

## Public Meeting

### Stormwater Controls at the Santa Susana Field Laboratory Outfalls 008 and 009

March 17, 2008  
7 – 9PM

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## Panel Members

- Dr. Robert Gearheart, P.E.
- Dr. Richard Horner
- Jonathan Jones, P.E.
- Dr. Michael Josselyn
- Dr. Robert Pitt, P.E.
- Dr. Michael Stenstrom, P.E.

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## Agenda

- Recap of January Meeting
- Responses to questions and comments
- Public field trip opportunity
- Independent Expert Panel
  - Scope of work
  - Progress toward design storm recommendation
  - Progress on ENTS (Controls) selection
  - Panel future efforts and schedule
- Public input – Questions and Comments

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## Recap of January Meeting

- **Introduction of Independent Expert Panel**
- **Overview of Stormwater Discharges at Santa Susana**
- **Engineered Natural Treatment Systems**
- **Schedule**
- **Questions and Comments Received**
  - Many answered at meeting
  - Others to be addressed tonight and on-line

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## Response to Questions and Comments from January Meeting

- Public/Board involved in panel selection?
  - Regional Board Staff
  - Heal-the-Bay
  - Santa Monica Baykeeper
- Long-term maintenance, sediment/vegetation concentrations in ENTSS?
  - Covered in presentation
- Sources of contamination – Dayton Canyon?
  - Extensive investigations have been completed
  - If public knows of sites, please respond to Boeing in writing and Boeing will visit sites with public

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## Expert Panel Scope of Work

- For outfalls 008 and 009 review site data and recommend natural BMPs capable of providing the required treatment to meet the final effluent limits.
- Recommend to the Board the site-wide design storm

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## Expert Panel Role

- Address the Scope of Work just discussed.
- Not charged to address RCRA or Radiological site clean-up.
- Provide participatory and technical models for other activities at the site

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## Expert Panel Work Plan Schedule

Tasks	Proposed Date
Design Storm Recommendation	<b>Preliminary draft complete</b>
ENTS Conceptual Designs Complete	May 15, 2008
ENTS Final Designs Complete	July 15, 2008
ENTS Permitting	August 15, 2008
ENTS Construction	October 31, 2008
Final Permit Limits Become Effective	June 10, 2009

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## Independent Expert Panel Public Involvement

- Public Participation Meetings
- Periodic reports to RWQCB on project status
- Periodic progress reports posted on the Internet

[http://www.boeing.com/aboutus/environment/santa\\_susana/ents/index.html](http://www.boeing.com/aboutus/environment/santa_susana/ents/index.html)

- Public Field Trips

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## Expert Panel Public Meetings

Proposed Scope	Proposed Date
Panel introduction	<b>Complete</b>
Progress on design storm and ENTS selection & conceptual design	<b>Tonight</b>
Recommended design storm and conceptual ENTS designs	April 17, 2008
Progress on ENTS implementation	September, 2008
Initial ENTS Performance Monitoring Results	Summer 2009

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## Board Presentations

- March 6<sup>th</sup>
- April 3<sup>rd</sup>
- May 1<sup>st</sup>

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## Site Field Trip Opportunity

- April 4<sup>th</sup>
- 3-4 hours
- Hiking (about ¼ mile in to outfall locations but steep back up plus other walking)
- Appropriate clothing and shoes
- Talk to Blythe at the end of the meeting

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Questions  
Panel Scope/Schedule?

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## What is a Site-Specific Design Storm?

- Storm depth or rain intensity to use for assessing compliance and therefore driving selection and design/sizing of controls
  - e.g. natural treatment systems for 008 and 009
  - Other treatment controls for other outfalls

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## Application of Site Design Storm in Assessing Compliance

Storm Size	Effluent Limits	Results
Smaller than or Equal to the Site Design Storm	Effluent limits apply as numerical effluent limits	Enforcement action(s) by Regional Board for exceedence(s) + propose remedies
Larger than Site Design Storm	Effluent limits apply as benchmarks	Assess cause of exceedence(s) and propose potential control enhancements for Regional Board review

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## Progress on Site Specific Design Storm

