10	ND	0.952	03/28/05	03/29/05		
Endrin ketone	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05		
Heptachlor	EPA 608	5C28048	0.030	0.10	ND	0.952	03/28/05	03/29/05		
Heptachlor epoxide	EPA 608	5C28048	0.020	0.10	ND	0.952	03/28/05	03/29/05		
Methoxychlor	EPA 608	5C28048	0.035	0.10	ND	0.952	03/28/05	03/29/05		
Toxaphene	EPA 608	5C28048	1.5	5.0	ND	0.952	03/28/05	03/29/05		
Surrogate: Tetrachloro-m-xylene (35-115%)					35 %					
Surrogate: Decachlorobiphenyl (45-120%)					40 %					ZX

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: TOTAL PCBS (EPA 608)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Aroclor 1016	EPA 608	5C28048	0.20	1.0	ND	0.952	03/28/05	03/30/05	UT S
Aroclor 1221	EPA 608	5C28048	0.10	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Aroclor 1232	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Aroclor 1242	EPA 608	5C28048	0.15	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Aroclor 1248	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Aroclor 1254	EPA 608	5C28048	0.25	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Aroclor 1260	EPA 608	5C28048	0.40	1.0	ND	0.952	03/28/05	03/30/05	↓ ↓
Surrogate: Decachlorobiphenyl (45-120%)					45 %				

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: RADIONUCLIDES

SAMPLE DELIVERY GROUPS:  
IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC1523, IOC1526, IOC1562, IOC2063, & IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Radionuclides  
QC Level: Level IV  
No. of Samples: 10  
No. of Reanalyses/Dilutions: 0  
Reviewer: P. Meeks  
Date of Review: May 17, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *EPA Prescribed Procedures for Measurements of Radioactivity in Drinking Water, Methods 900.0, 905.0, and 906.0*, and validation procedures outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	Del Mar ID	Eberline ID	Matrix	COC Method
Outfall 011 Grab/Unfiltered	IOC1523-01	8349-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC1523-03	8349-002	water	900.0, 905.0, 906.0
Outfall 011 Grab/Substrate	IOC1523-04	8350-001	water	901.1
Outfall 011 Composite	IOC1526-01	8344-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Filtered	IOC1562-01	8351-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Unfiltered	IOC1562-02	8351-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 003 Substrate	IOC1562-03	8352-001	water	901.1
Outfall 011 Grab/Unfiltered	IOC2063-01	8381-001	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Grab/Filtered	IOC2063-03	8381-002	water	900.0, 903.1, 904.0, 905.0, 906.0
Outfall 011 Composite	IOC2064-01	8383-001	water	900.0, 903.1, 904.0, 905.0, 906.0

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

All samples were received at Del Mar Analytical within the temperature limits of  $4\pm 2^{\circ}\text{C}$ . Eberline, the subcontract laboratory, did not provide sample receipt temperature information; however, as it is not necessary to chill radiological samples, no qualifications were required. All samples were received intact and in good condition.

All samples were received unpreserved, in glass containers. According to the Los Angeles Water Quality Control Board (LARWQCB) guidance letter dated 01/12/05, unfiltered samples should not be preserved and filtered aliquots should be preserved after filtration. As instructed on the transfer COCs, Eberline filtered and then preserved samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063). The gross alpha, gross beta, strontium, radium-226, radium-228, and cesium-137 results for the remaining samples were not qualified for lack of preservation, as the methods specifies a five-day holding time for unpreserved samples.

No qualifications were required.

#### 2.1.2 Chain of Custody

The original COCs were signed and dated by field and laboratory personnel and the transfer COCs were signed by personnel from both laboratories. None of the COCs requested radium-226 or radium-228 analyses. These analyses were requested by M. Harper of Del Mar Analytical, as per instructions in a letter from the LARWQCB dated 3/22/05. The original and transfer COCs accounted for the samples and remaining analyses presented in this data package.

Eberline did not list the MWH IDs on the Form Is; therefore, the reviewer edited the Form Is to reflect these IDs. No qualifications were required.

#### 2.1.3 Holding Times

All tritium analyses and all analyses for samples Outfall 011 Grab Filtered (IOC1523), Outfall 003 Filtered, and Outfall 011 Grab Filtered (IOC2063) were performed within 180 days of collection. The remaining analyses were performed beyond the five day holding time for unpreserved samples; therefore, the gross alpha, gross beta, radium-226, radium-228, strontium-90, and cesium-137 results for samples Outfall 011 Grab Unfiltered (IOC1523), Outfall 011 Grab Substrate (IOC1523), Outfall 011 Composite (IOC1526), Outfall 003 Unfiltered, Outfall 003 Substrate, Outfall 011 Grab Unfiltered (IOC2063), Outfall 011 Substrate (IOC2063), and Outfall 011 Composite (IOC2064) were qualified as estimated, "J," for detects and, "UJ," for nondetects. No further qualifications were necessary.

## 2.2 CALIBRATION

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

### Gross Alpha and Gross Beta

The initial calibration included with the data was performed in February 2003. All gross alpha detector efficiencies were below 20%; therefore, the gross alpha results were qualified as estimated, "UJ," for nondetects and, "J," for detects. All gross beta detector efficiencies were at least 20% and were considered acceptable.

### Tritium

No calibration standards were analyzed for this method. According to the laboratory, every sample was spiked for efficiency determination; therefore, no calibration is necessary. All detector efficiencies in the samples were at least 20% and were considered acceptable. All internal spike efficiency to default efficiency ratios were near 1, indicating that quenching did not occur.

### Strontium-90

The initial calibrations were performed in June 1997. All strontium chemical yields were at least 65% and were considered acceptable and the strontium continuing calibration results were within the laboratory control limits. No qualifications were necessary.

### Cesium

The reviewer confirmed that the 662 KeV peak was used for quantitation, with an efficiency of 85%. No qualifications were necessary.

### Radium

The radium-226 cell efficiencies were determined in June 2002. The radium-226 continuing calibration results were within the laboratory-established control limits. The radium-228 calibration utilized actinium-228 and was verified in July 2001. The radium-228 tracer, barium-133, was calibrated in March 2004. The tracer chemical yields were greater than 90% and the actinium chemical yields were greater than 65%. No qualifications were necessary.

## 2.3 BLANKS

No measurable activities were detected in the method blanks; therefore, no qualifications were necessary.

## 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Blank spikes were analyzed in association with the samples in these SDGs. Two gross alpha, two radium-228, one radium-226, one strontium-90, and one tritium LCS recoveries were outside the 3-sigma limits control limits, but all had acceptable recoveries ranging from 72- 125%. The remaining blank spike results were within the 3-sigma limits. No qualifications were necessary.

## 2.5 LABORATORY DUPLICATES

The laboratory performed duplicate analyses for gross alpha, gross beta, tritium, and strontium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, strontium, radium-226, and radium-228 on Outfall 011 Grab Unfiltered (IOC2063). All results were within the 3-sigma limits and no qualifications were necessary.

## 2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

The laboratory performed matrix spike analyses for gross alpha, gross beta, and tritium on Outfall 011 Composite (IOC1526) and for gross alpha, gross beta, tritium, and radium-226 on Outfall 011 Grab Unfiltered (IOC2063). The Outfall 011 Grab Unfiltered gross alpha (114%), gross beta (104%), tritium (96%), and radium-226 (104%) were outside the 3-sigma control limits; however, as the recoveries were deemed acceptable, no qualifications were required. The Outfall 011 Composite gross alpha recovery outside the 3-sigma limits; however, as the 82% recovery was deemed acceptable, no qualifications were required. The remaining recoveries were within the 3-sigma limits. No qualifications were necessary.

