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70 YEARS OF CREATING TOMORROW

Los Alamos NATIONAL LABORATORY

Individual Permit for Storm Water Public Meeting

June 2013

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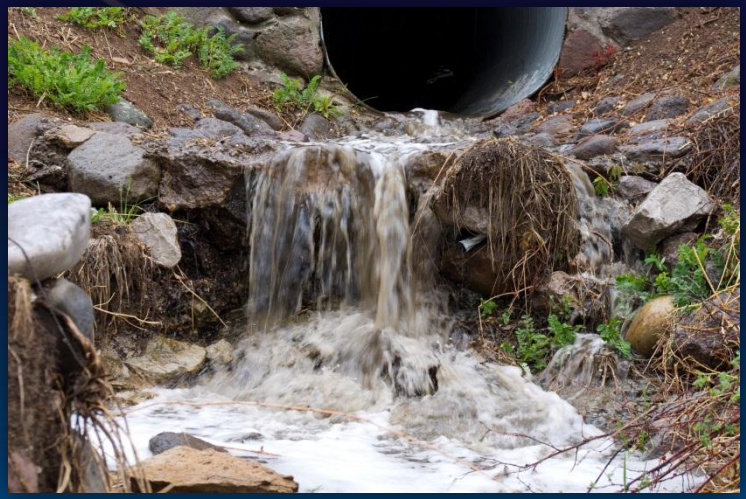
Scope of Meeting

- **Purpose of meeting**
  - Share information
  - Project status
  - Not designed to include
  - Discussions about scope of permit
  - LANL's programmatic priorities
- **Focus is on permit compliance actions**
- **Q&A Sessions**
  - After each LANL presentation
  - After all presentations if time allows



General Ground Rules

- Please wait until the scheduled time to provide information or to ask questions
- Please identify yourself before speaking
- Please keep your questions short
  - Remember there may be others waiting to ask questions
- Please honor the process by keeping questions and comments civil and by using appropriate language
- Please yield the floor if requested by facilitator
- Please help the participants and facilitator ensure that the agenda content and timeframes are met

Agenda

Time	Subject	Speaker
5:30	View Posters	
5:50	Welcome	Bruce MacAllister
6:00	IP Website	Steve Veenis
6:10	SDPPP Update	Steve Veenis
6:20	Background Metals Concentrations in Storm Water on the Pajarito Plateau	Armand Groffman
6:30	Alternative Compliance Submittal at S-SMA-0.25 & S-SMA-2	Kate Lynnes & Debbie Apodaca Pesiri
7:00	Update from Communities for Clean Water	Rachel Conn & Erin English
7:15	Wrap up	

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Steve Veenis

Individual Permit Project Manager

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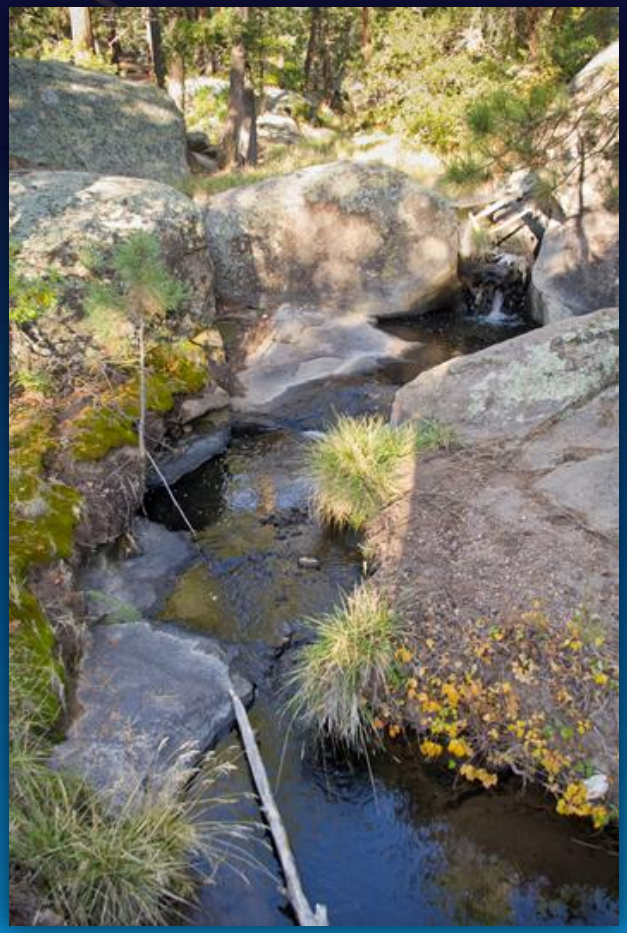
- Recent IP Submittals
  - Annual Report
  - Compliance Status Report
  - SDPPP
  - Alternative Compliance
- IP Re-application
  - Extension Request and Approval



Website

- New structure
- More information
- Find the website from the LANL home page:

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Armand Groffman

Storm Water Monitoring Team Leader

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Background Metals Concentrations in Storm Water on the Pajarito Plateau

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What is Background?

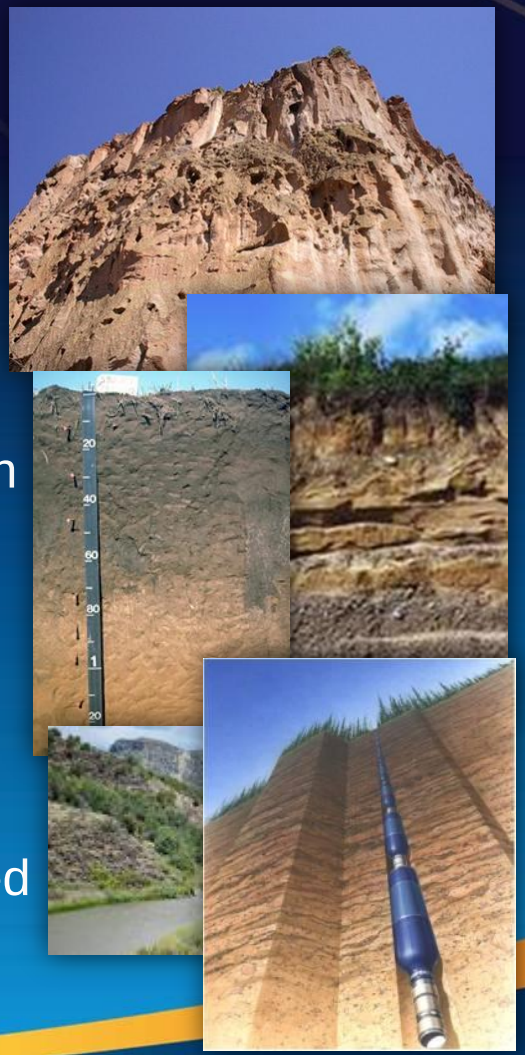
- The Environmental Protection Agency (EPA) defined “background” as, substances or locations that are not influenced by the release of pollutants from a site. There are two general categories of background:
  - 1) **Human influenced or anthropogenic background (baseline)** - natural and human made substances present in the environment as a result of human activity. Example: an urban developed landscape such as a city or town site.
  - 2) **Naturally occurring -** substances present in the environment in forms that have not been influenced by human activity. Example: a landscape where no industrial or invasive agricultural activity has occurred (national forest lands).