- Have recommended the proposed preliminary site specific design storm (1 year event)
- Have implemented evaluation methodology (i.e., long-term continuous hydrology modeling) consistent with LA Design Storm Task Force
- Developed preliminary recommendation to be confirmed with additional work on treatment system design for 008 and 009 watersheds

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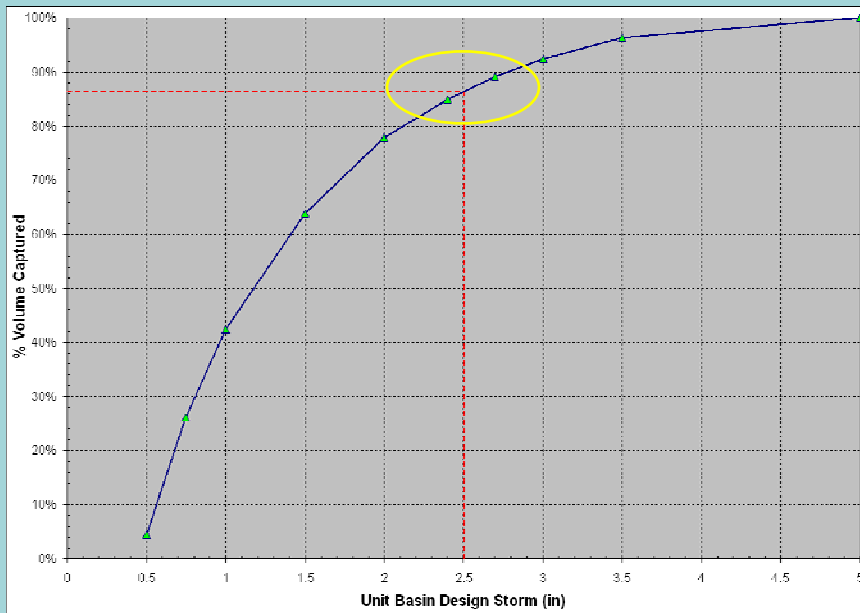
# Design Storm/ENTS

The Panel's Goal is a system of Engineered Natural Treatment Systems and other Controls (e.g. Treatment Trains), and a design storm that:

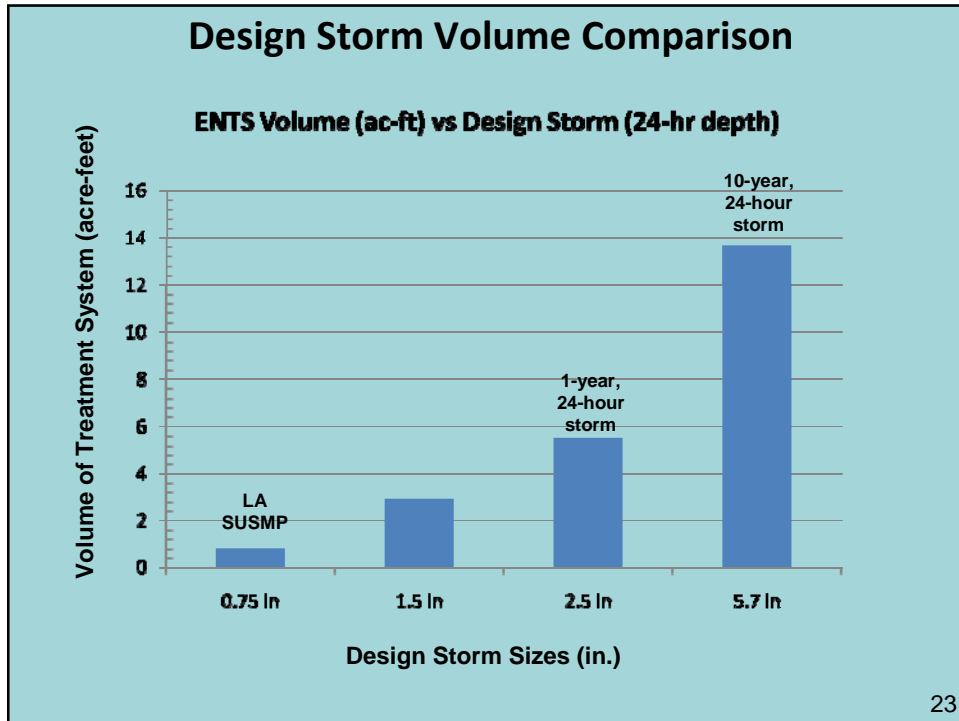
- Maximize the probability of attaining numeric effluent limits
- Minimize the potential impacts to downstream residents and the environment
- Protect the natural site conditions and is feasible given the site's constraints