## 2.7 SAMPLE RESULT VERIFICATION

An EPA Level IV review was performed for the samples in these data packages. Sample results and MDAs reported on the sample result forms were verified against the raw data and no calculation or transcription errors were noted. No qualifications were necessary.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

### 2.8.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples in these SDGs.

Eberline Services

ANALYSIS RESULTS

SDG <u>8349</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503159-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Grab Unfiltered IOC1523-01	8349-001	03/18/05	04/02/05	04/02/05	GrossAlpha	0.067 ± 0.71	pCi/L	1.39
			04/02/05	04/02/05	Gross Beta	2.09 ± 1.3	pCi/L	1.94
			04/22/05	04/22/05	Ra228	0.453 ± 0.25	pCi/L	0.611
			04/07/05	04/07/05	H3	-16.2 ± 98	pCi/L	166
			05/06/05	05/06/05	Ra226	0.084 ± 0.020	pCi/L	0.023
			04/05/05	04/05/05	Sr90	-0.108 ± 0.25	pCi/L	0.508
Outfall Oil Grab Filtered IOC1523-03	8349-002	03/18/05	04/02/05	04/02/05	GrossAlpha	0.626 ± 0.83	pCi/L	1.28
			04/02/05	04/02/05	Gross Beta	3.37 ± 1.3	pCi/L	1.79
			04/07/05	04/07/05	H3	-63.2 ± 96	pCi/L	166
			04/05/05	04/05/05	Sr90	0.029 ± 0.29	pCi/L	0.588

Am 5/12/05

Rec Qual	Qual Code
J	R, H
J	↓
J	
J	H
J	H
J	R
C	
C	

**AMEC VALIDATED**  
**LEVEL IV**

Certified by <u>[Signature]</u>
Report Date <u>05/17/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8150</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503160-01</u>	Contract <u>PROJECT# IOC1523</u>
Received Date <u>03/22/05</u>	Matrix <u>SOLID</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
IOC1523-04	8350-001	Outfall Oil Grab Substrate	03/18/05	04/11/05	Cs137 (G)	U	pCi/Smpl	9.67

Rev	Qual
Qual	Code
UJ	H

Am 5/17/05

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LEVEL IV

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Report Date <u>05/04/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8344</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503154-01</u>	Contract <u>PROJECT# IOC1526</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
<u>Sample ID</u> Outfall Oil Composite IOC1526	<u>Sample ID</u> 8344-001	03/18/05	04/02/05	GrossAlpha	0.305 ± 0.81	pCi/L	1.20
			04/02/05	Gross Beta	1.96 ± 1.1	pCi/L	1.80
			04/22/05	Ra228	0.359 ± 0.23	pCi/L	0.576
			04/07/05	H3	-31.0 ± 98	pCi/L	166
			05/06/05	Ra226	0.063 ± 0.020	pCi/L	0.024
			04/05/05	Sr90	0.032 ± 0.22	pCi/L	0.442

Am 5/17/05

Rev	Qual	Code
		R, H
		↓
		H
		H

AMEC VALIDATED

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Report Date <u>05/10/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8351</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503161-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 003 Filtered IOC1562-01	8351-001	03/19/05	04/08/05	04/08/05	GrossAlpha	8.96 ± 3.3	pCi/L	2.54
			04/08/05	04/08/05	Gross Beta	18.0 ± 3.1	pCi/L	3.73
			04/22/05	04/22/05	Ra228	0.448 ± 0.53	pCi/L	0.961
			04/07/05	04/07/05	H3	-43.7 ± 96	pCi/L	164
			05/05/05	05/05/05	Ra226	0.091 ± 0.026	pCi/L	0.034
			04/05/05	04/05/05	Sr90	5.49 ± 0.58	pCi/L	0.445
Outfall 003 Unfiltered IOC1562-02	8351-002	03/19/05	04/06/05	04/06/05	GrossAlpha	5.03 ± 3.0	pCi/L	3.27
			04/06/05	04/06/05	Gross Beta	19.0 ± 3.7	pCi/L	4.56
			04/22/05	04/22/05	Ra228	0.386 ± 0.56	pCi/L	0.897
			04/07/05	04/07/05	H3	-34.3 ± 99	pCi/L	168
			05/05/05	05/05/05	Ra226	0.145 ± 0.028	pCi/L	0.031
			04/05/05	04/05/05	Sr90	5.49 ± 0.56	pCi/L	0.404

AM 5/17/05

Raw Qual	Raw Code
H	R
CC	
HFBCH	R, H
	H
	H

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Report Date <u>05/16/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8352</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>RS03162-01</u>	Contract <u>PROJECT# IOC1562</u>
Received Date <u>03/22/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA	
Outfall 003	Substrate	IOC1562-03	8352-001	03/19/05	04/25/05	Ce137 (G)	U	pCi/Smpl	5.55

Rev Qual	Qual Code
UJ	H

pm 5/17/05

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LEVEL IV

Certified by <u>[Signature]</u>
Report Date <u>05/03/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8381</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503230-01</u>	Contract <u>PROJECT# IOC2063</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall Oil Grab Unfiltered IOC2063-01	8381-001	03/25/05	04/09/05	GrossAlpha	0.510 ± 0.59	pCi/L	0.852
			04/09/05	Gross Beta	2.97 ± 1.3	pCi/L	1.84
			05/05/05	Ra228	0.328 ± 0.16	pCi/L	0.403
			04/21/05	H3	-16.7 ± 160	pCi/L	279
			04/29/05	Ra226	-0.229 ± 0.19	pCi/L	0.396
Outfall Oil Grab Filtered IOC2063-03	8381-002	03/25/05	04/09/05	GrossAlpha	-0.086 ± 0.62	pCi/L	1.29
			04/09/05	Gross Beta	-0.472 ± 1.3	pCi/L	2.32
			05/05/05	Ra228	0.256 ± 0.19	pCi/L	0.501
			04/21/05	H3	129 ± 170	pCi/L	278
			04/29/05	Ra226	0.407 ± 0.21	pCi/L	0.285
		04/18/05	Sr90	-0.105 ± 0.26	pCi/L	0.535	

PM 5/17/05

Rev Qual	Qual Code
5	R.H
5	H
5	H
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5	H
5	R
5	C
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AMEC VALIDATED

LEVEL IV

Certified by <u><i>[Signature]</i></u>
Report Date <u>05/11/05</u>
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Eberline Services

ANALYSIS RESULTS

SDG <u>8383</u>	Client <u>DEL MAR ANAL</u>
Work Order <u>R503232-01</u>	Contract <u>PROJECT# IOC2064</u>
Received Date <u>03/29/05</u>	Matrix <u>WATER</u>

Client	Lab	Sample ID	Collected	Analyzed	Nuclide	Results ± 2σ	Units	MDA
Outfall 011 Composite		8383-001	03/25/05	04/11/05	GrossAlpha	0.216 ± 0.63	pCi/L	1.16
				04/11/05	Gross Beta	2.35 ± 1.2	pCi/L	1.82
				05/05/05	Ra228	0.348 ± 0.19	pCi/L	0.477
				04/21/05	H3	83.4 ± 170	pCi/L	278
				04/29/05	Ra226	0.237 ± 0.33	pCi/L	0.544
				04/18/05	Sr90	-0.105 ± 0.25	pCi/L	0.514

Rev Qual Code  
 SS R, H  
 SS ↓  
 SS H  
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Am 5/17/05

AMEC VALIDATED  
LEVEL IV


Certified by <u>[Signature]</u>
Report Date <u>05/11/05</u>
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## CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711SV53  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064  
 No. of Analyses 2

Laboratory Del Mar  
 Reviewer M. Pokorny  
 Analysis/Method Semivolatiles

Date: April 11, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis	Qualifications were required for calibration and LCS outliers and for blank contamination.
Protocol, e.g.,	_____
Holding Times	_____
GC/MS Tune/Inst. Perform	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	_____
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	

## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: SEMIVOLATILES

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Semivolatiles  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: M. Pokorny  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Semivolatile Organics (DVP-3, Rev. 2)*, *EPA Method 625*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	water	625
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	water	625

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation, and no preservation was noted in the field. The COCs noted that the samples were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were extracted within seven days of collection and analyzed within 40 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

The DFTPP tunes met the criteria specified in Method 625, and the samples were analyzed within 12 hours of the DFTPP injection time. No qualifications were required.

### 2.3 CALIBRATION

The initial calibration associated with this SDG was dated 03/17/05. The average RRFs for were  $\geq 0.05$  and the %RSDs were  $\leq 35\%$  or  $r^2 \geq 0.995$  for all target compounds listed on the sample summary form, except for the  $r^2$  values for benzoic acid and 4,6-dinitro-2-methylphenol. Benzoic acid and 4,6-dinitro-2-methylphenol were qualified as estimated nondetects, "UJ," in the samples of these SDGs. The laboratory used more stringent %RSD criteria than required by Method 625, and provided reanalyses of both samples for 2,4-dinitrophenol only; however, as the original data met criteria, the reanalysis results, both nondetects, were rejected, "R," in favor of the original analysis results for 2,4-dinitrophenol. A representative number of average RRFs and %RSDs were checked from the raw data, and no calculation or transcription errors were noted. The continuing calibration associated with the sample analysis was analyzed 03/31/05. The RRFs for all target compounds were  $\geq 0.05$ , and the %Ds were  $\leq 20\%$  except for the %Ds for hexachlorocyclopentadiene and benzidine. Hexachlorocyclopentadiene was qualified as an estimated nondetect, "UJ," in the samples of these SDGs. Benzidine was rejected for other reasons (see Section 2.5) and was not further qualified. A representative number of RRFs,  $r^2$  values, and %Ds were checked from the raw data, and no calculation or transcription errors were noted. No further qualifications were required.

