

**Public Meeting  
for  
EPA's Radiological Characterization for  
Area IV and the Northern Buffer Zone  
at  
Santa Susana Field Laboratory**

**December 12, 2012**



# EPA SSFL Management

Jane Diamond, EPA Superfund Division Director

Michael Montgomery, EPA Assistant Director

Loren Henning, EPA Section Chief

Mary Aycok, EPA Remedial Project Manager

Andy Bain, EPA Remedial Project Manager

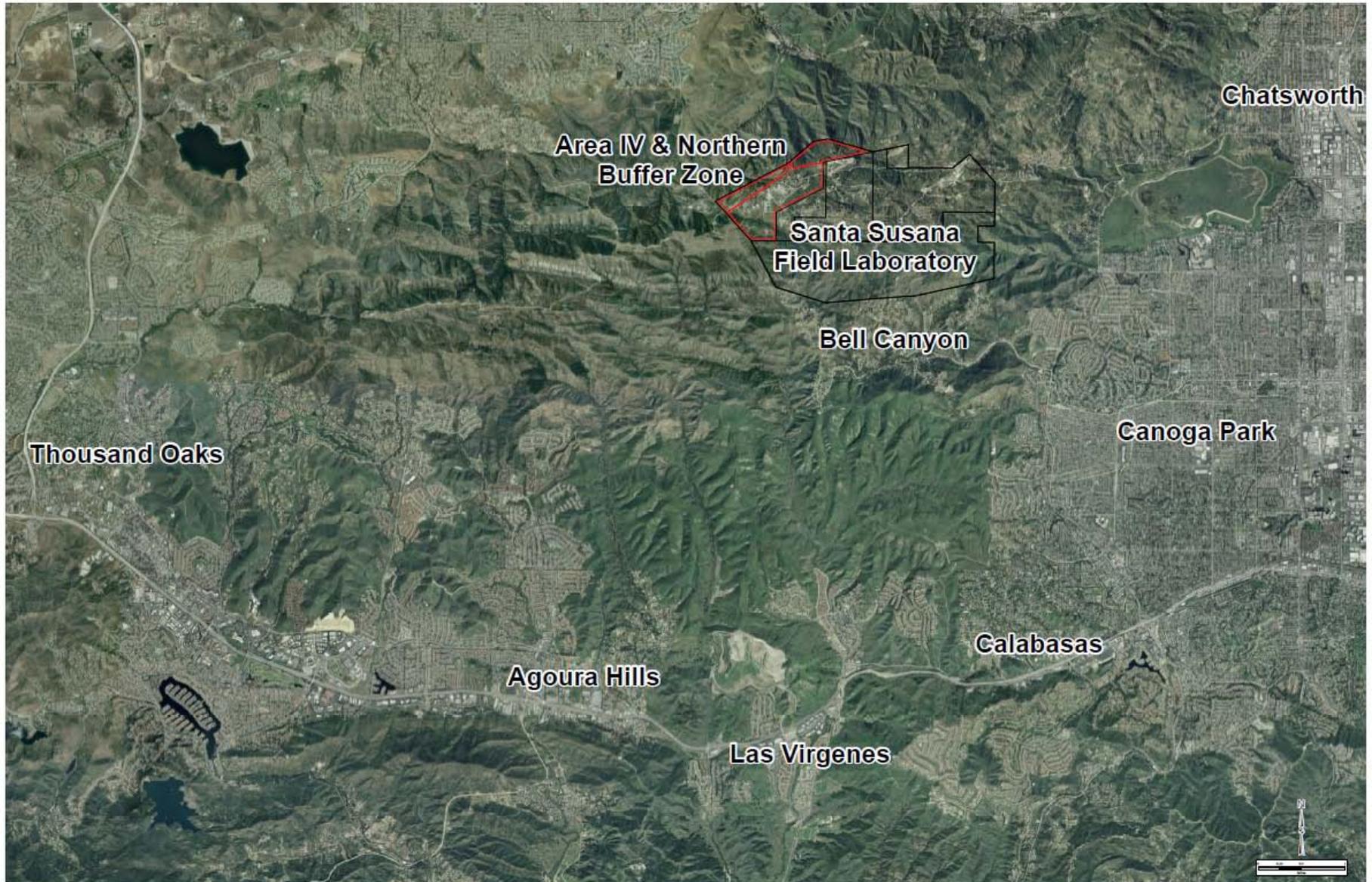
Shiann-Jang Chern, EPA Remedial Project Manager

Gregg Dempsey, Technical Advisor

<http://www.epa.gov/region09/SantaSusana>



# Site Location



# History of SSFL

- Constructed in 1946 for rocket testing
- Nuclear programs began in early 1950s starting in Area IV
- Area IV contained:
  - 10 nuclear reactors with nuclear R&D
  - Fuel testing and processing
  - Waste handling facilities
- DOE started phasing out nuclear operations in mid-1960s and discontinued them in 1988
- Area IV facilities are owned by DOE and the land is owned by Boeing



# EPA's Role

- 2008 Federal Appropriations Law (HR2764)
- DOE and EPA Interagency Agreement
- Comprehensive radiological site characterization of Area IV and Northern Buffer Zone (NBZ) in accordance with CERCLA
- Department of Toxic Substances Control (DTSC) is lead regulatory agency for site clean-up under a RCRA Corrective Action