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ENTS sizing curve for a hypothetical volume-based system implemented at outfall 008



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- ### Site Specific Design Storm Preliminary Recommendation
- The panel recommends that the 1-year return interval storm event be used as the single site-wide design storm:
    - Either a 24-hour storm (2.5 inches;) or
    - 0.6 inches in an houras measured at the Area 4 onsite rain gage
  - 95 percent of all storms would be smaller
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## Exceedance Frequency

- Variability in the effluent quality from the BMPs should be recognized for assessing compliance in the NPDES permit:
  - allowable exceedance frequency, or
  - comparison of discharge quality with one or more reference watersheds, or
  - some other comparable mechanism

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## Natural Disasters

- Site is in a natural vegetated condition - subject to wildfires
- NPDES permit should recognize that there may periodically be an inability to achieve NPDES permit limits.
  - For example, wildfires are a significant source of dioxin and sediment.
- Following a disaster, numeric effluent limits could become benchmarks for some recovery period

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## Panel's Summary

- A stormwater control program that consists of treatment trains using the design storm methodology will be effective and sustainable on a long term basis.
- The Board should consider these recommendations in its evaluation of the site specific design storm and Outfalls 008 and 009 control as the best means to be protective of:
  - public health,
  - aquatic life,
  - receiving water quality and
  - other beneficial uses.

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Questions Regarding  
Preliminary  
Design Storm Recommendation?

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## 008 and 009 Watersheds Guiding Principles

- Panel recommends that ENTS infiltrate and/or evapotranspire runoff to the maximum extent feasible considering site conditions and constraints such as:
  - locations of contaminated groundwater plumes,
  - sensitive habitat,
  - infiltration potential,
  - natural infiltration rates, and
  - geotechnical suitability.

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## 008 and 009 Watersheds Guiding Principles

- The Panel recommends control and treatment occur throughout the Outfall 008 and 009 watersheds, including off-site areas, such that
  - all feasible areas that can be used for volume reduction and treatment are used to help ensure compliance at the outfall

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## 008 and 009 Watersheds Guiding Principles

- Engineered Natural Treatment System (ENTS) options should focus on pollutant load as well as concentration reductions.
- These would include:
  - Engineered natural treatment systems that are sub-regional and at outfall locations should be as large as feasible, given site constraints.
  - Treatment controls for “critical source areas” (e.g. developed RFI, and known contaminated surface soil/sediment areas) should be designed using storms larger than the design storm, when feasible.

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## “Treatment Train” Approach

- Combine controls in series to treat runoff for multiple constituents and protect downstream controls
- Reduce peak flows to allow for optimizing treatment
- Consider “polishing” enhancements (media additions, BMP soils amendments, etc.)
- Optimize unit processes and overall system design
  - redundancy and complementary processes
- Detain and slow runoff from watershed to maximize space-limited treatment at outfall 009

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## Engineered Natural Treatment System Example “Dry” Treatment Train Approach