Background Studies at Los Alamos National Laboratory

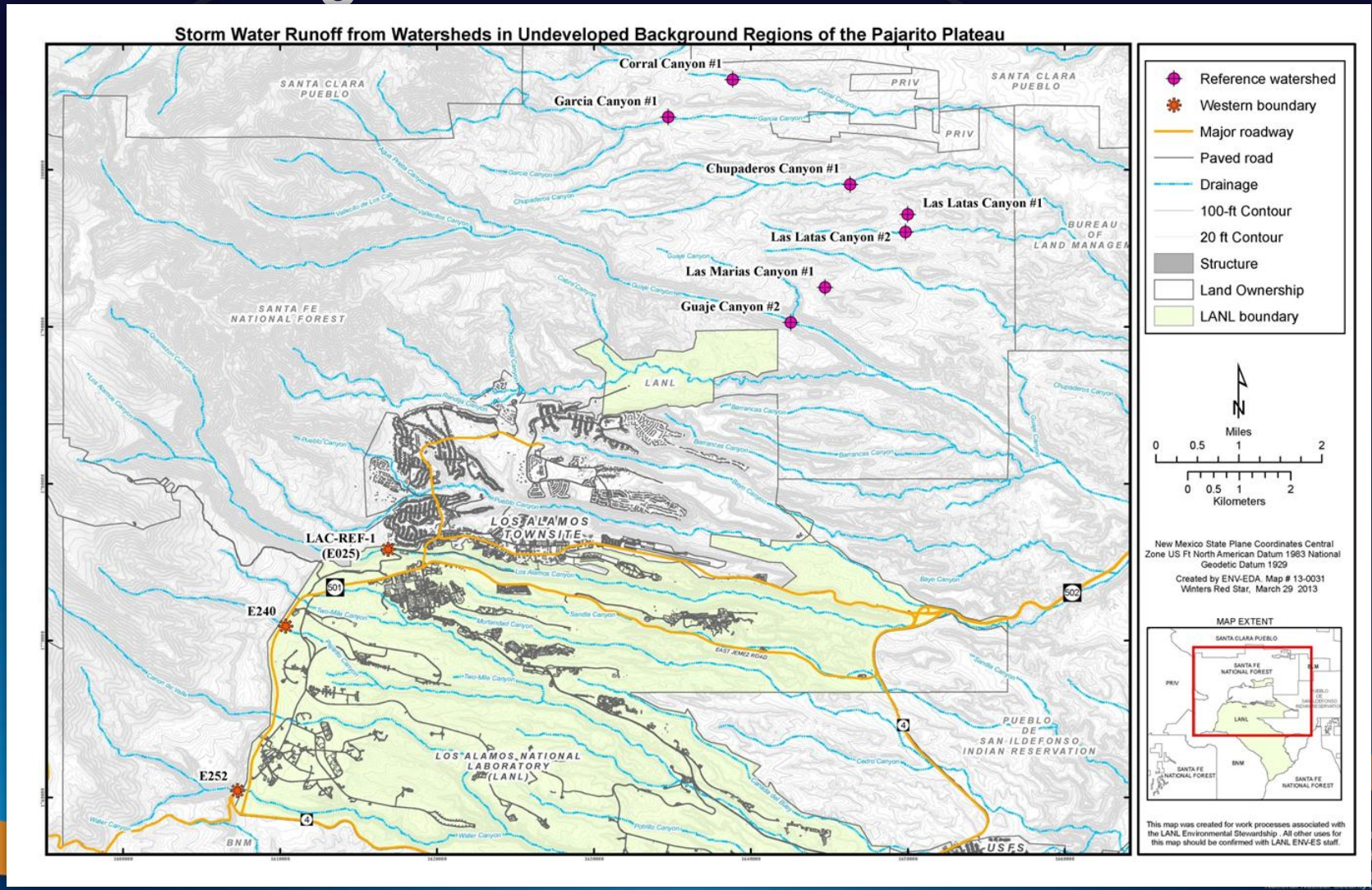
- Los Alamos National Laboratory (LANL) has conducted several background studies for soils, sediments, rock, and groundwater. These data have been used in reports subsequently approved by the New Mexico Environment Department (NMED).

- In 2012 a report describing the distribution of PCBs in precipitation and storm water within the upper Rio Grande watershed was published. This study was conducted jointly by the NMED and LANL.

- In 2013 a report presenting background metals and radioactivity in storm water on the Pajarito Plateau was published. Results from this report are presented here.



Remote Undeveloped Background Monitoring Locations



Background Monitoring: Remote Undeveloped Landscapes

- *Reference Watersheds; predominantly weathered Bandelier tuff*
  - Coral Canyon, Garcia Canyon, Chupaderos Canyon, Las Latas, Las Marias Canyon and Guaja Canyon

- *Western Boundary; weathered dacite and Bandelier tuff*
  - Water Canyon, Canyon de Valle, Pajarito Canyon and Los Alamos Canyon

- Monitoring locations were upstream from and known legacy contamination and industrial activity, most on Santa Fe National forest lands.

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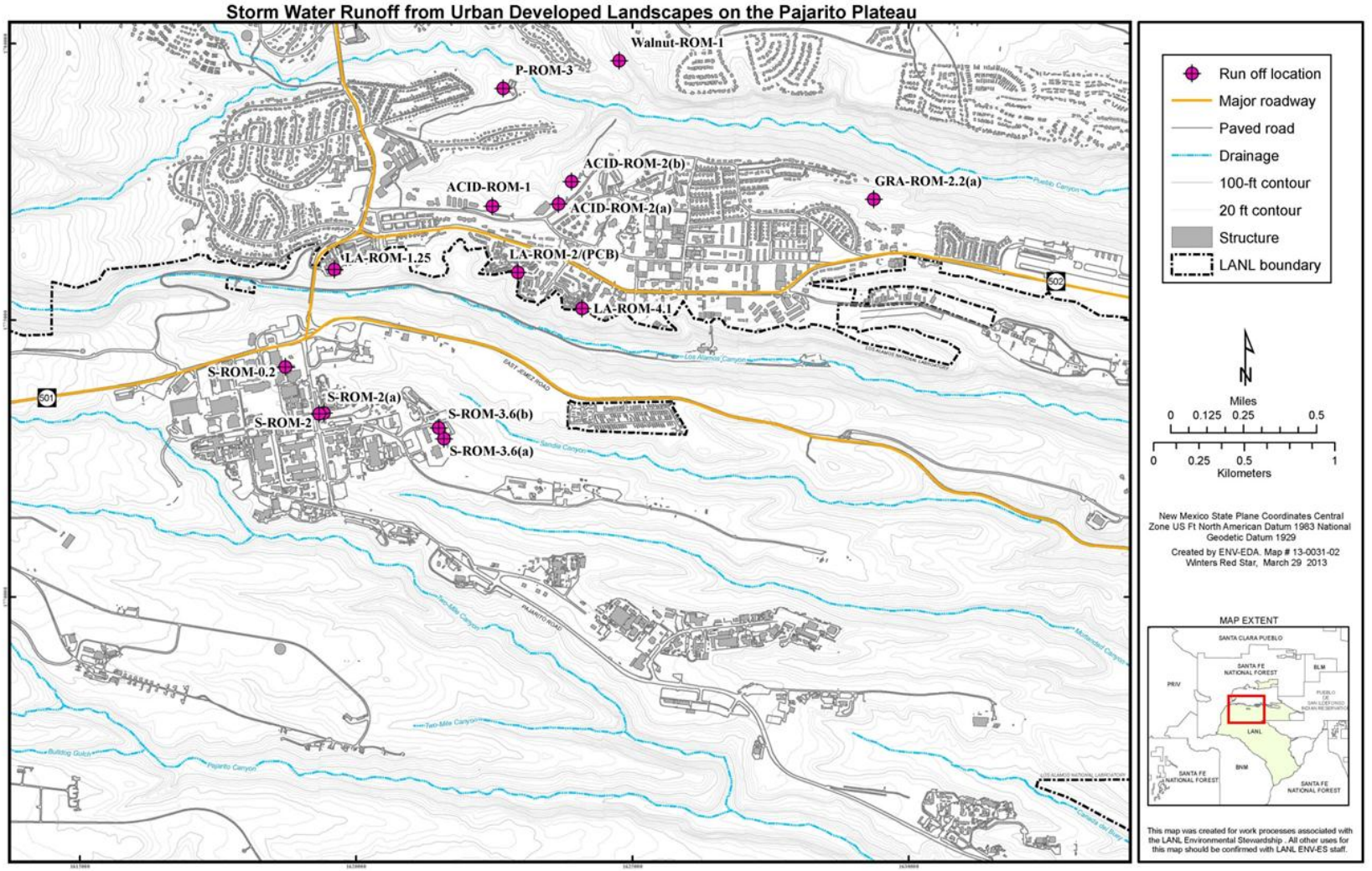
Developed Urban Landscape Background (Baseline) Monitoring



Monitoring Urban Developed Landscape

- *Los Alamos County Town Site*
  - Runoff sources include:
    - Neighborhood houses, apartment buildings, roofs, parking lots, streets, commercial properties, parks, and open space.