# Federal Appropriations Law (HR2764)

- EPA's role is limited to providing radiological technical assistance to DTSC and DOE
- HR2764 mandated DOE and EPA conduct a joint comprehensive radioactive site characterization of Area IV and the Northern Buffer Zone
- DOE provided EPA with \$41.5 million to do this study, including \$38.3 million under the American Recovery and Reinvestment Act of 2009 (ARRA)



# Administrative Order on Consent

- Agreement between DTSC and DOE, signed December 2010
- Primary Objective of the AOC is to “define and make more specific DOE’s obligations with respect to only the cleanup of soils at the site.”
- EPA is not a party to this Order
- EPA was brought in as a third party to use “independent technical judgment in performing the technical work”



# EPA's Specific Role

## Accomplished

- ☑ "Determine local background levels and detection limits " (Background Study)
- ☑ Conduct a "radiological characterization survey" sampling soil and other environmental media in accordance with project plans prepared by EPA
- ☑ Provide co-located and split samples to DTSC for chemical characterization
- ☑ "Determine where onsite levels exceed local background within Area IV and Northern Buffer Zone" (Final Soils Report)
- ☑ "Provide a report on the presence of radiological contamination at the site" (Final Soils Report)



# EPA's Specific Role (continued)

## Remaining

- "Conduct post cleanup confirmatory radiation assessment in areas where cleanup was performed"
- "Verify that backfill/replacement soils do not exceed local background for radiological constituents"
- EPA's participation at SSFL is dependent on future negotiations between agencies and additional funding



# Gamma Scanning 266 Acres Surveyed



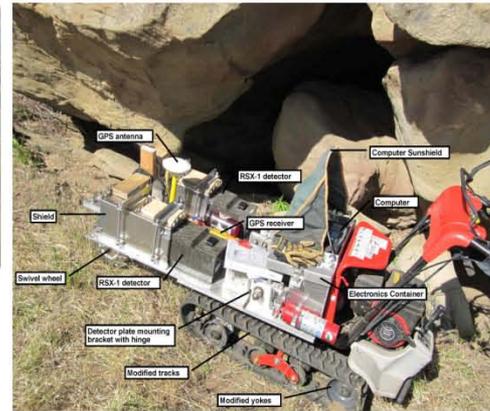
# Gamma Radiation Detection Systems



Enhanced Radiation Ground Scanner II  
(JCB Telehandler)



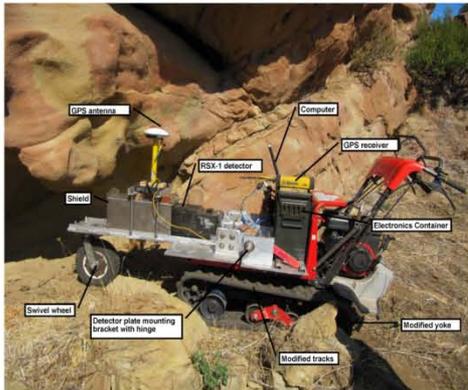
Enhanced Radiation Ground Scanner II  
(SkyTrak Telehandler) Scanning  
Hillside Behind RMHF