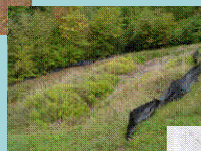


**1: Site Controls  
(reduce runoff volume)**

E.g., restore un-used impervious surface to natural state



**2: Extended Detention**

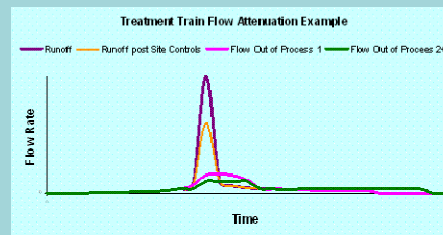


**3: Bio-Filter**

Could also consider cistern and then irrigation use

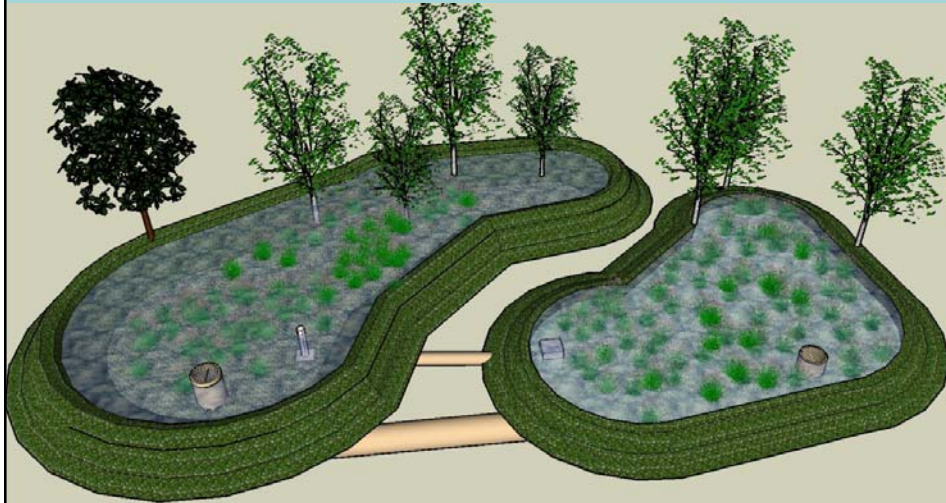


**4: Media Filter  
(if needed)**



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## Treatment Train Concept



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## Progress on ENTS Designs for Outfall 008 and 009 Watersheds

- Have already selected multiple potential ENTS locations throughout these watersheds (i.e., not just control at the outfalls)
- Initially locating ENTS downstream of:
  - Developed areas
  - Areas of known historic activities or surface soil/sediment contamination
- 1<sup>st</sup> set of draft conceptual ENTS designs in progress

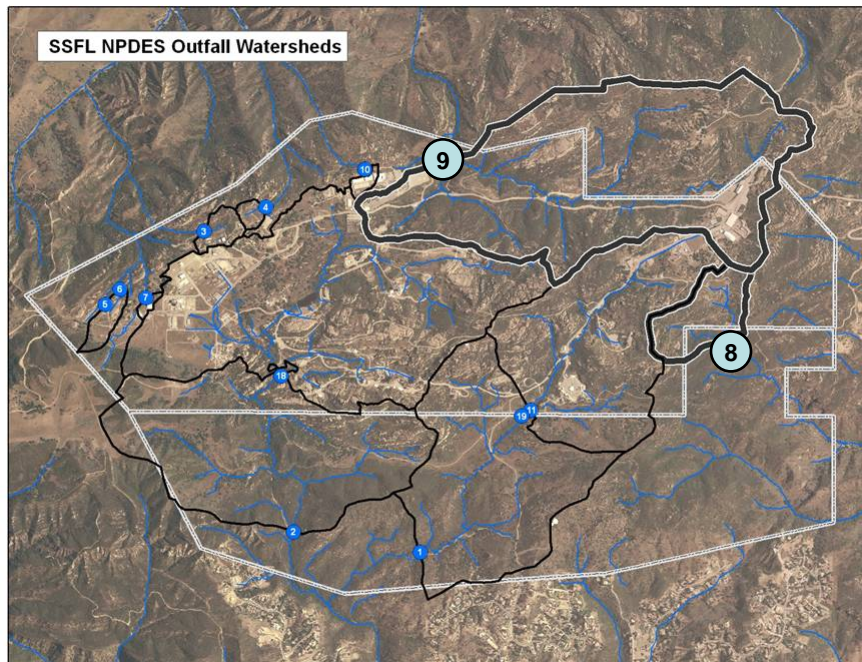
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# Progress on ENTS Designs for Outfall 008 and 009 Watersheds

(continued)

- Considering locating additional ENTS at upstream off-site locations to address run-on
- Looking for additional locations for “source control” type of BMPs, for example:
  - Remove/cover treated wood and galvanized metals
  - Remove impervious areas
  - Control eroding areas
  - Outfall protection
  - Stream stability enhancements
  - Other source controls identified by the panel or by Boeing