- *Los Alamos National Laboratory (TA-3)*
  - Runoff sources include:
    - Office buildings, roofs, parking lots, streets, commercial properties, and open space.

- Monitoring locations were located upstream from any known industrial discharge, solid waste management unit(SWMU)/ area of concern (AOC), and associated legacy contamination.

Storm Water Collection Methods

- Storm water samples were collected using ISCO® and Global Water® automated samplers
- Installed on the bank of a channel and anchored
- Samplers collected water samples when the liquid actuator detected flow in the channel
- Water collected in 1 gallon or 950 ml glass bottles

Analytical Methods

- Monitoring effort focused on 24 metals and metaloids, suspended solids, total organic carbon (TOC), and select radioactivity and radioisotopes.

Analyte(s)	Method
SSC (nonfiltered)	EPA160.2 or ASTM D3977-97
Laser particle-size analysis (nonfiltered)	ASTM C1070-01
TOC (nonfiltered)	EPA SW-846-9060
Metals (filtered and non-filtered)	EAP 200.7, EPA 200.8, and EPA 245.2
Anions (filtered)	EPA 300.0
Radioactivity (gross alpha and Radium-226 + -228; nonfiltered)	EPA 900, EPA 903.1, EPA 904,

Statistical Methods

- All statistical analyses were performed on validated data. Non-detected or rejected results were not included in the analysis.
- Data were analyzed using Statistica 8.0 (StatSoft, Tulsa, Oklahoma) and ProUCL 4.1.
  - Additional information is available at: http//www.epa.gov/nerlesd1/databases/datahome.htm.
- If the largest result for a given analyte was more than five times larger than the second largest result, it was considered to be suspect and removed.
- Upper threshold limits (UTLs) were calculated for each parameter with seven or more detected results. UTLs represent the background values for each constituent.

Results

Analytes (units are (µg/L) unless otherwise stated)	Reference Watersheds [Undeveloped Landscape, Weathered Bandelier Tuff]		Developed Urban Landscape, [Los Alamos County and Los Alamos National Lab]		Target Action Limits (TALs; ATAL/MTAL) Under the Individual Permit
	Dissolved (filtered) Background Values (UTLs)	Totals (nonfiltered) Background Values (UTLs)	Dissolved (filtered) Background Values (UTLs)	Totals (nonfiltered) Background Values (UTLs)	
Aluminum	2210	161,000	245	17,700	750
Cadmium	—	7.3	0.36	1.25	0.6
Copper	3.43	1490	32.3	84	4.3
Gross Alpha (pCi/L)	—	1,490	—	32.5	15
Hardness (mg/L)	74	—	105	—	30
Lead	9.03	393	3.3	133	17
Radium-226 + 228 (pCi/L)	—	52.7		8.94	30
Zinc	109	1350	1120	1,671	42

Results from Other Developed Urban Environments

Dissolved Metals in Storm Water and Precipitation in Other Developed Urban Environments						
Media	Environment Material	Cadmium	Copper	Lead	Zinc	Reference
Storm Water	Highway Runoff	0.14 - <0.6	1.96 - 13.9	0.15 - 7.6	6.4 - 78.5	Highway Storm Water Runoff Study, 1998, Michigan Department of Transportation, CH2MHILL Report.
Storm Water	Urban/Suburban runoff	No data	1.0 - 16.9	3.8 - 15.4	8.4 - 905	Rose, S. et al., 2001, Comparative zinc dynamics in Atlanta metropolitan region stream and street runoff, Environmental Geology, 40, p. 983-992.
Rain	Atmosphere	0.1 - 3.9	1 - 355	2.0 - 76	5 - 235	Gobel, P. et al., 2007, Storm Water Runoff Concentration Matrix for Urban Areas, Journal of Contaminant Hydrology, 91, p. 26-42.
Storm Water	Roof Runoff	0.2 - 1.0	6 - 3.4	2 - 493	24 - 4,880	
Storm Water	Traffic area; low density	0.2 - 0.5	21 - 140	98 - 170	15 - 1,420	
Storm Water	Traffic area; high density	0.3 - 13.0	97 - 104	11 - 525	120 - 2,000	

Summary

- LANL has conducted a background investigation to determine the concentrations of metals in storm water emanating from undeveloped and developed urban landscapes.
- Background values for select constituents in undeveloped landscapes including aluminum, gross alpha, and radium are greater than the TALs and are related to natural materials.
- In storm water emanating from a developed urban landscape, background values of copper and zinc are greater than TALs and are thought to be related to parking lots, streets, and building materials.
- Additional run-on sampling will take place during the 2013 monitoring season to bring more resolution to the body of background data.

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Kate Lynnes, Regulatory Manager
Deborah Apodaca Pesiri, Project Engineer

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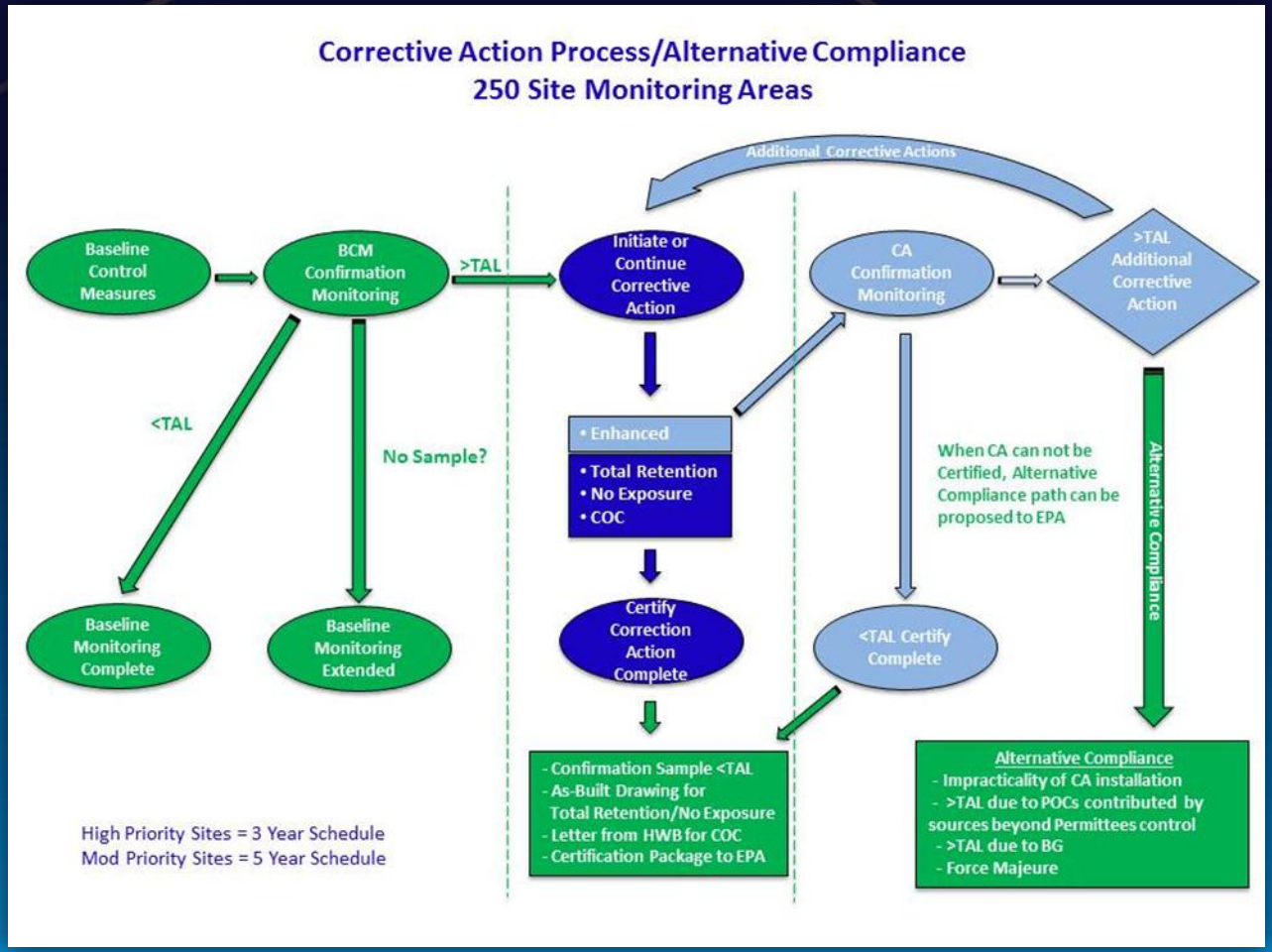
NNSA National Nuclear Security Administration