Dual Detector Track Mounted  
Gamma Scanner



Wheel Mounted Gamma Scanner



Single Detector Track Mounted  
Gamma Scanner



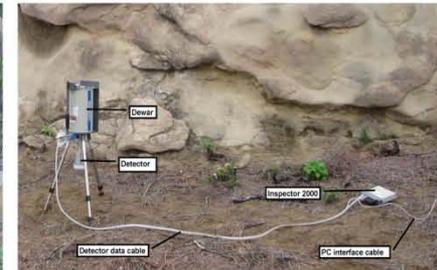
Mule Mounted Gamma Scanner



Hand Held Gamma  
Scanner I



Hand Held Gamma  
Scanner II



In Situ Gamma Spectrometer

Presented in order of detection capability top-left to bottom-right

# Wheel Mounted Gamma Scanner



# Track Mounted Gamma Scanner



06/27/2011 15:45



# Enhanced Radiation Ground Scanner (ERGS)

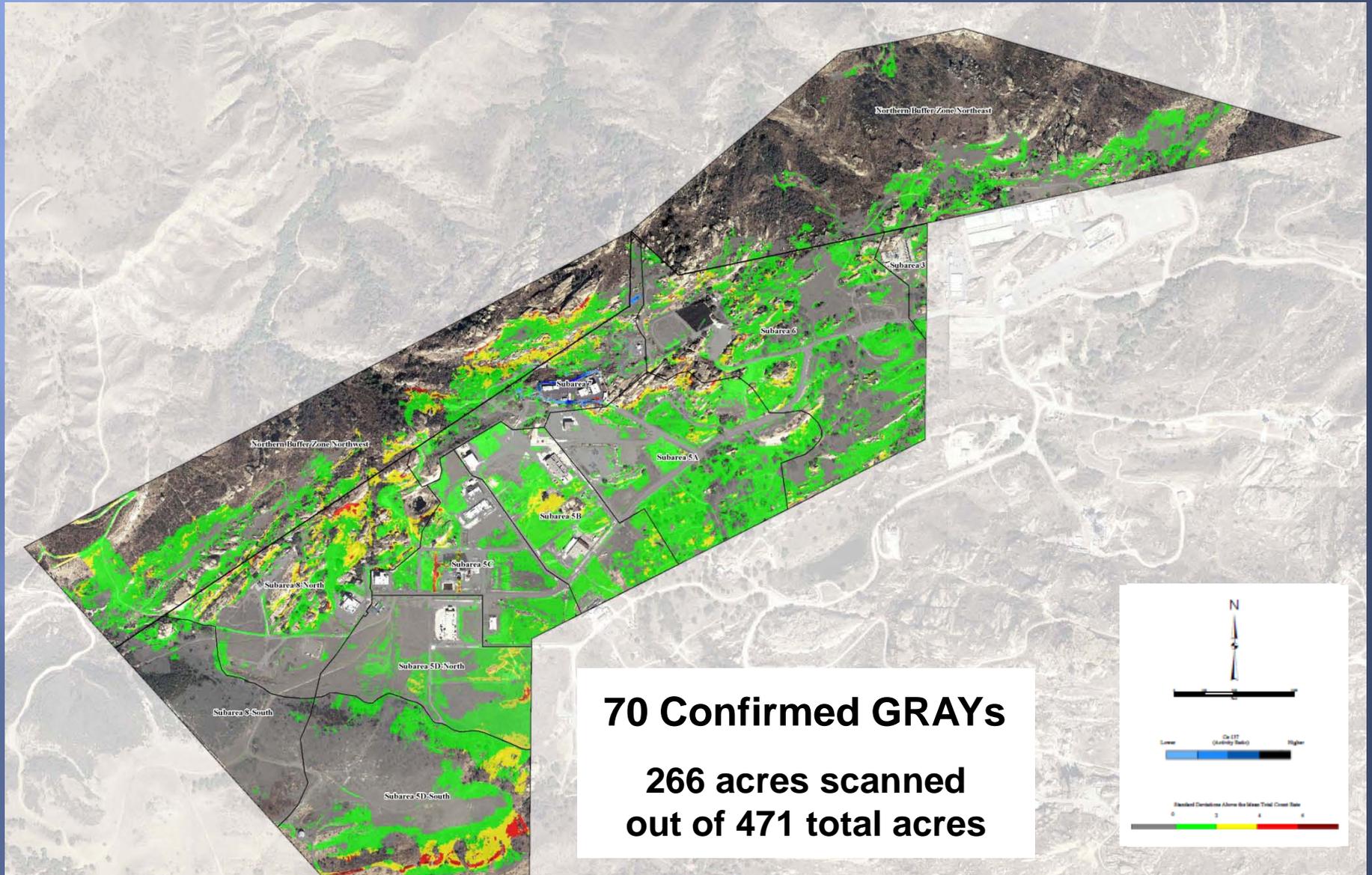




# Mule Mounted Gamma Scanner

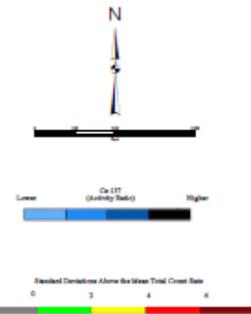


# Gamma Scanning Results

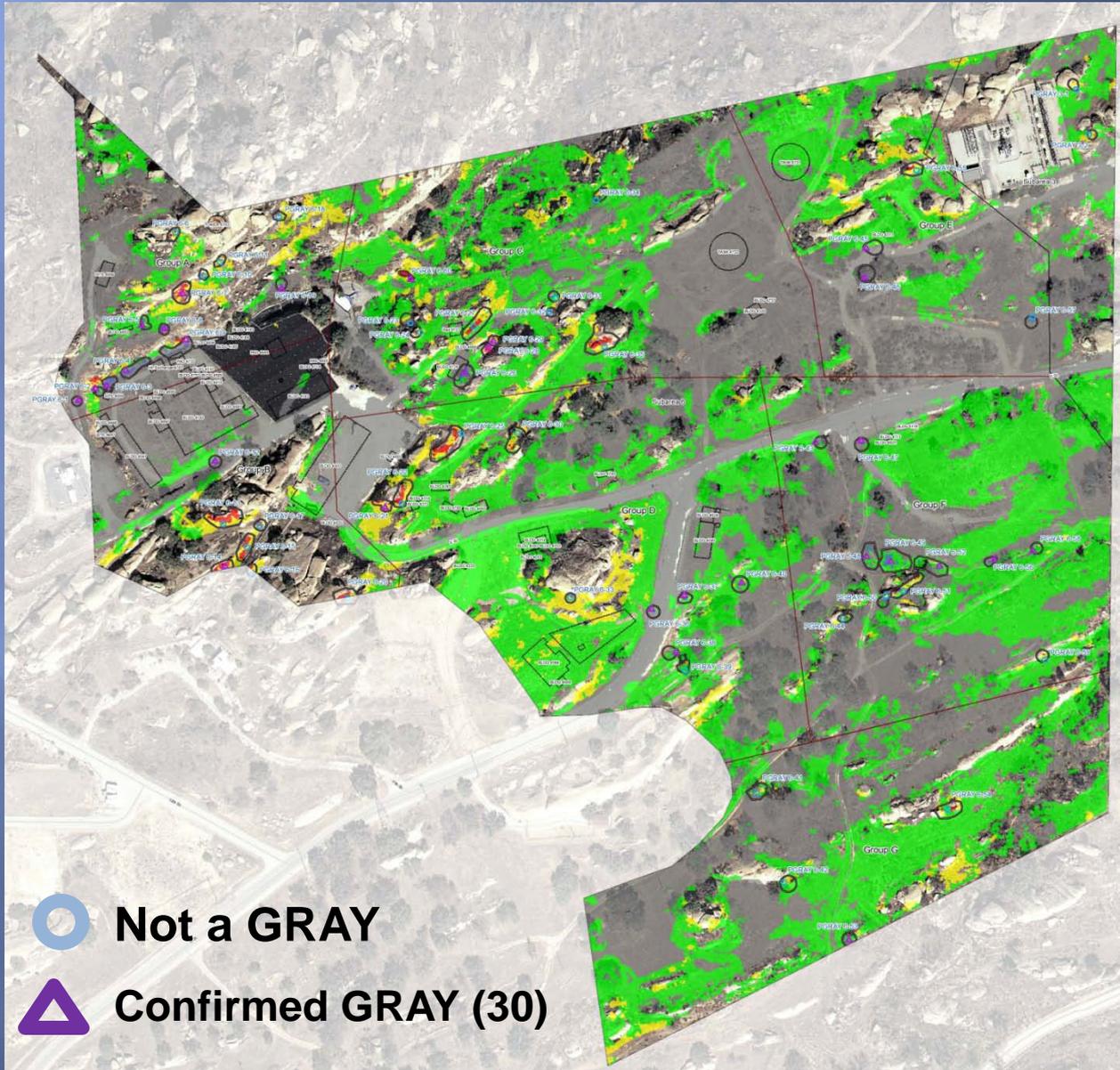


**70 Confirmed GRAYs**

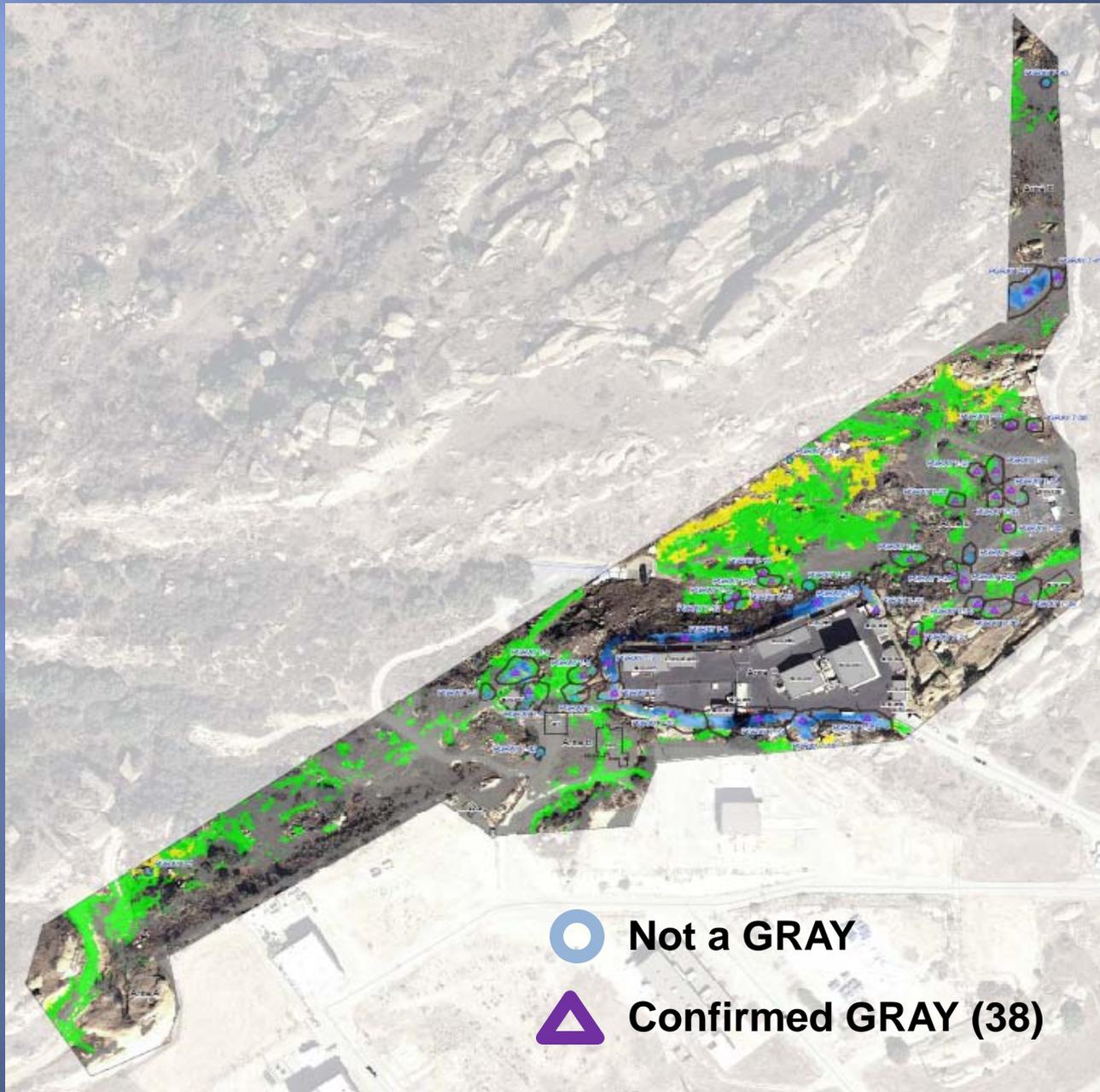
**266 acres scanned  
out of 471 total acres**



# Subarea 6 Results



# Subarea 7 Results



- Not a GRAY
- △ Confirmed GRAY (38)