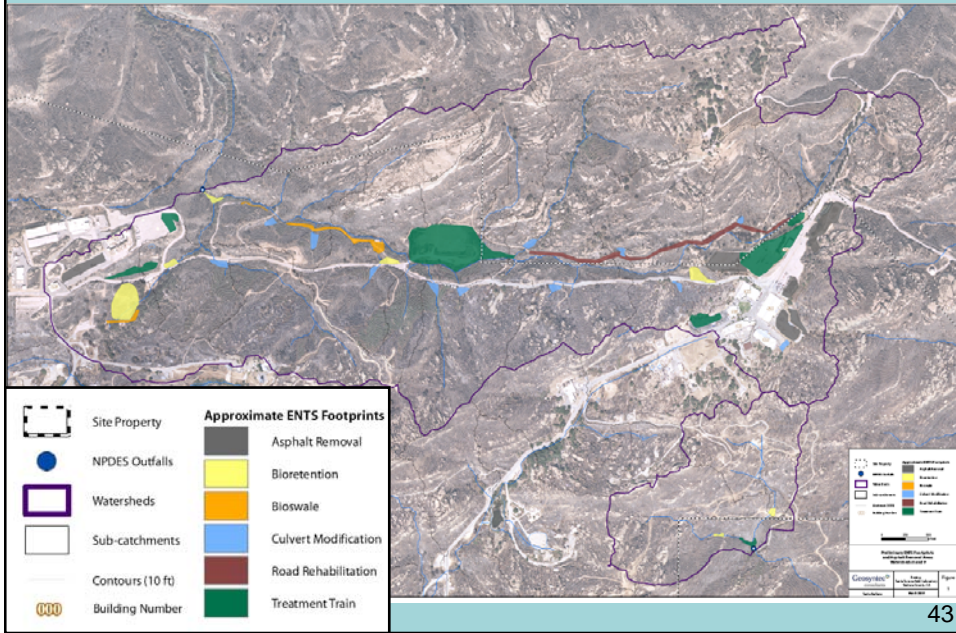
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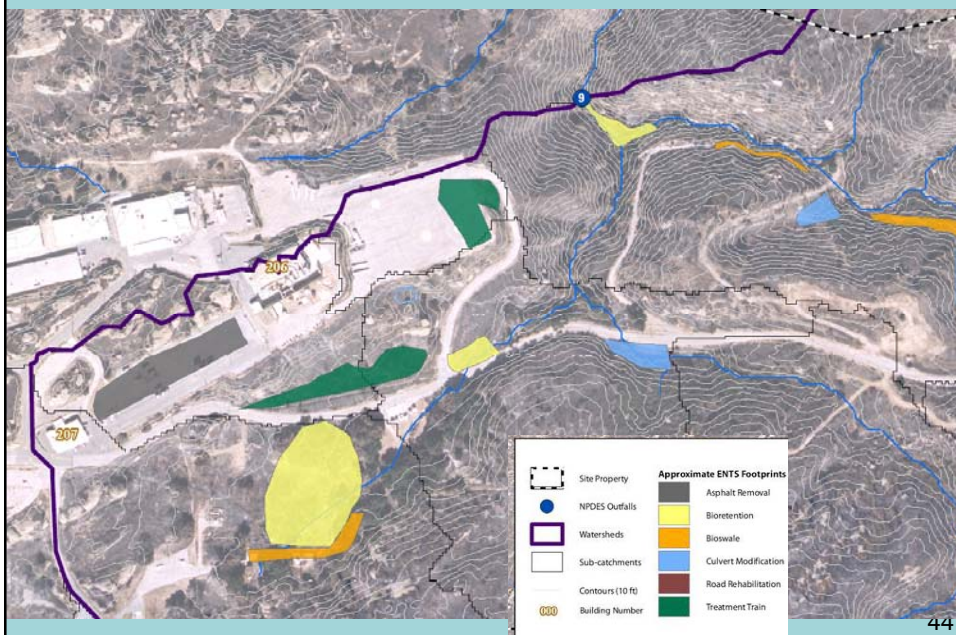
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## Engineered Natural Treatment Systems for 009 Watershed