Alternative Compliance for S-SMA-0.25 and S-SMA-2.0


Corrective Action Process/Alternative Compliance
250 Site Monitoring Areas
Additional Corrective Actions
Baseline Control Measures
BCM Confirmation Monitoring
>TAL
Initiate or Continue Corrective Action
CA Confirmation Monitoring
>TAL Additional Corrective Action
<TAL
No Sample?
• Enhanced
• Total Retention
• No Exposure
• COC
When CA can not be Certified, Alternative Compliance path can be proposed to EPA
Alternative Compliance
Baseline Monitoring Complete
Baseline Monitoring Extended
Certify Correction Action Complete
<TAL Certify Complete
- Confirmation Sample <TAL
- As-Built Drawing for Total Retention/No Exposure
- Letter from HWB for COC
- Certification Package to EPA
Alternative Compliance
- Impracticality of CA installation
- >TAL due to POCs contributed by sources beyond Permittees control
- >TAL due to BG
- Force Majeure
High Priority Sites = 3 Year Schedule
Mod Priority Sites = 5 Year Schedule

Overview of Alternative Compliance Process

- To be eligible for alternative compliance the permittees must:
  - Confirm that baseline control measures have been installed as required in Part I.A;
  - Demonstrate they will not be able to certify completion of corrective action under Parts 1.E.2(a) through (d); and
  - Develop a detailed demonstration of how this conclusion was reached.

S-SMA-0.25

- S-SMA-0.25
  - Located in north central Technical Area 3 (TA-03)
  - Contains two “high priority” solid waste management units (SWMUs or Sites); Site 03-013(a) and 03-052(f)
  - Confirmation samples collected in 2011 exceeded target action levels (TALs) for copper, zinc, gross alpha and PCBs

Upper Sandia Map

S-SMA-0.25 (33 acres)

- Location: Northern TA-3, Near University House
- Highly developed urbanized area
- Cultural Resource area
- Storm water discharges to Sandia Wetland

Legend

- IP sampler
- Environmental surveillance sampler
- Culvert
- Perennial drainage
- Monitored Solid Waste Management Unit (SWMU)/Area of Concern (AOC)
- Low Impact Development (LID) areas
- Site Monitoring Area (SMA) drainage
- Wetland

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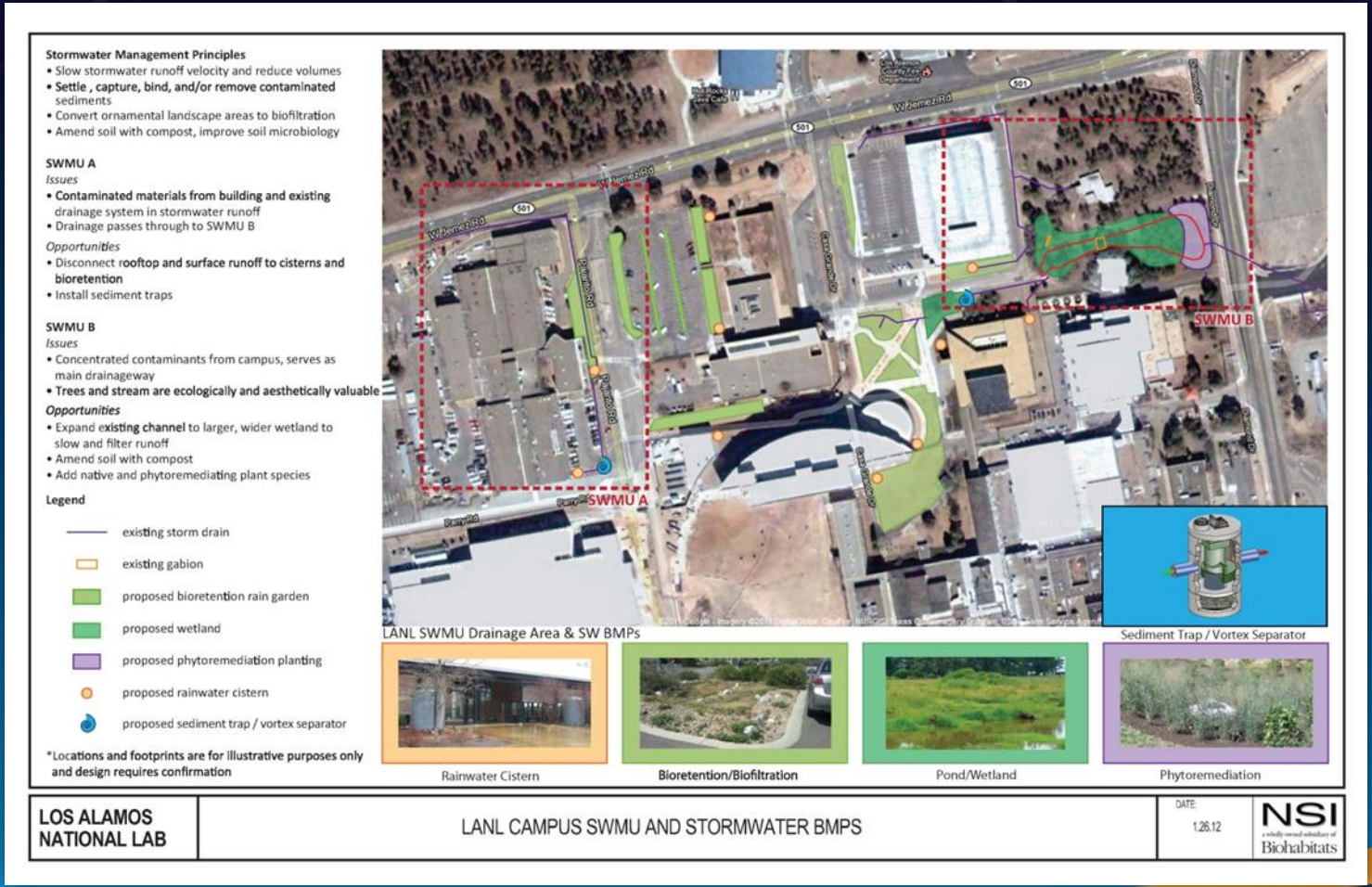
Collaboration with CCW/Biohabitats