## 2.4 BLANKS

One method blank (5C28041-BLK1) was extracted and analyzed with this SDG. Butylbenzylphthalate, di-n-butylphthalate, and diethylphthalate were reported in the method blank and were qualified as nondetects, "U," in the samples of these SDGs. Review of the raw data indicated no reportable false negatives or false positives. No further qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One blank spike/blank spike duplicate pair (5C28041-BS1/5C28041-BSD1) was extracted and analyzed with this SDG. All percent recoveries and RPDs were within the laboratory QC limits, except for benzidine which was not recovered in either the BS or BSD. Benzidine was rejected, "R," in the samples of these SDGs. A representative number of recoveries and RPDs were calculated from the raw data and no calculation or transcription errors were found. No further qualifications were required.

## 2.6 SURROGATE RECOVERY

The sample surrogate recoveries were within the laboratory QC limits. A representative number of recoveries were calculated from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses were associated with these SDGs. Evaluation of method accuracy and precision was based on blank spike/blank spike duplicate results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. Following are findings associated with field QC samples:

### 2.8.1 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.2 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## **2.9 INTERNAL STANDARDS PERFORMANCE**

The internal standard area counts and retention times were within the control limits established by the continuing calibration standards: -50%/+100% for internal standard areas and  $\pm 30$  seconds for retention times. A representative number of recoveries were checked from the raw data, and no transcription or calculation errors were noted. No qualifications were required.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatograms, retention times, and spectra indicated no problems with target compound identification. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification is verified at a Level IV data validation. No calculation or transcription errors were found. The reporting limits were supported by the low level of the initial calibration and the method detection limit study. No qualifications were required.

## **2.12 TENTATIVELY IDENTIFIED COMPOUNDS**

TICs were not reported by the laboratory for these SDGs. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

Review of the raw data indicated no problems with system performance. No qualifications were required.



# Del Mar Analytical

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 9784 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689  
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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: ug/l									
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	U
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.971	03/28/05	03/31/05	U
Aniline	EPA 625	5C28041	2.9	10	ND	0.971	03/28/05	03/31/05	U
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	U
Benzidine	EPA 625	5C28041	2.4	5.0	ND	0.971	03/28/05	03/31/05	U
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.971	03/28/05	03/31/05	U
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.971	03/28/05	03/31/05	U
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.971	03/28/05	03/31/05	U
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.971	03/28/05	03/31/05	U
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.971	03/28/05	03/31/05	U
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.971	03/28/05	03/31/05	U
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	U
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.971	03/28/05	03/31/05	U
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	U
Butyl benzyl phthalate	EPA 625	5C28041	0.34	5.0	ND 0.68	0.971	03/28/05	03/31/05	U J B
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.971	03/28/05	03/31/05	U
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05	U
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.971	03/28/05	03/31/05	U
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.971	03/28/05	03/31/05	U
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.971	03/28/05	03/31/05	U
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.971	03/28/05	03/31/05	U
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.971	03/28/05	03/31/05	U
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05	U
Di-n-butyl phthalate	EPA 625	5C28041	0.26	2.0	ND 0.87	0.971	03/28/05	03/31/05	U J B
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.971	03/28/05	03/31/05	U
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.971	03/28/05	03/31/05	U
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.971	03/28/05	03/31/05	U
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.971	03/28/05	03/31/05	U
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.971	03/28/05	03/31/05	U
Diethyl phthalate	EPA 625	5C28041	0.12	1.0	ND 0.23	0.971	03/28/05	03/31/05	U J B
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.971	03/28/05	03/31/05	U
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.971	03/28/05	03/31/05	U
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.971	03/28/05	03/31/05	U J C
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	03/31/05	U N
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.971	03/28/05	03/31/05	U
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.971	03/28/05	03/31/05	U
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.971	03/28/05	03/31/05	U
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.971	03/28/05	03/31/05	U

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	REV QUAL	QUAL CODE
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.											
Reporting Units: ug/l											
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.971	03/28/05	03/31/05	U		
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.971	03/28/05	03/31/05			
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05			
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.971	03/28/05	03/31/05			
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.971	03/28/05	03/31/05	UJ		C
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.971	03/28/05	03/31/05	U		
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.971	03/28/05	03/31/05			
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.971	03/28/05	03/31/05			
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05			
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.971	03/28/05	03/31/05			
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.971	03/28/05	03/31/05			
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.971	03/28/05	03/31/05			
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.971	03/28/05	03/31/05			
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.971	03/28/05	03/31/05			
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.971	03/28/05	03/31/05			
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05			
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.971	03/28/05	03/31/05			
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.971	03/28/05	03/31/05			
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.971	03/28/05	03/31/05			
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.971	03/28/05	03/31/05			
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.971	03/28/05	03/31/05			
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.971	03/28/05	03/31/05			
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.971	03/28/05	03/31/05			
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.971	03/28/05	03/31/05			
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.971	03/28/05	03/31/05			
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05			
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.971	03/28/05	03/31/05			
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.971	03/28/05	03/31/05			
Surrogate: 2-Fluorophenol (30-120%)					64 %						
Surrogate: Phenol-d6 (35-120%)					65 %						
Surrogate: 2,4,6-Tribromophenol (45-120%)					85 %						
Surrogate: Nitrobenzene-d5 (45-120%)					64 %						
Surrogate: 2-Fluorobiphenyl (45-120%)					69 %						
Surrogate: Terphenyl-d14 (45-120%)					84 %						

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01RE1 (Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.971	03/28/05	04/11/05	R D
Surrogate: 2-Fluorophenol (30-120%)					60 %				
Surrogate: Phenol-d6 (35-120%)					63 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					84 %				
Surrogate: Nitrobenzene-d5 (45-120%)					62 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					66 %				
Surrogate: Terphenyl-d14 (45-120%)					79 %				

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Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV QUAL	QUAL CODE
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)										
Reporting Units: ug/l										
Acenaphthene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	U	
Acenaphthylene	EPA 625	5C28041	0.10	0.50	ND	0.943	03/28/05	03/31/05	U	
Aniline	EPA 625	5C28041	2.9	10	ND	0.943	03/28/05	03/31/05	U	
Anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	U	
Benzidine	EPA 625	5C28041	2.4	5.0	ND	0.943	03/28/05	03/31/05	U	L
Benzoic acid	EPA 625	5C28041	3.7	20	ND	0.943	03/28/05	03/31/05	U	C
Benzo(a)anthracene	EPA 625	5C28041	0.038	5.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(a)pyrene	EPA 625	5C28041	0.14	2.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(b)fluoranthene	EPA 625	5C28041	0.050	2.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(g,h,i)perylene	EPA 625	5C28041	0.059	5.0	ND	0.943	03/28/05	03/31/05	U	
Benzo(k)fluoranthene	EPA 625	5C28041	0.053	0.50	ND	0.943	03/28/05	03/31/05	U	
Benzyl alcohol	EPA 625	5C28041	0.21	5.0	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroethoxy)methane	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroethyl)ether	EPA 625	5C28041	0.084	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-chloroisopropyl)ether	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	U	
Bis(2-ethylhexyl)phthalate	EPA 625	5C28041	1.1	5.0	ND	0.943	03/28/05	03/31/05	U	
4-Bromophenyl phenyl ether	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	U	
Butyl benzyl phthalate	EPA 625	5C28041	0.34	5.0	ND 0.70	0.943	03/28/05	03/31/05	U	B
4-Chloroaniline	EPA 625	5C28041	0.20	2.0	ND	0.943	03/28/05	03/31/05	U	
2-Chloronaphthalene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	U	
4-Chloro-3-methylphenol	EPA 625	5C28041	0.34	2.0	ND	0.943	03/28/05	03/31/05	U	
4-Chlorophenyl phenyl ether	EPA 625	5C28041	0.056	0.50	ND	0.943	03/28/05	03/31/05	U	
2-Chlorophenol	EPA 625	5C28041	0.12	1.0	ND	0.943	03/28/05	03/31/05	U	
Chrysene	EPA 625	5C28041	0.072	0.50	ND	0.943	03/28/05	03/31/05	U	
Dibenz(a,h)anthracene	EPA 625	5C28041	0.083	0.50	ND	0.943	03/28/05	03/31/05	U	
Dibenzofuran	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	U	
Di-n-butyl phthalate	EPA 625	5C28041	0.26	2.0	ND	0.943	03/28/05	03/31/05	U	
1,2-Dichlorobenzene	EPA 625	5C28041	0.11	0.50	ND	0.943	03/28/05	03/31/05	U	
1,3-Dichlorobenzene	EPA 625	5C28041	0.13	0.50	ND	0.943	03/28/05	03/31/05	U	
1,4-Dichlorobenzene	EPA 625	5C28041	0.050	0.50	ND	0.943	03/28/05	03/31/05	U	
3,3-Dichlorobenzidine	EPA 625	5C28041	0.93	5.0	ND	0.943	03/28/05	03/31/05	U	
2,4-Dichlorophenol	EPA 625	5C28041	0.21	2.0	ND	0.943	03/28/05	03/31/05	U	
Diethyl phthalate	EPA 625	5C28041	0.12	1.0	ND 0.26	0.943	03/28/05	03/31/05	U	B
2,4-Dimethylphenol	EPA 625	5C28041	0.31	2.0	ND	0.943	03/28/05	03/31/05	U	
Dimethyl phthalate	EPA 625	5C28041	0.081	0.50	ND	0.943	03/28/05	03/31/05	U	
4,6-Dinitro-2-methylphenol	EPA 625	5C28041	0.38	5.0	ND	0.943	03/28/05	03/31/05	U	C
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	03/31/05	U	N-1
2,4-Dinitrotoluene	EPA 625	5C28041	0.23	5.0	ND	0.943	03/28/05	03/31/05	U	
2,6-Dinitrotoluene	EPA 625	5C28041	0.24	5.0	ND	0.943	03/28/05	03/31/05	U	
Di-n-octyl phthalate	EPA 625	5C28041	0.17	5.0	ND	0.943	03/28/05	03/31/05	U	
1,2-Diphenylhydrazine/Azobenzene	EPA 625	5C28041	0.087	1.0	ND	0.943	03/28/05	03/31/05	U	