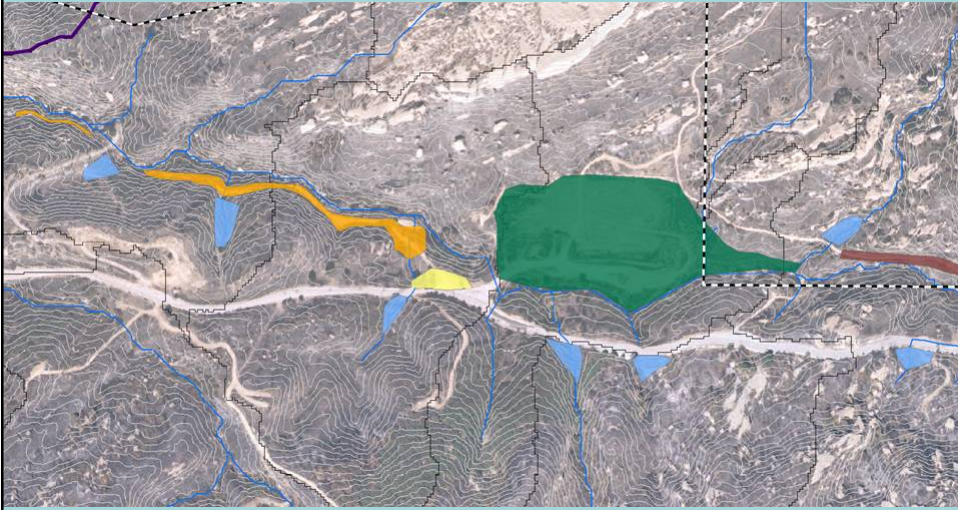
## Revised ENTS Footprints – Western 009 Watershed