- LANL/CCW – Five technical meetings/field visits
- LANL Presented Conceptual Design for S-SMA-0.25
- CCW/Biohabitats reviewed and submitted LID Conceptual Design
- LANL – EPA SWMM and LID Engineering Design
- CCW/Biohabitats review of 90 percent LID Design
- LANL IP team promoting LID concepts

Biohabitats Conceptual Design for S-SMA-0.25



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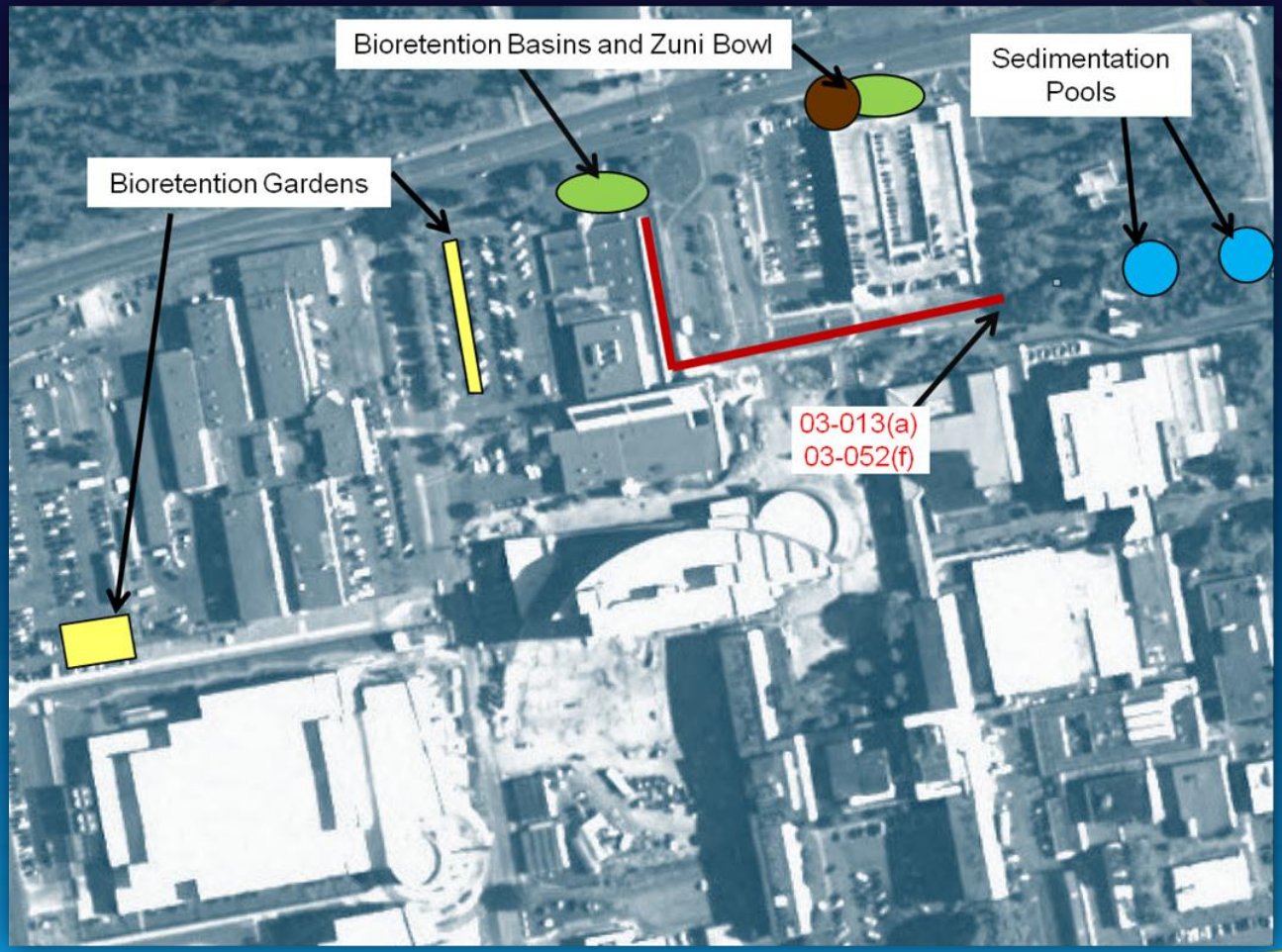
S-SMA-0.25: LID Design Locations



Legend

- Bioretention Basin
- Sedimentation Pond
- Bioretention Garden
- Zuni Bowl/Outlet Protection
- Wetland
- Roof Drains
- SWMU/AOC
- IP Sampler
- Curb Cuts

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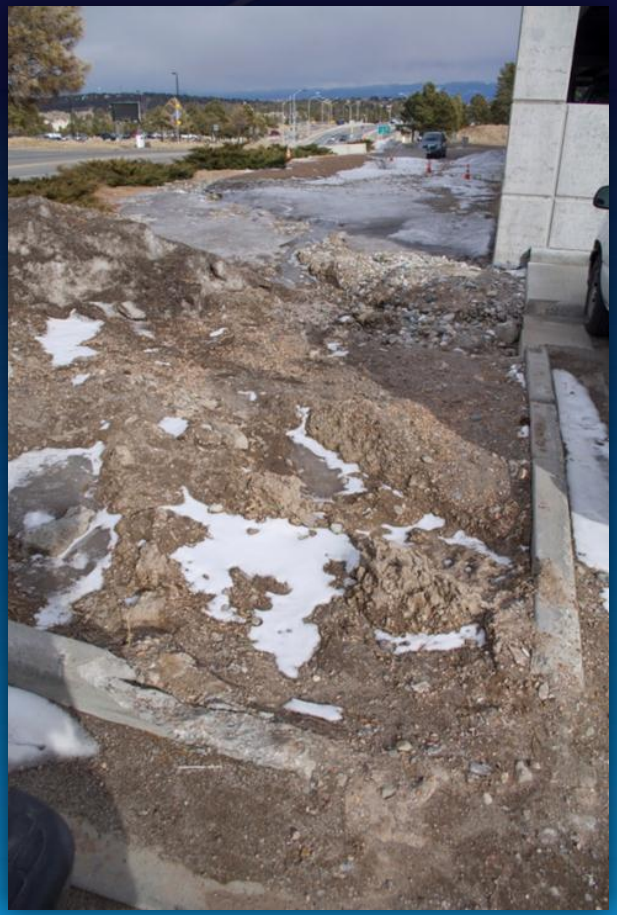
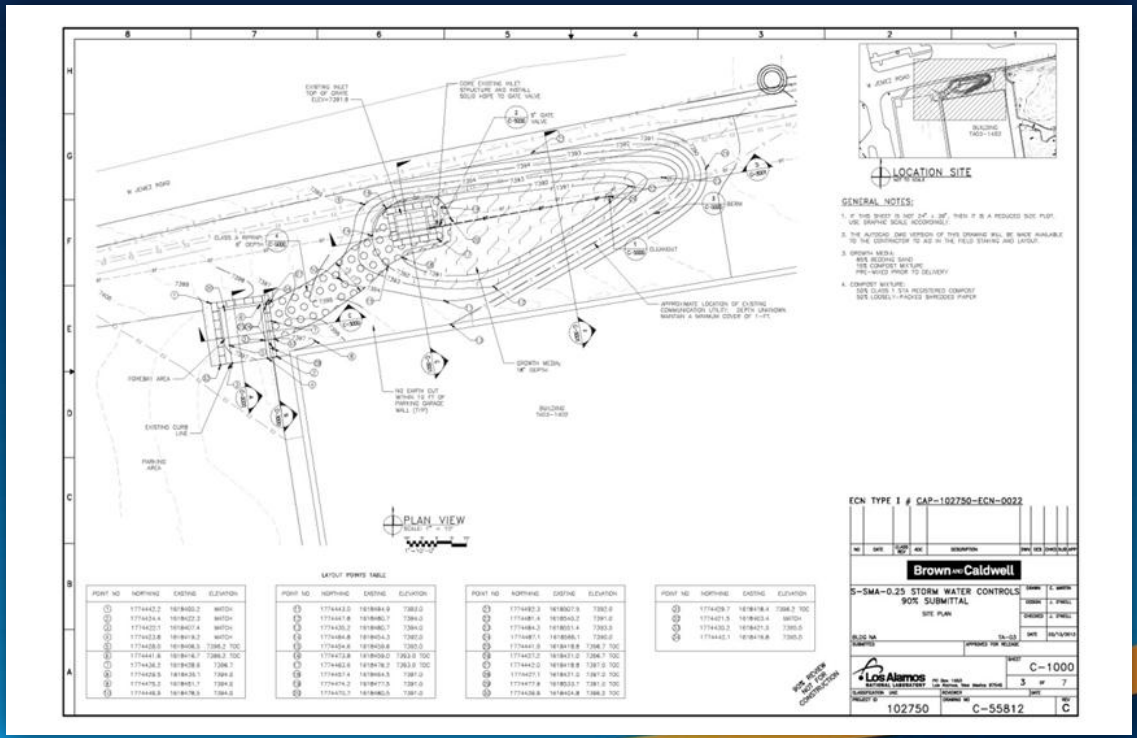
S-SMA-0.25: Enhanced Control Current Conditions and Design to be Installed