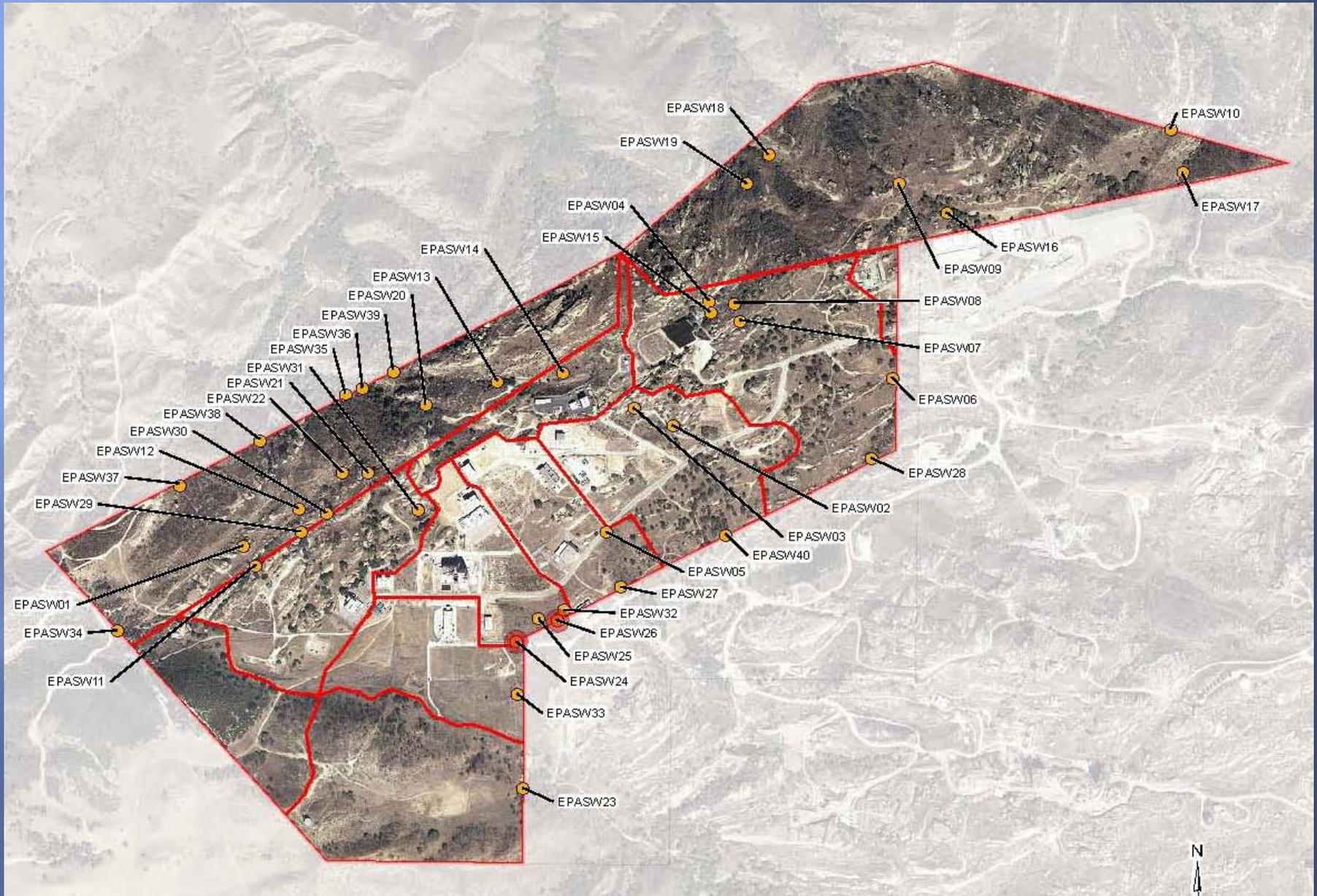


# Surface Water Sampling

- Conducted in December 2010
- Collected 34 Samples
- Samples at two locations exceeded the Maximum Contaminant Level (MCL) of 50 pCi/L for total gross beta
  - Location EPASW24
    - Total gross beta (51.2 pCi/L)
  - Location EPASW26
    - Total gross beta (191 pCi/L)