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: ACID & BASE/NEUTRALS BY GC/MS (EPA 625)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Fluoranthene	EPA 625	5C28041	0.089	0.50	ND	0.943	03/28/05	03/31/05	U
Fluorene	EPA 625	5C28041	0.075	0.50	ND	0.943	03/28/05	03/31/05	U
Hexachlorobenzene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
Hexachlorobutadiene	EPA 625	5C28041	0.38	2.0	ND	0.943	03/28/05	03/31/05	U
Hexachlorocyclopentadiene	EPA 625	5C28041	1.8	5.0	ND	0.943	03/28/05	03/31/05	U J C
Hexachloroethane	EPA 625	5C28041	0.51	3.0	ND	0.943	03/28/05	03/31/05	U
Indeno(1,2,3-cd)pyrene	EPA 625	5C28041	0.19	2.0	ND	0.943	03/28/05	03/31/05	U
Isophorone	EPA 625	5C28041	0.059	1.0	ND	0.943	03/28/05	03/31/05	U
2-Methylnaphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
2-Methylphenol	EPA 625	5C28041	0.28	2.0	ND	0.943	03/28/05	03/31/05	U
4-Methylphenol	EPA 625	5C28041	0.20	5.0	ND	0.943	03/28/05	03/31/05	U
Naphthalene	EPA 625	5C28041	0.13	1.0	ND	0.943	03/28/05	03/31/05	U
2-Nitroaniline	EPA 625	5C28041	0.18	5.0	ND	0.943	03/28/05	03/31/05	U
3-Nitroaniline	EPA 625	5C28041	0.35	5.0	ND	0.943	03/28/05	03/31/05	U
4-Nitroaniline	EPA 625	5C28041	0.49	5.0	ND	0.943	03/28/05	03/31/05	U
Nitrobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
2-Nitrophenol	EPA 625	5C28041	0.23	2.0	ND	0.943	03/28/05	03/31/05	U
4-Nitrophenol	EPA 625	5C28041	0.73	5.0	ND	0.943	03/28/05	03/31/05	U
N-Nitrosodimethylamine	EPA 625	5C28041	0.22	2.0	ND	0.943	03/28/05	03/31/05	U
N-Nitroso-di-n-propylamine	EPA 625	5C28041	0.18	2.0	ND	0.943	03/28/05	03/31/05	U
N-Nitrosodiphenylamine	EPA 625	5C28041	0.077	1.0	ND	0.943	03/28/05	03/31/05	U
Pentachlorophenol	EPA 625	5C28041	0.78	2.0	ND	0.943	03/28/05	03/31/05	U
Phenanthrene	EPA 625	5C28041	0.071	0.50	ND	0.943	03/28/05	03/31/05	U
Phenol	EPA 625	5C28041	0.14	1.0	ND	0.943	03/28/05	03/31/05	U
Pyrene	EPA 625	5C28041	0.059	0.50	ND	0.943	03/28/05	03/31/05	U
1,2,4-Trichlorobenzene	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
2,4,5-Trichlorophenol	EPA 625	5C28041	0.075	2.0	ND	0.943	03/28/05	03/31/05	U
2,4,6-Trichlorophenol	EPA 625	5C28041	0.10	1.0	ND	0.943	03/28/05	03/31/05	U
Surrogate: 2-Fluorophenol (30-120%)									63 %
Surrogate: Phenol-d6 (35-120%)									66 %
Surrogate: 2,4,6-Tribromophenol (45-120%)									87 %
Surrogate: Nitrobenzene-d5 (45-120%)									67 %
Surrogate: 2-Fluorobiphenyl (45-120%)									70 %
Surrogate: Terphenyl-d14 (45-120%)									83 %

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## ACID & BASE/NEUTRALS BY GC/MS (EPA 625)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01RE1 (Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
2,4-Dinitrophenol	EPA 625	5C28041	2.7	5.0	ND	0.943	03/28/05	04/11/05	R D
Surrogate: 2-Fluorophenol (30-120%)					61 %				
Surrogate: Phenol-d6 (35-120%)					66 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)					89 %				
Surrogate: Nitrobenzene-d5 (45-120%)					66 %				
Surrogate: 2-Fluorobiphenyl (45-120%)					71 %				
Surrogate: Terphenyl-d14 (45-120%)					81 %				

**AMEC VALIDATED  
 LEVEL IV**

Del Mar Analytical, Irvine  
 Michele Harper  
 Project Manager

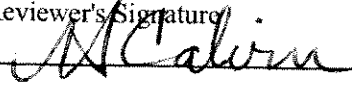
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF60  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064  
 No. of Analyses 2

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method EFH by Method 8015B

Date: April 12, 2005  
 Reviewer's Signature  


ACTION ITEMS <sup>a</sup>	
1. Case Narrative Deficiencies	
2. Out of Scope Analyses	
3. Analyses Not Conducted	
4. Missing Hardcopy Deliverables	
5. Incorrect Harcopy Deliverables	
6. Deviations from Analysis	
Protocol, e.g.,	
Holding Times	
GC/MS Tune/Inst. Performance	
Calibration	
Method blanks	
Surrogates	
Matrix Spike/Dup LCS	
Field QC	
Internal Standard Performance	
Compound Identification	
Quantitation	
System Performance	
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/EXTRACTABLE

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Extractable  
QC Level: Level IV  
No. of Samples: 2  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 12, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

DATA VALIDATION REPORT

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	8015B/EFH
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	8015B/EFH



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical laboratory on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the sample containers were received intact. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel, and accounted for the analyses presented in this SDG. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were extracted within seven days of sample collection and analyzed within 40 days of extraction. No qualifications were required.

### 2.2 CALIBRATION

The initial calibration associated with the sample analyses was analyzed on 03/11/05. The %RSD was within the QC limit of  $\leq 20\%$ . The %Ds for the initial calibration verification (ICV) and continuing calibrations associated with the sample analysis were  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One method blank (5C26001-BLK1) was extracted and analyzed with the samples in these SDGs. EFH (C13-C22) was not present above the MDL in the method blank or in the instrument blank analyzed at the beginning of the analytical sequence. Review of the chromatograms showed no false negatives. No qualifications were required.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One method blank spike/blank spike duplicate pair (5C26001-BS1/BSD1) was extracted and analyzed with the samples in these SDGs. The laboratory reported recoveries of alkane range C13-C28 from spiked diesel. The recoveries were within the laboratory-established QC limits of 40-120%, and the RPD was within the QC limit of  $\leq 25\%$ . The recoveries and RPD were checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

*DATA VALIDATION REPORT*

## **2.6 SURROGATE RECOVERY**

The samples were fortified with the surrogate compound n-octacosane. The sample surrogate recoveries were within the laboratory-established QC limits of 40-125%. The recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

There were no MS/MSD analyses performed on the samples of these SDGs. Evaluation of method accuracy and precision was based on the BS/BSD results. No qualifications were required.