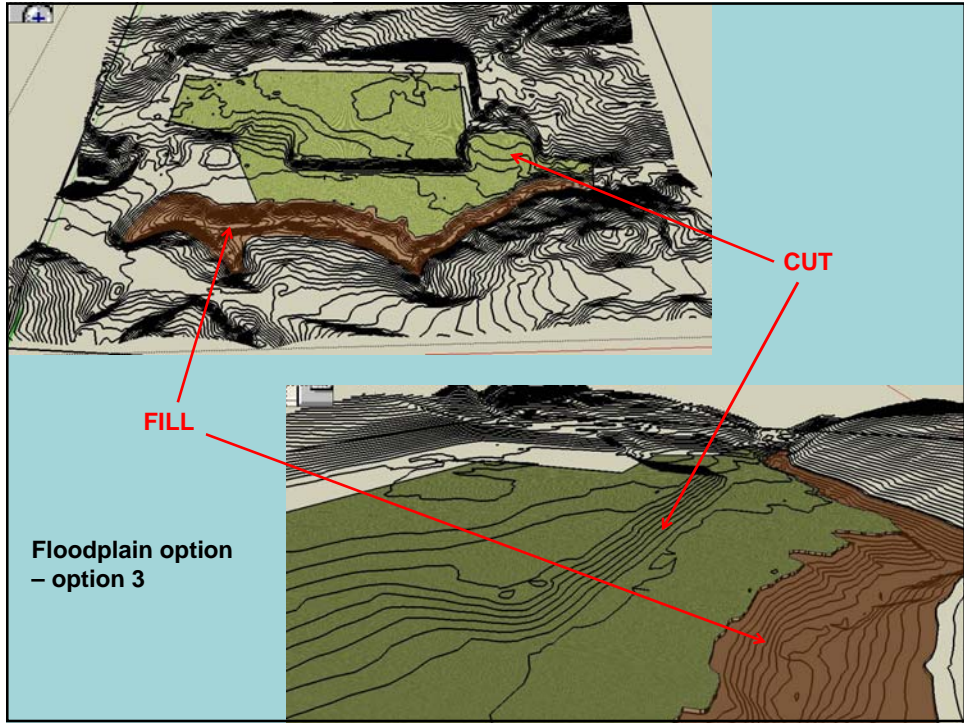
# Fire Station Area



# Engineered Natural Treatment System Footprints – Central 009 Watershed



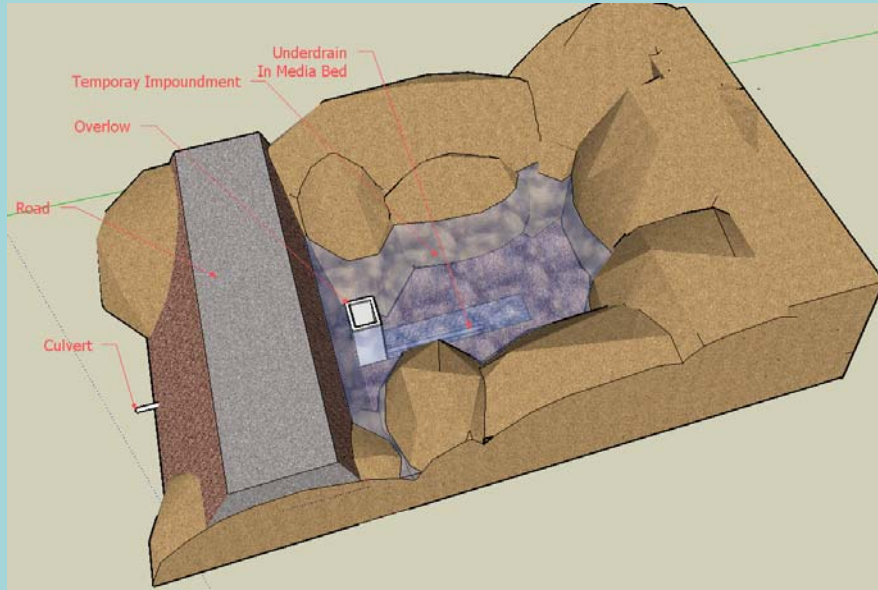




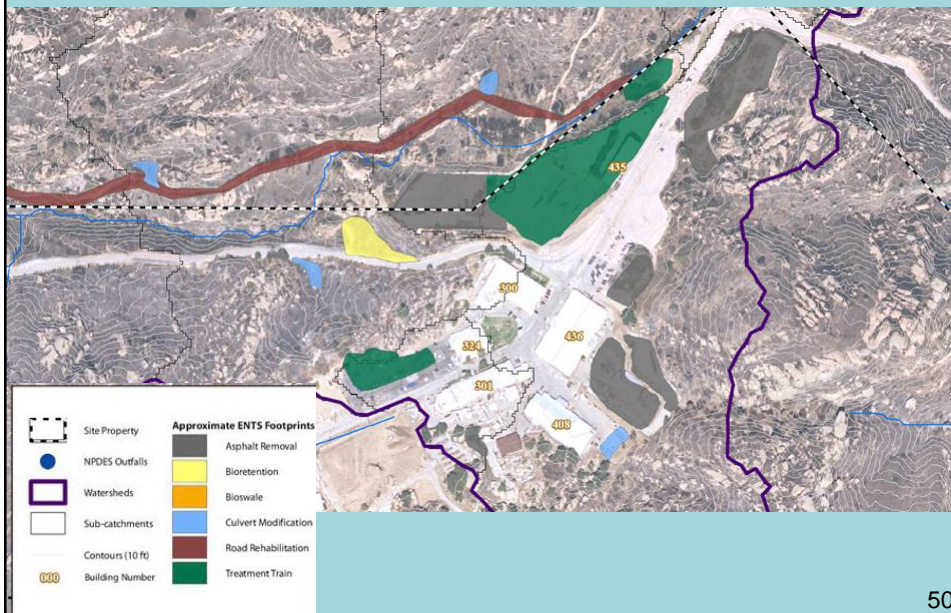
## Service Road Culvert at Area 1 Landfill