# Surface Water Sampling Locations

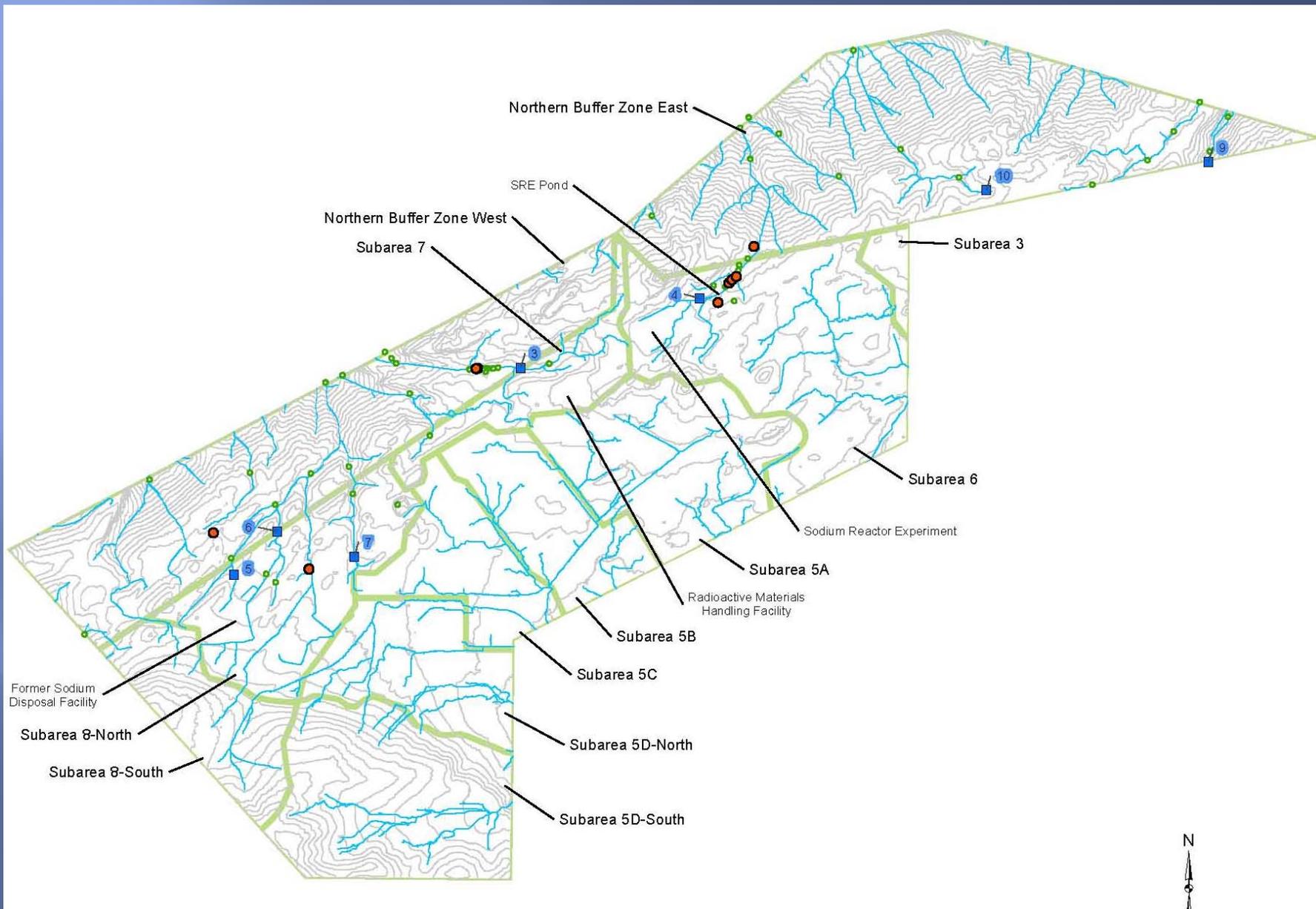


# Sediment Sampling

- A total of 67 samples and four field duplicate samples were collected throughout Area IV and the NBZ.
- Radionuclide concentrations exceeded Field Action Levels (FALs) in four areas.
  - Cs-137, Sr-90, and Pu-239/240 were detected downgradient of the Sodium Reactor Experiment (SRE)
  - Sr-90 was detected downgradient of the Radioactive Materials Handling Facility (RMHF)
  - Sr-90 also exceeded FALs at one location in the western portion of the NBZ
  - Cs-137 also exceeded FALs at one location downgradient of the Building 4009 leach field



# Sediment Sampling Locations



# Groundwater Sampling

- Two Phases (Dry Season- August 2010. Wet Season- April 2011.)
- Sampled 80 wells in Area IV and 13 wells off-site
- Collected a total of 161 groundwater samples
- Detected tritium in three Area IV wells above the MCL
- Detected Sr-90 in one Area IV well above the MCL
- The results of EPA's characterization study confirmed Boeing's previous data





Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RD-06	U-233/U-234	Filtered	2	53	5
RD-116	U-233/U-234	Filtered	2	24	50
	U-238	Filtered	3	22.9	50

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RD-06	gross beta	Filtered	1	208	50
	gross beta	Suspended	1	0.64	50
	gross beta	Total	1	208	50

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RD-095	H-3	Filtered	1	5970	20000
RD-95	H-3	Total	2	4600	20000

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RD-200	H-3	Filtered	1	4300	20000
RD-201	H-3	Total	2	5400	20000

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
PZ-124	U-233/U-234	Filtered	2	36.7	20
	U-238	Filtered	2	35.6	20

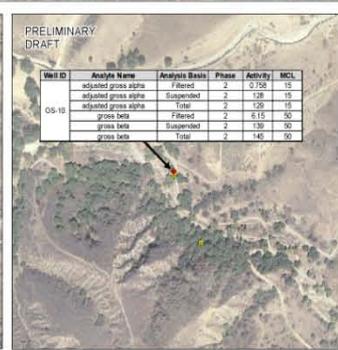
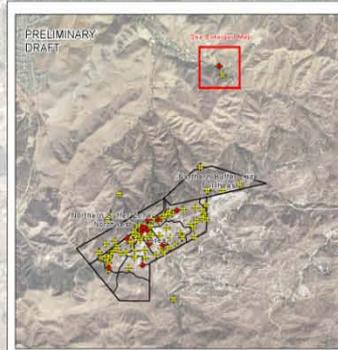
Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RD-93	gross beta	Filtered	2	135	50
	gross beta	Suspended	2	1.55	50
	gross beta	Total	2	145	50

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RS-27	adjusted gross alpha	Filtered	2	3.92	15
	adjusted gross alpha	Suspended	2	18.1	15
	adjusted gross alpha	Total	2	37.3	15
	gross beta	Filtered	2	35.1	50
	gross beta	Suspended	2	7.24	50
	gross beta	Total	2	93.5	50