## **2.8 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.9.1 Field Blanks and Equipment Rinsates**

There were no field blank or equipment rinsate samples associated with the site samples in these SDGs. No qualifications were required.

### **2.9.2 Field Duplicates**

There were no field duplicate samples associated with these SDGs.

## **2.10 COMPOUND IDENTIFICATION**

The laboratory analyzed for EFH n-alkane range C13-C22 by Method 8015B. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for these SDGs. No qualifications were required.

## **2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in mg/L (ppm). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifier
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.952	03/26/05	03/29/05	u
Surrogate: n-Octacosane (40-125%)									
					95 %				

*very good code*

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-05  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: EXTRACTABLE FUEL HYDROCARBONS (CADHS/8015 Modified)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
EFH (C13 - C22)	EPA 8015B	5C26001	0.082	0.50	ND	0.943	03/26/05	03/28/05	U
Surrogate: n-Octacosane (40-125%)					65 %				

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### AMEC VALIDATED

### LEVEL IV

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 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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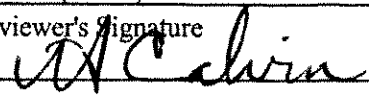
**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711TF61  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064

No. of Analyses 4

Laboratory Pacific Analytical  
 Reviewer L. Calvin  
 Analysis/Method GRO by Method 8015M

Date: April 12, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. Case Narrative Deficiencies	_____
2. Out of Scope Analyses	_____
3. Analyses Not Conducted	_____
4. Missing Hardcopy Deliverables	_____
5. Incorrect Hardcopy Deliverables	_____
6. Deviations from Analysis Protocol, e.g., Holding Times GC/MS Tune/Inst. Performance Calibration Method blanks Surrogates Matrix Spike/Dup LCS Field QC Internal Standard Performance Compound Identification Quantitation System Performance	_____
<b>COMMENTS<sup>b</sup></b>	Acceptable as reviewed.
<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements. <sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.	



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: TPH/Purgeable

SAMPLE DELIVERY GROUP: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: TPH-Purgeable  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: L. Calvin  
Date of Review: April 12, 2005

The samples listed in Table 1 were validated based on the general guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Extractable Total Fuel Hydrocarbons by GC (DVP-8, Rev. 2)*, USEPA SW-846 Method 8015M, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC2063-02	water	8015M/GRO
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	8015M/GRO
Trip Blank	Trip Blank	IOC2064-02	water	8015M/GRO



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical on ice within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The Del Mar Analytical case narrative noted that the samples were received intact, and the COCs indicated the samples were properly preserved. Information regarding lack of headspace in the VOA vials was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The water samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 CALIBRATION

One gasoline standard initial calibration dated 08/15/04 was associated with the sample analyses. The %RSD for GRO (C4-C12) was within the QC limit of  $\leq 20\%$ . An initial calibration verification (ICV) was not provided in the data package. The %Ds for both CCVs bracketing the sample analyses were within the Method QC limit of  $\leq 15\%$ . The %RSD and %Ds were recalculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

### 2.4 METHOD BLANKS

One water method blank (5C26026-BLK1) was associated with the sample analyses. GRO (C4-C12) was not detected above the MDL in the method blank. Review of the raw data indicated no false negative result. No qualifications were necessary.

### 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water method blank spike (5C26026-BS1) was associated with the sample analyses. GRO (C4-C12) was recovered within the laboratory-established QC limits of 70-140% in the blank spike. The recovery was checked from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The samples were fortified with the surrogate compound 4-bromofluorobenzene (BFB). Surrogate recoveries were within the laboratory-established QC limits of 65-140%. Recoveries were calculated from the raw data and no transcription or calculation errors were noted. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site samples of these SDGs. Evaluation of method accuracy was based on the blank spike results. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based on method blanks and laboratory QC samples for usability. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### 2.9.1 Trip Blanks, Field Blanks, and Equipment Rinsates

Samples Trip Blank (IOC2063-02) and Trip Blank (IOC2064-02) were the trip blanks associated with site samples Outfall 011 Grab and Outfall 011 Composite, respectively. GRO (C4-C12) was not detected above the MDL in either trip blank. Review of the raw data indicated no false negative results. There were no field blank or equipment rinsate samples associated with these SDGs. No qualifications were necessary.

### 2.9.2 Field Duplicates

There were no field duplicate samples in these SDGs.

## 2.10 COMPOUND IDENTIFICATION

The laboratory analyzed for GRO (C4-C12) by EPA SW-846 Method 8015M. Compound identification is verified at a Level IV validation. Review of chromatograms and retention times indicated no problems with compound identification for the samples in these SDGs. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified for these SDGs by recalculating any sample detects, blank spike recoveries, and a representative number of surrogate recoveries. Reporting limits were supported by the low level standard of the initial calibration and by the laboratory MDL. Results were reported in units of mg/L (ppt). No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont. Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	u
Surrogate: 4-BFB (FID) (65-140%)					104 %				
Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water) Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	u
Surrogate: 4-BFB (FID) (65-140%)					103 %				

*real qual*  
*qual*  
*code*

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE



# Del Mar Analytical

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 735-0043 FAX (480) 735-085  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-362

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: VOLATILE FUEL HYDROCARBONS (EPA 5030/CADHS Mod. 8015)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/28/05	u
Surrogate: 4-BFB (FID) (65-140%)					102 %				
<b>Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: mg/l									
GRO (C4 - C12)	EPA 8015 Mod.	5C26026	0.050	0.10	ND	1	03/26/05	03/27/05	u
Surrogate: 4-BFB (FID) (65-140%)					88 %				

*rel  
qual  
qual  
Good*

### AMEC VALIDATED

### LEVEL IV

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

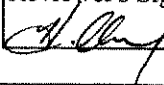
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**CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

AMEC Earth & Environmental  
 550 South Wadsworth Boulevard  
 Suite 500  
 Lakewood, CO 80226

Package ID T711VO92  
 Task Order 313150010  
 SDG No. IOC2063, IOC2064  
 No. of Analyses 4

Laboratory Del Mar  
 Reviewer H. Chang  
 Analysis/Method Volatiles/624

Date: April 11, 2005  
 Reviewer's Signature  


<b>ACTION ITEMS<sup>a</sup></b>	
1. <b>Case Narrative Deficiencies</b>	_____
2. <b>Out of Scope Analyses</b>	_____ _____
3. <b>Analyses Not Conducted</b>	_____ _____
4. <b>Missing Hardcopy Deliverables</b>	_____ _____
5. <b>Incorrect Harcopy Deliverables</b>	_____ _____
6. <b>Deviations from Analysis Protocol, e.g.,</b>	Acrolein was rejected in all samples due to low RRFs in initial and continuing calibrations.
Holding Times	_____
GC/MS Tune/Inst. Perform	_____
Calibrations	_____
Blanks	_____
Surrogates	_____
Matrix Spike/Dup LCS	_____
Field QC	_____
Internal Standard Performance	_____
Compound Identification and Quantitation	_____
System Performance	_____
<b>COMMENTS<sup>b</sup></b>	

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.  
<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: VOLATILES

SAMPLE DELIVERY GROUPS: IOC2063, IOC2064

Prepared by

AMEC Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
SDG#: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Volatiles  
QC Level: Level IV  
No. of Samples: 4  
No. of Reanalyses/Dilutions: 0  
Reviewer: H. Chang  
Date of Review: April 11, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels C and D Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, *EPA SW-846 Method 8260B*, and the *National Functional Guidelines For Organic Data Review (2/94)*. Any deviations from these procedures are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the summary forms as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Lab No.	Matrix	Method
Outfall 011 Grab	Outfall 011 Grab	IOC2063-01	water	624
Trip Blank	Trip Blank	IOC2063-02	water	624
Outfall 011 Composite	Outfall 011 Composite	IOC2064-01	water	624
Trip Blank	Trip Blank	IOC2064-02	water	624



## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

The following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The samples were properly preserved. The COC noted that the samples were received intact; however, information regarding absence of headspace was not provided. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by both field and laboratory personnel. The COCs accounted for the analysis presented in these SDGs. As the samples were couriered directly to the laboratory, custody seals were not required. No qualifications were required.