# Example of Culvert Modification ENTS



# Engineered Natural Treatment System Footprints – Eastern 009 Watershed



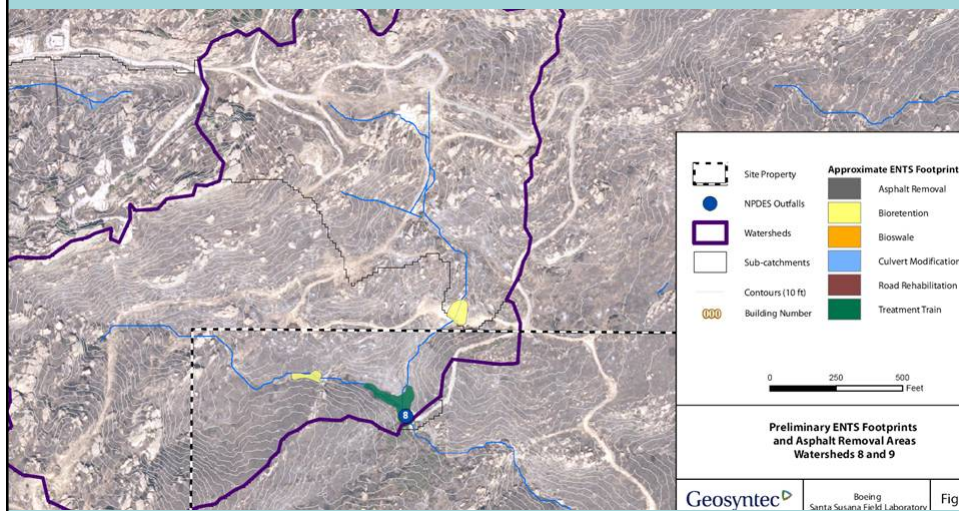


# Channel Stabilization Study

- Northern drainage mapped for:
  - Areas of significant erosion
  - Areas of significant deposition
  - Nick points
  - Culverts & outfalls
  - Debris and trash accumulation
- Channel map coming, with recommendations for locations needing grade or bank controls

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## Engineered Natural Treatment Systems Footprints – 008 Watershed



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## Agency Coordination Required for Final ENTS Approval & Implementation

- CDFG, ACOE, NASA, DTSC, RWQCB, and Ventura County
- Example - DTSC:
  - Many proposed ENTS located near cleanup areas
  - Significant coordination required with DTSC for these areas to meet ENTS implementation schedule
  - Early clean-up for some areas

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Questions Regarding  
Progress on  
ENTS (Controls) selection?

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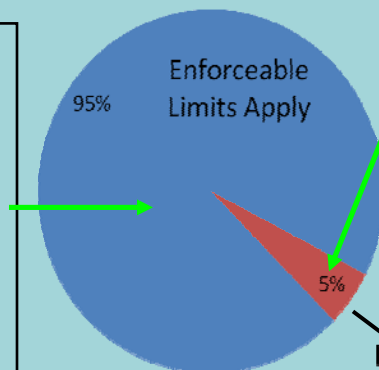
## Expert Panel's Wrap-up

- A proposed criterion to govern how Boeing is regulated when runoff from the site is discharged off site:
  - for almost all of the runoff discharged (about 95 percent of all storms), Boeing would be subject to enforcement if they discharge more than the very smallest amounts of pollutants as specified in the permit, and
  - for the rest of runoff that occurs in infrequent large storms, if numeric effluent limits are exceeded, Boeing will have to assess sources and put in more management measures if it is expected to cause significant problems;

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### Percent of Storms Being Treated at SSFL Using 1-Year Design Storm

Boeing would be subject to enforcement if they discharge more than the very small amounts of pollutants as specified in the permit



If numeric effluent limits are exceeded, Boeing will have to assess sources and put in more management measures if it is expected to cause significant problems

**Benchmarks Apply**

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## Expert Panel's Wrap-up

- All available opportunities for management measures are being identified. With goals of:
  - fully managing more than 90% of the runoff to the extent that the various site conditions allow
  - retaining the maximum possible amounts of contaminants in managed locations

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## Panel Future Efforts

- *Final* design storm recommendation and conceptual Engineered Natural Treatment Systems designs, scheduled for April 17 public meeting for Outfall 008 and 009 Watersheds:
  - Develop complete list of ENTS locations and footprints
  - Develop conceptual ENTS designs for each location
  - Develop list of other controls to be included
- Provide an update to Regional Board at April 3<sup>rd</sup> Hearing

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# THE END

## THANK YOU FOR YOUR TIME

For questions or comments, contact:  
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