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RS-11	U-233/U-234	Filtered	2	30.9	20
	U-238	Filtered	2	28.1	20

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
PZ-105	adjusted gross alpha	Filtered	2	11.4	15
	adjusted gross alpha	Suspended	2	17.8	15
	adjusted gross alpha	Total	2	18.7	15

Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
RS-23	adjusted gross alpha	Filtered	2	27.2	15
	adjusted gross alpha	Suspended	2	146.8	15
	adjusted gross alpha	Total	2	213.7	15
	gross beta	Filtered	2	32.1	50
	gross beta	Suspended	2	281	50
	gross beta	Total	2	313	50



Well ID	Analyte Name	Analysis Basis	Phase	Activity	MCL
OS-15	adjusted gross alpha	Filtered	2	0.758	15
	adjusted gross alpha	Suspended	2	138	15
	adjusted gross alpha	Total	2	139	15
	gross beta	Filtered	2	6.15	50
	gross beta	Suspended	2	130	50
	gross beta	Total	2	145	50

HGL Santa Susana Field Laboratory  
 Site-Ventura County, California  
 Area IV and Northern Buffer Zone  
 Phase I and Phase II Groundwater  
 Sample Locations  
 Radionuclide Concentrations Above  
 Maximum Contaminant Levels

U.S. EPA Region 9

Legend  
 ♦ Location of MCL Exceedance  
 □ Groundwater Sample Location  
 — Subarea Boundaries

Note:  
 Activity and Maximum Contaminant Levels (MCL)  
 reported in picocuries per liter (pCi/L)

# Surface/Subsurface Soil Investigation



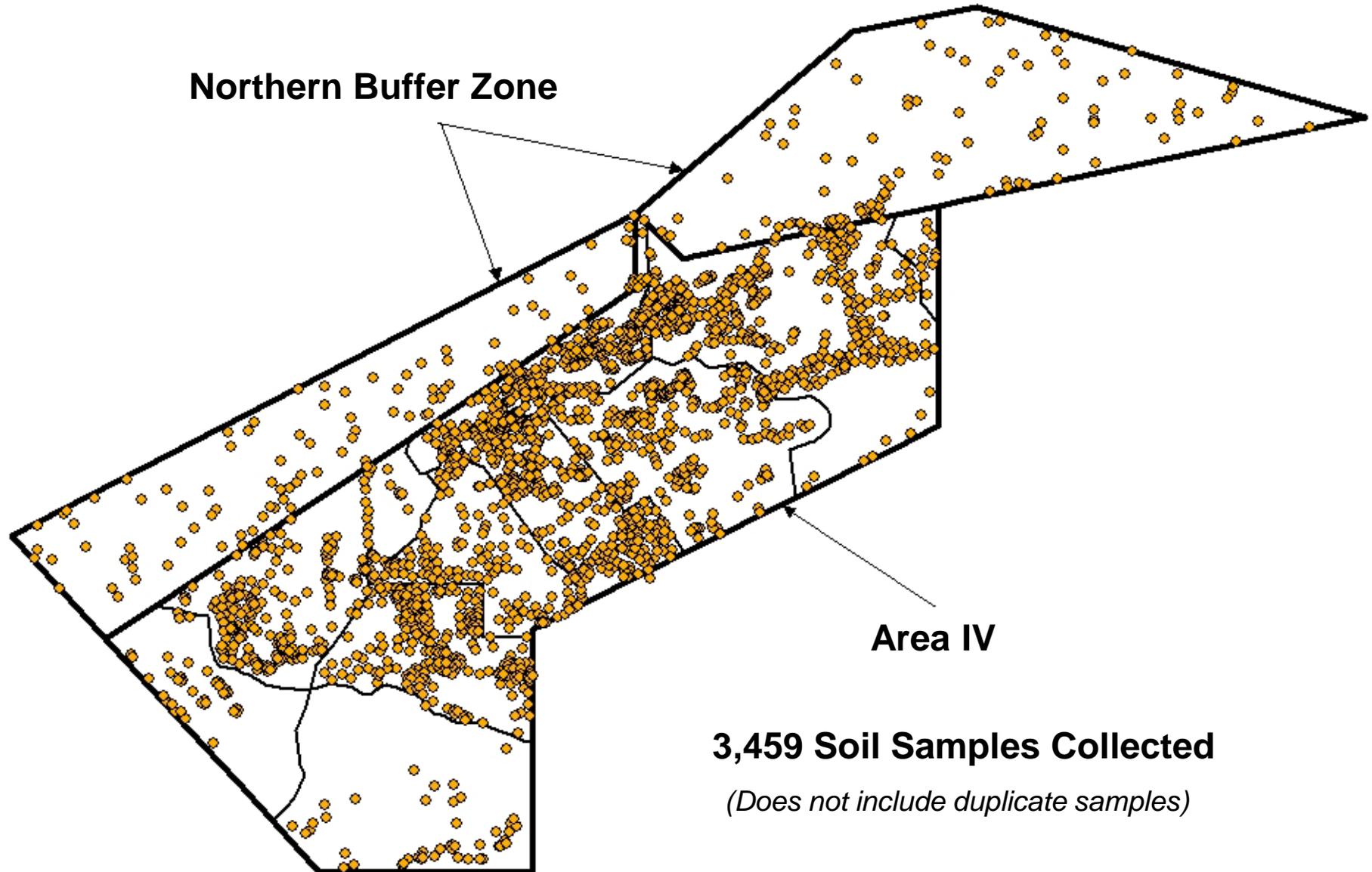
# Soil Sampling

- Round 1 Soil Sampling
  - Area IV – 2,490 samples and 131 field duplicate samples collected
  - NBZ – 233 samples and 13 field duplicate samples collected
  - Deep Borehole – 18 samples and one field duplicate collected
  - Completed in May 2012
- Round 2 Soil Sampling (Step-outs)
  - 734 samples and 44 field duplicates collected
  - Complete July 2012