#### 2.1.3 Holding Times

The samples were analyzed within 14 days of collection. No qualifications were required.

### 2.2 GC/MS TUNING

All ion abundances were within the limits specified in the EPA Method 624. The samples and associated QC were analyzed within 12 hours of the BFB injection times. The Form Vs were verified from the raw data and no discrepancies between the summary forms and the raw data were noted. No qualifications were required.

### 2.3 CALIBRATION

Two initial calibrations dated 03/04/05 and 03/16/05 (1,1,2-trichloro-1,2,2-trifluoroethane, acrolein, and acrylonitrile only) were associated with these SDGs. The average RRF for acrolein was  $<0.05$  in the initial calibration dated 03/16/05; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. The average RRFs were  $\geq 0.05$  for the remaining target compounds listed on the sample result summaries. The %RSDs were  $\leq 35\%$  for all applicable target compounds.

Two continuing calibrations dated 03/27/05 at 09:39 and at 10:11 (1,1,2-trichloro-1,2,2-trifluoroethane, acrolein, and acrylonitrile only) were associated with the sample analyses in these SDGs. The RRF for acrolein was  $<0.05$  in the continuing calibration; therefore, the nondetect results for acrolein were rejected, "R," in all samples of these SDGs. All other RRFs were  $\geq 0.05$  for the remaining target compounds. All %Ds were within  $\pm 20\%$  with the exception of acrolein which had a %D greater than 20%. No additional qualification was necessary since acrolein was already rejected due to low RRFs. A representative number of %RSDs and average RRFs from the

initial calibrations, and %Ds and RRFs from the continuing calibrations were recalculated from the raw data, and no calculation or transcription errors were found. No further qualifications were required.

## 2.4 BLANKS

One water method blank (5C27003-BLK1) was associated with the sample analyses. There were no detects above the MDLs for the target compounds listed on the sample result summary. The method blank raw data showed no evidence of false negatives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One water blank spike (5C27003-BS1) was associated with the sample analyses. All recoveries were within the laboratory-established QC limits. A representative number of recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.6 SURROGATE RECOVERY

The surrogates were recovered within the QC limits of 80-120% in the samples and associated QC. A representative number of surrogate recoveries were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall 011 Grab. All recoveries and RPDs were within the laboratory-established QC limits. A representative number of recoveries and RPDs were recalculated from the raw data and no calculation or transcription errors were found. No qualifications were required.

## 2.8 FIELD QC SAMPLES

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site sample. Following are findings associated with field QC samples:

### 2.8.1 Trip Blanks

Sample Trip Blank (IOC2063) and Trip Blank (IOC2064) were the trip blanks associated with these SDGs. There were no target compounds detected above the MDLs in the trip blanks. No qualifications were required.

### 2.8.2 Field Blanks and Equipment Rinsates

There were no field QC samples associated with these SDGs. No qualifications were required.

### 2.8.3 Field Duplicates

There were no field duplicate samples associated with these SDGs. No qualifications were required.

## 2.9 INTERNAL STANDARDS PERFORMANCE

Internal standard area counts and retention times for the samples in this SDG were within the control limits established by the continuing calibration standards: +100%/-50% for internal standard areas and  $\pm 0.50$  minutes for retention times. A representative number of internal standard areas and retention times were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

## 2.10 COMPOUND IDENTIFICATION

Target compound identification was verified at a Level IV data validation. The laboratory analyzed for volatile target compounds by EPA Method 624. A TIC search was performed for requested target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane. The laboratory calibrated for target compound 1,2-dichloro-1,1,2-trifluoroethane; however, the calibration was not used for identification. Target compound cyclohexane was not included in the calibration (see section 2.11). TIC scan did not identify neither compound. Chromatograms, retention times, and spectra for the samples and QC were examined and no target compound identification problems were noted. No qualifications were required.

## 2.11 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification is verified at a Level IV data validation. The reporting limits were supported by the lowest concentrations of the initial calibration standards and by the MDL study. Calibration was not utilized for target compounds 1,2-dichloro-1,1,2-trifluoroethane and cyclohexane; therefore, the laboratory performed only a TIC search for these compounds. Nondetects for both compounds were qualified as estimated, "UJ," in the samples Outfall 011 Grab and Outfall 011 Composite. Compound quantitation was verified by recalculating any sample detects and a representative number of blank spike and surrogate recoveries from the raw data. Results were reported in  $\mu\text{g/L}$  (ppb). No calculation or transcription errors were noted. No further qualifications were required.

## 2.12 TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for these SDGs other than two target compounds reported using a TIC scan (see Section 2.10). Reporting of TICs is not required by EPA Method 624. No qualifications were required.

## **2.13 SYSTEM PERFORMANCE**

A review of the chromatograms and other raw data showed no identifiable problems with system performance. No qualifications were required.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05		u	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05			
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05			
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05			
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05			
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05			
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05			
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05			
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05			
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05			
Surrogate: Dibromofluoromethane (80-120%)					108 %						
Surrogate: Toluene-d8 (80-120%)					101 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %						

**AMEC VALIDATED**

**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05		u	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05			
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05			
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05			
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05			
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05			
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05			
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05			
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05			
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05			
Surrogate: Dibromofluoromethane (80-120%)					108 %						
Surrogate: Toluene-d8 (80-120%)					100 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					92 %						

**AMEC VALIDATED**  
**LEVEL IV**

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									Rev Qual	Qual Code
<b>Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)</b>										
Reporting Units: ug/l										
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	U	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	U	
Surrogate: Dibromofluoromethane (80-120%)					108 %					
Surrogate: Toluene-d8 (80-120%)					101 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %					
<b>Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	U	
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	U	
Surrogate: Dibromofluoromethane (80-120%)					108 %					
Surrogate: Toluene-d8 (80-120%)					100 %					
Surrogate: 4-Bromofluorobenzene (80-120%)					92 %					

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 755-0043 FAX (480) 785-0881  
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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: ug/l									
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05	u
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05	
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05	
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05	
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05	
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05	
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05	
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05	
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05	
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05	
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05	
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05	
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05	
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05	
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05	
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05	
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05	
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05	
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05	
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05	
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05	
Surrogate: Dibromofluoromethane (80-120%)									105 %
Surrogate: Toluene-d8 (80-120%)									100 %
Surrogate: 4-Bromofluorobenzene (80-120%)									94 %

### AMEC VALIDATED

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 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: PURGEABLES BY GC/MS (EPA 624)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	Rev Qual	Qual Code
Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)											
Reporting Units: ug/l											
Benzene	EPA 624	5C27003	0.28	1.0	ND	1	03/27/05	03/27/05		u	
Bromodichloromethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Bromoform	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
Bromomethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Carbon tetrachloride	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
Chlorobenzene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
Chloroethane	EPA 624	5C27003	0.33	5.0	ND	1	03/27/05	03/27/05			
Chloroform	EPA 624	5C27003	0.33	2.0	ND	1	03/27/05	03/27/05			
Chloromethane	EPA 624	5C27003	0.30	5.0	ND	1	03/27/05	03/27/05			
Dibromochloromethane	EPA 624	5C27003	0.28	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichlorobenzene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
1,3-Dichlorobenzene	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
1,4-Dichlorobenzene	EPA 624	5C27003	0.37	2.0	ND	1	03/27/05	03/27/05			
1,1-Dichloroethane	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloroethane	EPA 624	5C27003	0.28	0.50	ND	1	03/27/05	03/27/05			
1,1-Dichloroethene	EPA 624	5C27003	0.32	5.0	ND	1	03/27/05	03/27/05			
trans-1,2-Dichloroethene	EPA 624	5C27003	0.27	2.0	ND	1	03/27/05	03/27/05			
1,2-Dichloropropane	EPA 624	5C27003	0.35	2.0	ND	1	03/27/05	03/27/05			
cis-1,3-Dichloropropene	EPA 624	5C27003	0.22	2.0	ND	1	03/27/05	03/27/05			
trans-1,3-Dichloropropene	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Ethylbenzene	EPA 624	5C27003	0.25	2.0	ND	1	03/27/05	03/27/05			
Methylene chloride	EPA 624	5C27003	0.48	5.0	ND	1	03/27/05	03/27/05			
1,1,2,2-Tetrachloroethane	EPA 624	5C27003	0.24	2.0	ND	1	03/27/05	03/27/05			
Tetrachloroethene	EPA 624	5C27003	0.32	2.0	ND	1	03/27/05	03/27/05			
Toluene	EPA 624	5C27003	0.36	2.0	ND	1	03/27/05	03/27/05			
1,1,1-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
1,1,2-Trichloroethane	EPA 624	5C27003	0.30	2.0	ND	1	03/27/05	03/27/05			
Trichloroethene	EPA 624	5C27003	0.26	2.0	ND	1	03/27/05	03/27/05			
Trichlorofluoromethane	EPA 624	5C27003	0.34	5.0	ND	1	03/27/05	03/27/05			
Vinyl chloride	EPA 624	5C27003	0.26	0.50	ND	1	03/27/05	03/27/05			
Xylenes, Total	EPA 624	5C27003	0.52	4.0	ND	1	03/27/05	03/27/05			
Trichlorotrifluoroethane (Freon 113)	EPA 624	5C27003	1.2	5.0	ND	1	03/27/05	03/27/05			
Surrogate: Dibromofluoromethane (80-120%)					105 %						
Surrogate: Toluene-d8 (80-120%)					100 %						
Surrogate: 4-Bromofluorobenzene (80-120%)					93 %						