Current Conditions

Rip-rap channel and Sedimentation Basin



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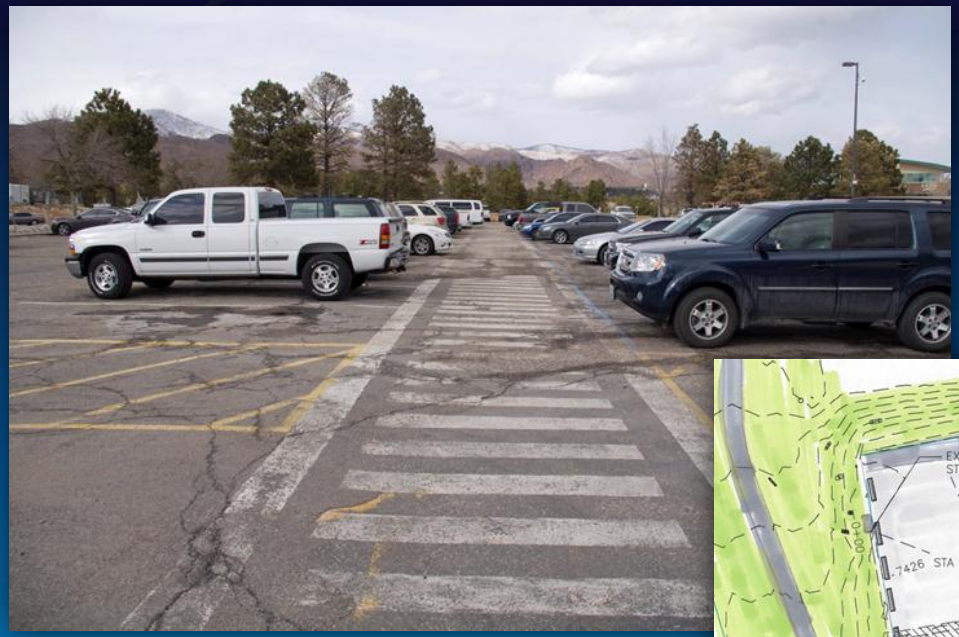
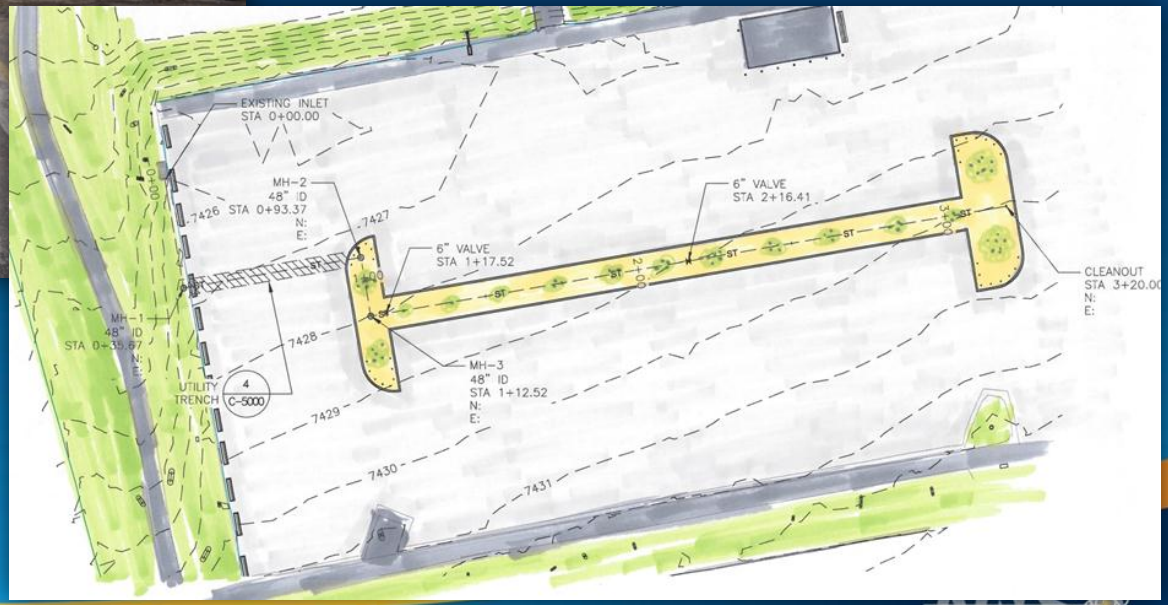
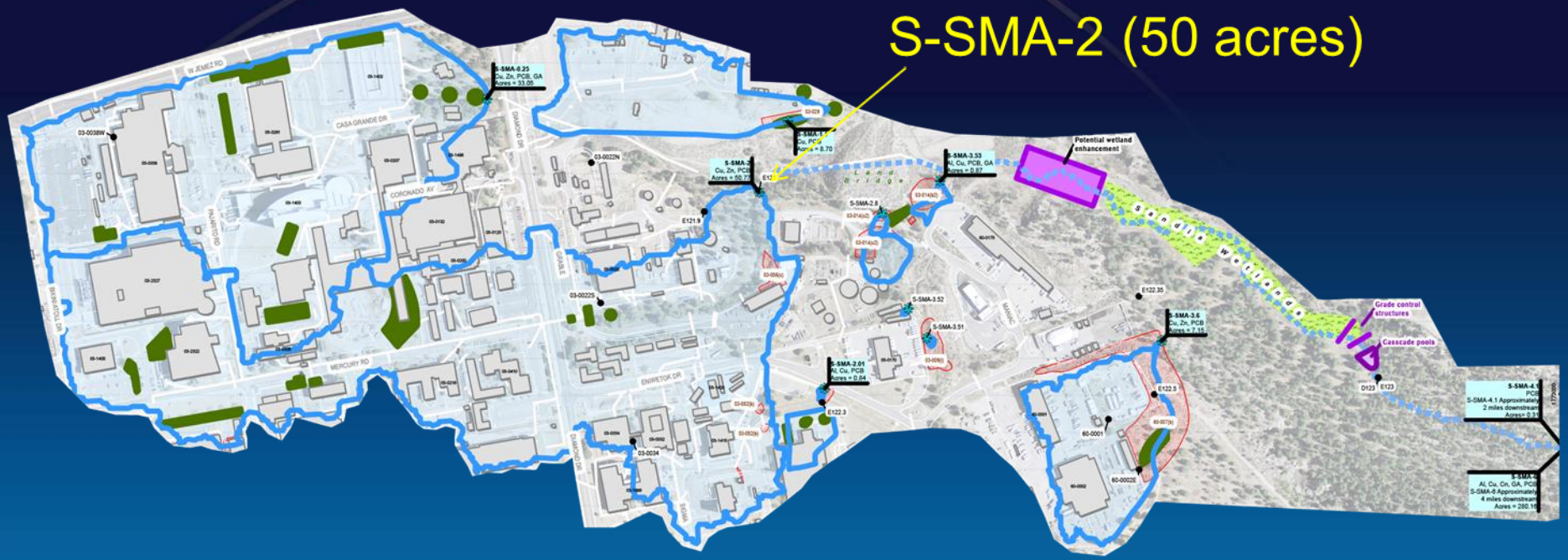
S-SMA-0.25: Bioretention Garden Current Conditions and Proposed Bio-retention Garden Site