**AMEC VALIDATED**

**LEVEL IV**

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS (EPA 624)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					94 %				
<b>Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
Acrolein	EPA 624	5C27003	4.6	50	ND	1	03/27/05	03/27/05	R
Acrylonitrile	EPA 624	5C27003	5.1	50	ND	1	03/27/05	03/27/05	u
2-Chloroethyl vinyl ether	EPA 624	5C27003	1.3	5.0	ND	1	03/27/05	03/27/05	u
Surrogate: Dibromofluoromethane (80-120%)					105 %				
Surrogate: Toluene-d8 (80-120%)					100 %				
Surrogate: 4-Bromofluorobenzene (80-120%)					93 %				

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# LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	
									Rev Qual	Qual Code
<b>Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)</b>										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ	*11
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ	*11
<b>Sample ID: IOC2063-02 (DRAFT: Trip Blank - Water)</b>										
Reporting Units: ug/l										
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U	
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U	

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: PURGEABLES BY GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
<b>Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ #11
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	UJ #11
<b>Sample ID: IOC2064-02 (DRAFT: Trip Blank - Water)</b>									
Reporting Units: ug/l									
1,2-Dichloro-1,1,2-trifluoroethane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U
Cyclohexane	EPA 624 (MOD.)	5C27003	N/A	2.5	ND	1	03/27/05	03/27/05	U

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## Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

### Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

## NPDES Monitoring

ANALYSIS: GENERAL MINERALS

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226

## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: General Minerals  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 8, 2005

The sample listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2, USEPA Methods for Chemical Analysis of Water and Wastes Method 300.0, 350.2, 330.5, 405.1, 335.2, 413.1, 415.1, 418.1, 425.1, 218.6, 120.1, 160.2, 160.5, 180.1, and 120.1, Standard Methods for the Examination of Water and Wastewater Method SM5540-C and SM2540C,* and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	Water	General Minerals
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	Water	General Minerals
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01RE	Water	EPA 413.1
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01RE	Water	EPA 413.1

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . No preservation problems were noted by the laboratory. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for all analyses presented in these SDGs. No sample qualifications were required.

#### 2.1.3 Holding Times

The holding times were assessed by comparing the date of collection with the dates of analyses. The 28-day analytical holding time for ammonia, fluoride, chloride, sulfate, conductivity, total recoverable hydrocarbons, TOC, and oil and grease, the 14-day analytical holding time for cyanide, the seven-day holding time for total suspended solids and total dissolved solids, the 48-hour holding time for surfactants, turbidity, nitrate/nitrite, biological oxygen demand, and total settleable solids, and the 24-hour hexavalent chromium and residual chlorine holding times were met. No qualifications were required.

### 2.2 CALIBRATION

For the applicable analyses, the initial calibration correlation coefficients were  $\geq 0.995$ . Initial and continuing calibration information was acceptable with recoveries within the control limits of 90-110%. For ammonia, no information regarding the standardization of the titrant was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. For BOD, no information regarding the calibration of the oxygen meter was provided; however, as the LCS recovery was within the CCV control limits, no qualifications were required. The total cyanide reporting limit check standard was recovered within the control limits of 70-130%. Calibration is not applicable to residual chlorine, oil and grease, total dissolved solids, total suspended solids, or total settleable solids. No qualifications were required.

### 2.3 BLANKS

Turbidity was detected in the method blank (5C26056-BLK1) associated with Outfall 011-Grab and Outfall 011-Composite; however, the method blank result was insufficient to qualify the Outfall 011-Grab or Outfall 011-Composite results. Cyanide was reported in the method blank (5C25119-BLK1) associated with Outfall 011-Grab and Outfall 011-Composite at  $-3.8 \mu\text{g/L}$ ; therefore, nondetected cyanide in Outfall 011-Grab and Outfall 011-Composite was qualified as estimated, "UJ." The remaining method blank and

CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No further qualifications were required.

#### **2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES**

The laboratory control sample and laboratory control sample duplicate (BOD, oil and grease, and total recoverable hydrocarbons only) recoveries and RPDs were within the laboratory-established control limits. The LCS is not applicable to turbidity, conductivity, residual chlorine, or settleable solids. The original LCS/LCSD results for oil and grease associated with Outfall 011-Grab and Outfall 011-Composite were recovered below laboratory-established QC limits. The laboratory re-extracted the samples and the LCS/LCSD and reported all oil and grease results from the reanalysis. No qualifications were required.

#### **2.5 SURROGATES RECOVERY**

Surrogate recovery is not applicable to the analyses presented in these SDGs.

#### **2.6 LABORATORY DUPLICATES**

Laboratory duplicate analyses were performed on Outfall 011-Grab for residual chlorine and total suspended solids. The RPDs were within the laboratory-established control limits and no qualifications were required.

#### **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

There were no MS/MSD analyses performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

#### **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

#### **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analyses presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Cyanide was reported in the raw data for Outfall 011-Grab and Outfall 011-Composite at -5.2 and -5.6 µg/L, respectively, and the associated method blank was reported at -3.8 µg/L. Due to these negative results, the reviewer changed the MDL and the reporting limit on the Form Is to the level of interference. BOD and fluoride in Outfall 011-Grab and Outfall 011-Composite and oil and grease in Outfall 011-Grab detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	U

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: mg/l									
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	0.56	1	03/28/05	03/28/05	
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	0.91	1	03/25/05	03/30/05	J
Chloride	EPA 300.0	5C25048	0.26	0.50	8.4	1	03/25/05	03/25/05	J
Fluoride	EPA 300.0	5C25048	0.10	0.50	0.25	1	03/25/05	03/25/05	J
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	0.14	1	03/25/05	03/25/05	J
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	U
Sulfate	EPA 300.0	5C25048	0.18	0.50	20	1	03/25/05	03/25/05	U
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	U
Total Dissolved Solids	SM2540C	5C28078	10	10	120	1	03/28/05	03/28/05	
Total Organic Carbon	EPA 415.1	5C29079	0.25	1.0	11	1	03/29/05	03/29/05	
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	U

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## LEVEL IV

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers	
									REV	QUAL CODE
Sample ID: IOC2063-01RE1 (DRAFT: Outfall 011 Grab - Water) - cont.										
Reporting Units: mg/l										
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	1.6	1	03/28/05	03/28/05	J	J DNR

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.4	1	03/26/05	03/26/05	REV QUAL EMT CODE

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MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	U
Total Cyanide	EPA 335.2	5C25119	<del>2.2</del> 5.2	<del>5.0</del> 5.2	ND	1	03/25/05	03/25/05	U, W
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	*

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**LEVEL IV**

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8596 FAX (619) 505-9680  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0343 FAX (480) 785-0431  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-0670 FAX (702) 798-3627

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA 120.1	5C28081	1.0	1.0	210	1	03/28/05	03/28/05	<div style="border: 1px solid black; padding: 2px; display: inline-block;">           KEY            QUAL            CODE         </div>

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (619) 505-8796 FAX (619) 505-9688  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0045 FAX (480) 785-0857  
 2520 E. Sunset Rd. # 3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

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 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (EPA 418.1)**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water)									
Reporting Units: mg/l									
Total Recoverable Hydrocarbons	EPA 418.1	5C26002	0.31	1.0	ND	1	03/26/05	03/26/05	u