S-SMA-2



- Location: Northern TA-3, Near Power Plant
- Highly developed urbanized area
- Heavy infrastructure area, with constant base flow
- Storm water discharges to Sandia Wetland

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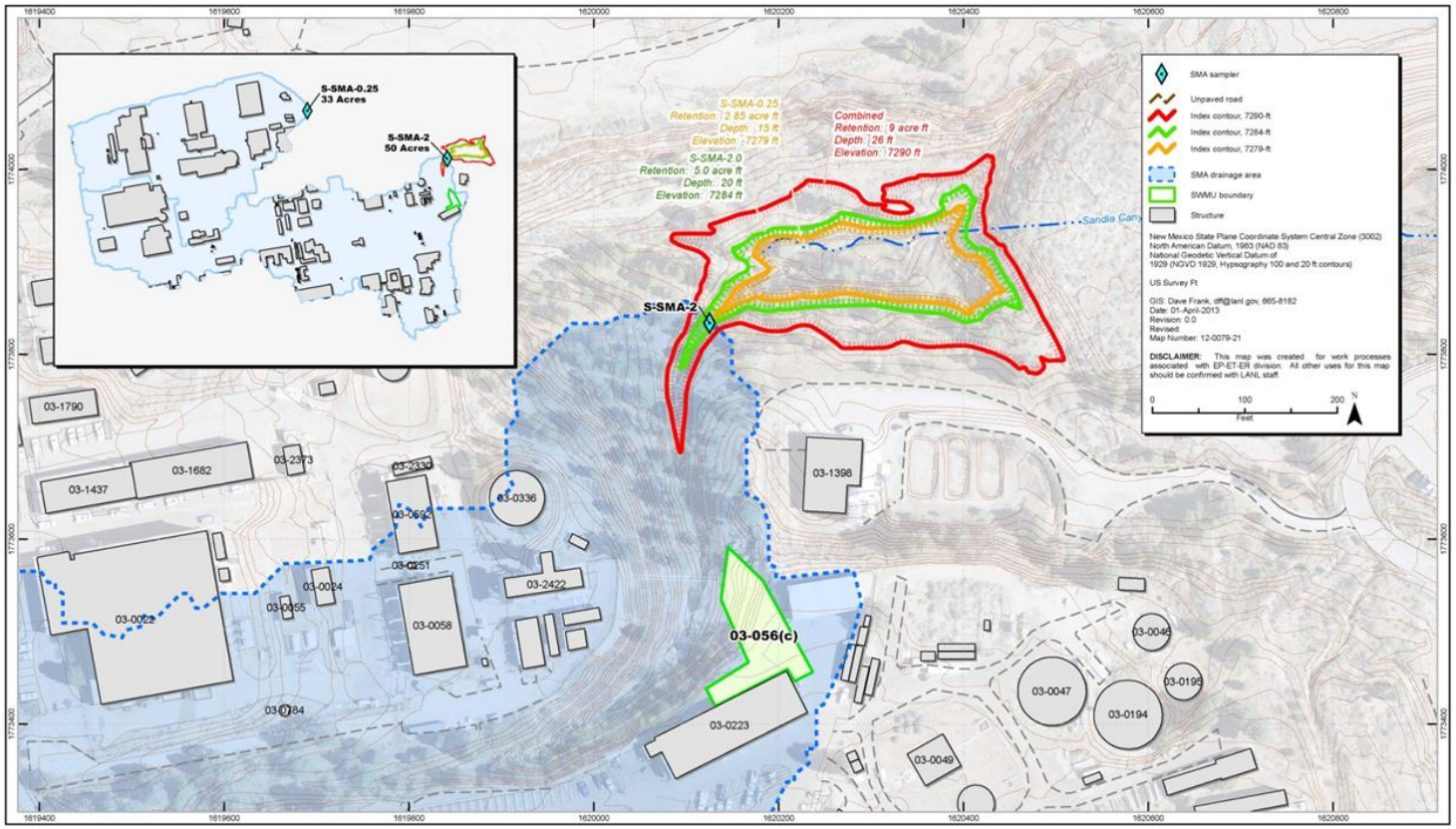
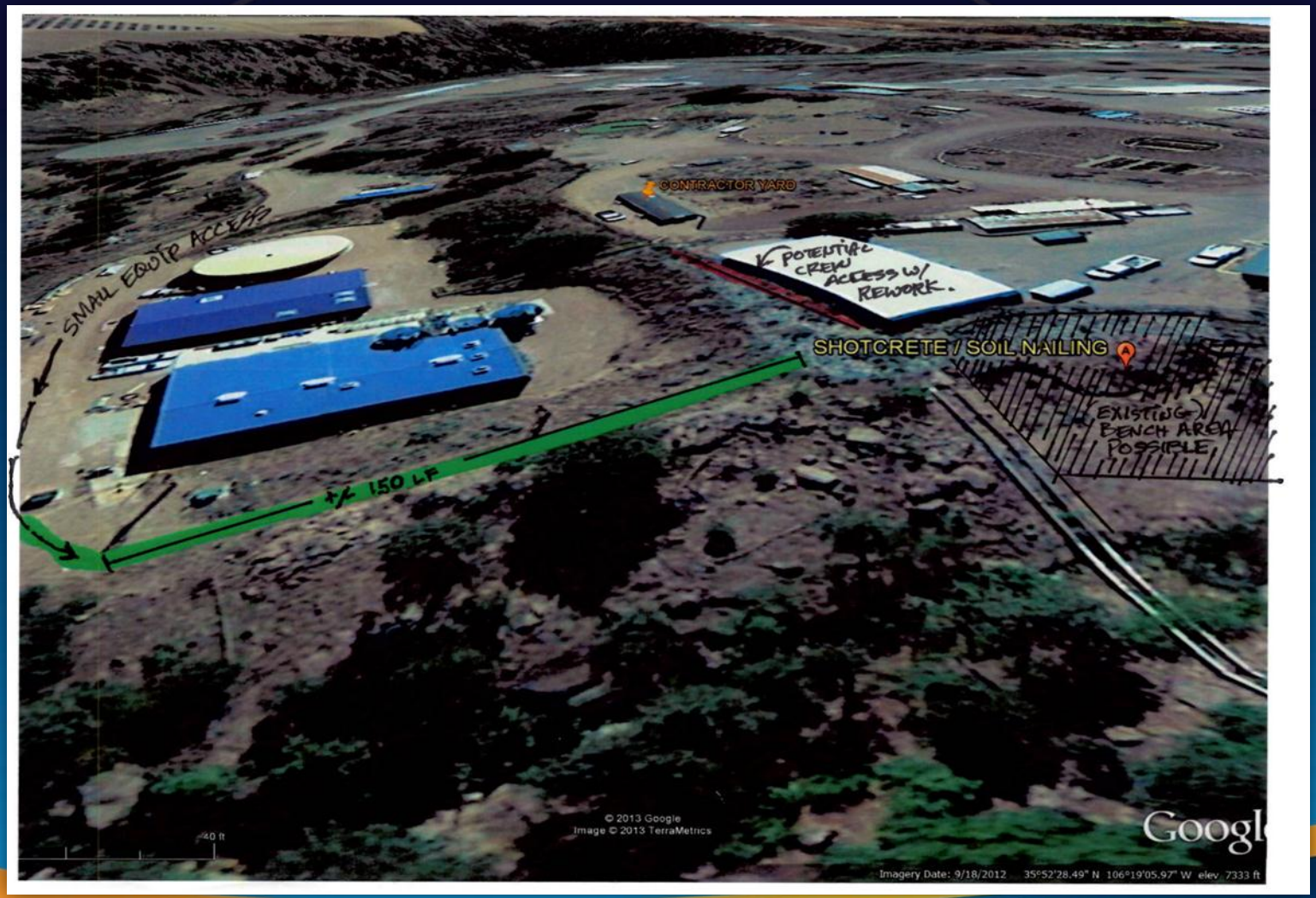
S-SMA-2: Alternatives Analysis