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 9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-0596 FAX (858) 505-9689  
 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-085  
 2520 E. Sunset Rd., #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data	
									Qualifiers	REV QUAL
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.										
Reporting Units: mg/l										
Ammonia-N (Distilled)	EPA 350.2	5C28067	0.30	0.50	ND	1	03/28/05	03/28/05	U	
Biochemical Oxygen Demand	EPA 405.1	5C25093	0.59	2.0	1.1	1	03/25/05	03/30/05	J	DNQ
Chloride	EPA 300.0	5C25048	0.26	0.50	9.2	1	03/25/05	03/25/05		
Fluoride	EPA 300.0	5C25048	0.10	0.50	0.25	1	03/25/05	03/25/05	J	DNQ
Nitrate/Nitrite-N	EPA 300.0	5C25048	0.072	0.11	0.15	1	03/25/05	03/25/05		
Residual Chlorine	EPA 330.5	5C25118	0.10	0.10	ND	1	03/25/05	03/25/05	U	
Sulfate	EPA 300.0	5C25048	0.18	0.50	22	1	03/25/05	03/25/05		
Surfactants (MBAS)	SM5540-C	5C25096	0.044	0.10	ND	1	03/25/05	03/25/05	U	
Total Dissolved Solids	SM2540C	5C28078	10	10	140	1	03/28/05	03/28/05		
Total Organic Carbon	EPA 415.1	5C28077	0.25	1.0	10	1	03/28/05	03/28/05		
Total Suspended Solids	EPA 160.2	5C25117	10	10	ND	1	03/25/05	03/25/05	U	

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 765-8045 FAX (480) 765-0851  
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing  
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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

**DRAFT: INORGANICS**

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2064-01RE1 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: mg/l									
Oil & Grease	EPA 413.1	5C28069	0.94	5.0	ND	1	03/28/05	03/28/05	U

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3627

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ml/l/hr									
Total Settleable Solids	EPA 160.5	5C25105	0.10	0.10	ND	1	03/25/05	03/25/05	U

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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: NTU									
Turbidity	EPA 180.1	5C26056	0.040	1.0	4.2	1	03/26/05	03/26/05	REV SUN COR

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 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	U
Total Cyanide	EPA 335.2	5C25119	<del>2.2</del> 5.6	<del>5.0</del> 5.6	ND	1	03/25/05	03/25/05	UJ
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	*

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**LEVEL IV**

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 790-3610 FAX (702) 798-3021

MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Analyzed	Date Data	Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: umhos/cm									
Specific Conductance	EPA :20.1	5C28081	1.0	1.0	220	1	03/28/05	03/28/05	REV SUR SUR COG

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### Data Qualifier Reference Table

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.	The associated value is an estimated quantity.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	Not applicable.
UJ	The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.	The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.	The data are unusable. (Note: Analyte may or may not be present).

## Qualification Code Reference Table

Qualifier	Organics	Inorganics
H	Holding times were exceeded.	Holding times were exceeded.
S	Surrogate recovery was outside QC limits.	The sequence or number of standards used for the calibration was incorrect
C	Calibration %RSD or %D were noncompliant.	Correlation coefficient is <0.995.
R	Calibration RRF was <0.05.	%R for calibration is not within control limits.
B	Presumed contamination from preparation (method) blank.	Presumed contamination from preparation (method) or calibration blank.
L	Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits.	Laboratory Control Sample %R was not within control limits.
Q	MS/MSD recovery was poor or RPD high.	MS recovery was poor.
E	Not applicable.	Duplicates showed poor agreement.
I	Internal standard performance was unsatisfactory.	ICP ICS results were unsatisfactory.
A	Not applicable.	ICP Serial Dilution %D were not within control limits.
M	Tuning (BFB or DFTPP) was noncompliant.	Not applicable.
T	Presumed contamination from trip blank.	Not applicable.
+	False positive – reported compound was not present. Not applicable.	
-	False negative – compound was present but not reported.	Not applicable.
F	Presumed contamination from FB, or ER.	Presumed contamination from FB or ER.
\$	Reported result or other information was incorrect.	Reported result or other information was incorrect.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis with this flag should not be used because another more technically sound analysis is available.	The analysis with this flag should not be used because another more technically sound analysis is available.
P	Instrument performance for pesticides was poor.	Post Digestion Spike recovery was not within control limits.
DNQ	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.	The compound was detected between the MDL and the RL and, by definition, is considered an estimated value.

\*# Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (\*) will indicate the subsection where a description of the problem can be found (eg. \*1 would indicate a sample was not within temperature limits).

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# DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: PERCHLORATE

SAMPLE DELIVERY GROUPS: IOC2063 & IOC2064

Prepared by

AMEC—Denver Operations  
550 South Wadsworth Boulevard, Suite 500  
Lakewood, Colorado 80226



## 1. INTRODUCTION

Task Order Title: NPDES Monitoring  
Contract Task Order #: 313150010  
Sample Delivery Group #: IOC2063, IOC2064  
Project Manager: B. McIlvaine  
Matrix: Water  
Analysis: Perchlorate  
QC Level: Level IV  
No. of Samples: 2  
Reviewer: L. Jarusewic  
Date of Review: April 8, 2005

The samples listed in Table 1 was validated based on the guidelines outlined in the AMEC *Data Validation Procedures SOP DVP-6, Rev. 2*, USEPA *Methods for Chemical Analysis of Water and Wastes Method 314.0*, and validation guidelines outlined in the USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

**Table 1. Sample identification**

Client ID	EPA ID	Laboratory ID	Matrix	COC Method
Outfall 011-Grab	Outfall 011-Grab	IOC2063-01	Water	Perchlorate
Outfall 011-Composite	Outfall 011-Composite	IOC2064-01	Water	Perchlorate

## 2. DATA VALIDATION FINDINGS

### 2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

#### 2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The analysis did not require preservation and no preservation was noted in the field. No qualifications were required.

#### 2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel, and accounted for the samples and analysis presented in these SDGs. No qualifications were required.

#### 2.1.3 Holding Times

The holding time was assessed by comparing the dates of collection with the date of analysis. The 28-day analytical holding time for perchlorate was met, and no qualifications were required.

### 2.2 CALIBRATION

The initial calibration correlation coefficient was  $\geq 0.995$ . The IPC-MA recovery was within the control limits of 80-120%. The ICV, CCV, ICCS, and IPC recoveries were within the control limits of 90-110%. No qualifications were required.

### 2.3 BLANKS

The method blank and CCB results reported on the summary forms and in the raw data for blank analyses associated with the samples were nondetects at the reporting limit. No qualifications were required.

### 2.4 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The laboratory control sample recovery was within the method control limits of 85-115%. No qualifications were required.

### 2.5 SURROGATES RECOVERY

Surrogate recovery is not applicable to the analysis presented in these SDGs.

## **2.6 LABORATORY DUPLICATES**

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

## **2.7 MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

No MS/MSD analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results.

## **2.8 FURNACE ATOMIC ABSORPTION QC**

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

## **2.9 ICP SERIAL DILUTION**

ICP serial dilution is not applicable to the analysis presented in this data validation report.

## **2.10 SAMPLE RESULT VERIFICATION**

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. No qualifications were required.

## **2.11 FIELD QC SAMPLES**

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples. The following are findings associated with field QC samples:

### **2.11.1 Field Blanks and Equipment Rinsates**

The samples in these SDGs had no associated field QC samples. No qualifications were required.

### **2.11.2 Field Duplicates**

There were no field duplicate pairs associated with these SDGs.



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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
 Pasadena, CA 91101  
 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2063

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2063-01 (DRAFT: Outfall 011 Grab - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	* ↓ UL
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	

# AMEC VALIDATED

# LEVEL IV

\*Analysis Not Validated

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing  
 300 North Lake Avenue, Suite 1200  
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 Attention: Bronwyn Kelly

Project ID: 13267 (Study 1)  
 Outfall 011  
 Report Number: IOC2064

Sampled: 03/25/05  
 Received: 03/25/05

## DRAFT: INORGANICS

Analyte	Method	Batch	MDL Limit	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOC2064-01 (DRAFT: Outfall 011 Composite - Water) - cont.									
Reporting Units: ug/l									
Chromium VI	EPA 218.6	5C25058	0.10	1.0	ND	1	03/25/05	03/25/05	* ↓
Total Cyanide	EPA 335.2	5C25119	2.2	5.0	ND	1	03/25/05	03/25/05	↓
Perchlorate	EPA 314.0	5C25061	0.80	4.0	ND	1	03/25/05	03/26/05	u

### AMEC VALIDATED

# LEVEL IV

\*Analysis Not Validated

DRAFT REPORT  
 DRAFT REPORT  
 DATA SUBJECT TO CHANGE

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