- Total Retention
  - Technically Feasible: Need 9 acre-ft storage (not including base flow)
    - S-SMA-0.25 Retention Depth of 15 ft = 2.85 acre-ft
    - S-SMA-2.0 Retention Depth of 20 ft = 5 acre-ft
    - Combined Retention Depth of 26 ft = 10 acre-ft
  - Practicality
    - NPDES base flows required to maintain wetlands
    - Potential impacts to groundwater
    - Doesn't meet water quality goals
- No Exposure

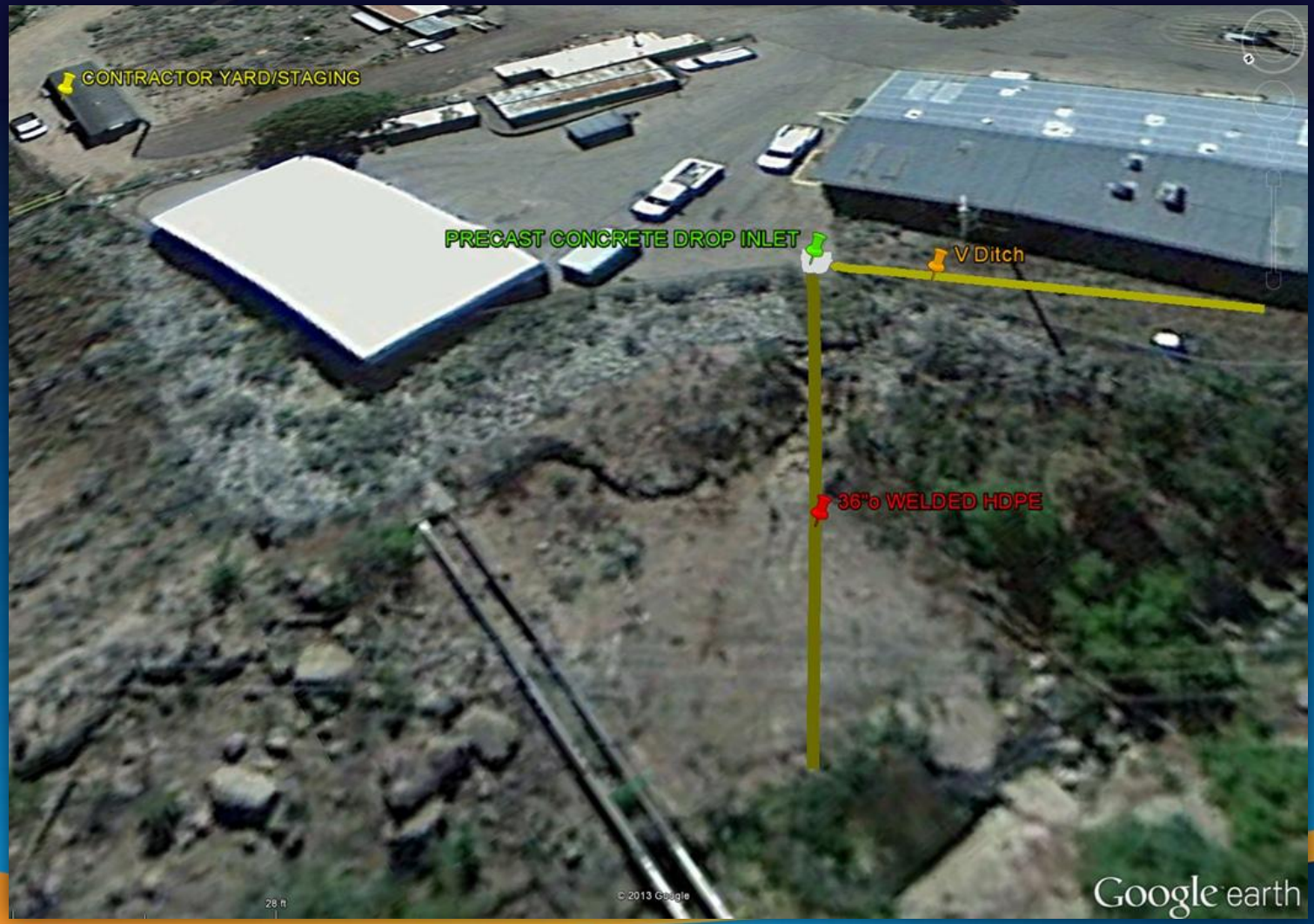
Total Retention for S-SMA-0.25 and S-SMA-2.0



S-SMA-2.0 No Exposure



S-SMA-2.0 No Exposure: Drop Inlet and Conveyance



Basis of Alternative Compliance Request for Sites 03-13(a) and 03-52(f)

- Sources of pollutants
  - Copper and zinc
    - Do not appear to be significant industrial materials used at the Sites
    - Common urban contaminants
- Technical Feasibility and Practicability
  - Site conditions (e.g. urban storm water discharges and high level of development) make it impracticable to install further controls that will meet TALs

Basis of Alternative Compliance Request

- Additional engineered controls will not resolve exceedances because the sites are not the source of the pollutants.

S-SMA-2.0

- S-SMA-2.0
  - Located in the central portion of TA-03
  - Contains four “high priority” sites; Site 03-056(c) is the subject of the alternative compliance request
  - Confirmation samples collected in 2011 exceeded TALs for copper, zinc and PCBs

Basis of Alternative Compliance Request for Site 03-056(c)

- Sources of pollutants
  - Copper and zinc
    - Not associated with industrial materials historically managed at the site
    - Common urban contaminants
  - PCBs
    - Historical releases at Site 03-056(c)
      - Certificate of completion with controls was issued by NMED after two removal actions were completed
      - The “control” is storm water monitoring for potential off-site transport of residual contamination

Basis of Alternative Compliance Request for Site 03-056(c)

- Anthropogenic, urban “background”
  - Run-on samples collected in 2012 exceed TAL and regional background UTL
- Technical Feasibility and Practicability
  - Additional engineered controls will not resolve copper or zinc exceedances because the site is not the source of the pollutants
  - Engineered controls may improve water quality related to residual PCBs but will still not achieve TALs

Next Steps

- 45-day public comment period
  - Public comment period ends June 14th
  - Written comments may be submitted by:
    - e-mail through the Laboratory IP website link or,
    - Mail
- At the conclusion of the public comment period the permittees will:
  - Prepare a written response to all “relevant and significant concerns” raised during the comment period

Next Steps

- Send the response to each person who requested a response
- Post the response to comments on the IP section of the Laboratory's public website
- Submit the response to comments to EPA for a final determination

- If EPA grants the request it will:
  - Issue an individually tailored work plan
  - Extend the compliance deadline for completion of corrective action, if necessary

Next Steps

- If EPA denies the request it will:
  - Promptly notify the permittees of the basis for its decision and
  - Establish a timeframe for the completion of corrective action

QUESTIONS?