# Soil Sample Locations

## Area IV and Northern Buffer Zone



# Surface Soil Sampling



# Subsurface Soil Sampling Direct Push Sampling Rig



# Subsurface Soil Sampling Sonic Drill Rig



02/20/2012



# Soil Results Compared to Field Action Levels

- The FAL is a laboratory specific reference concentration of radioactivity in site soil
- The FAL is the greater of the Background Threshold Value (BTV) or the Minimum Detectable Concentration (MDC)
- The FAL is used to identify “Areas of Interest”
- Follows the requirement established in the AOC
- The FALs have NOT been adjusted to account for laboratory uncertainty
- FALs are NOT the final Look-Up-Table values



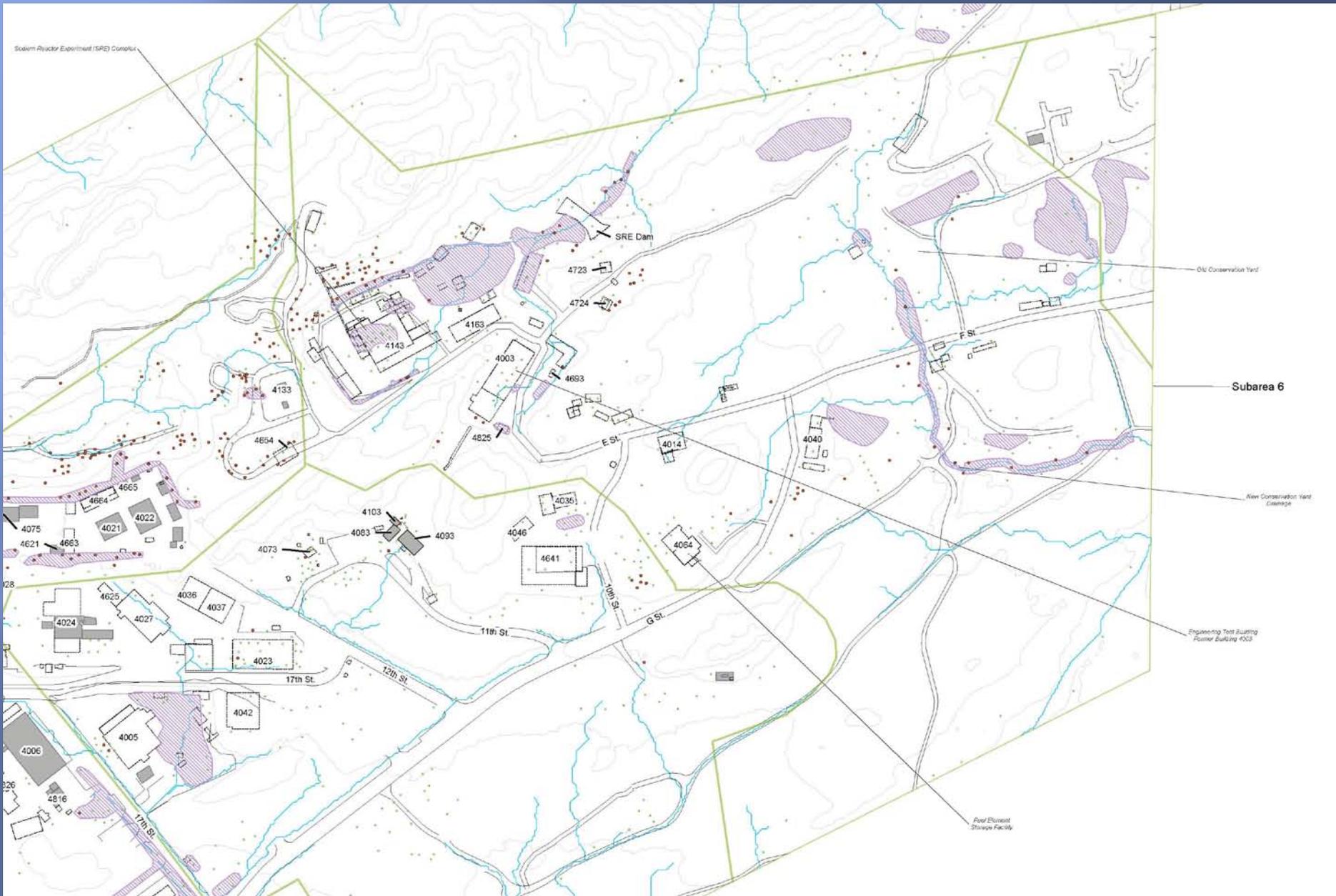
# Soil Sample Results Above the Field Action Level

<u>Radionuclide</u>	<u>FAL (pCi/g)</u>	<u>Exceedances</u>
Cs-137	0.193	291
Sr-90	0.075	153
Pu-239/240	0.0142	14
Eu-152	0.0459	6
Co-60	0.0252	4
Am-241	0.0410	3
Pu-238	0.00921	2
Cm-243/244	0.0162	2
Eu-154	0.1360	1
Ni-59	7.24	1
Tritium	7.38	1

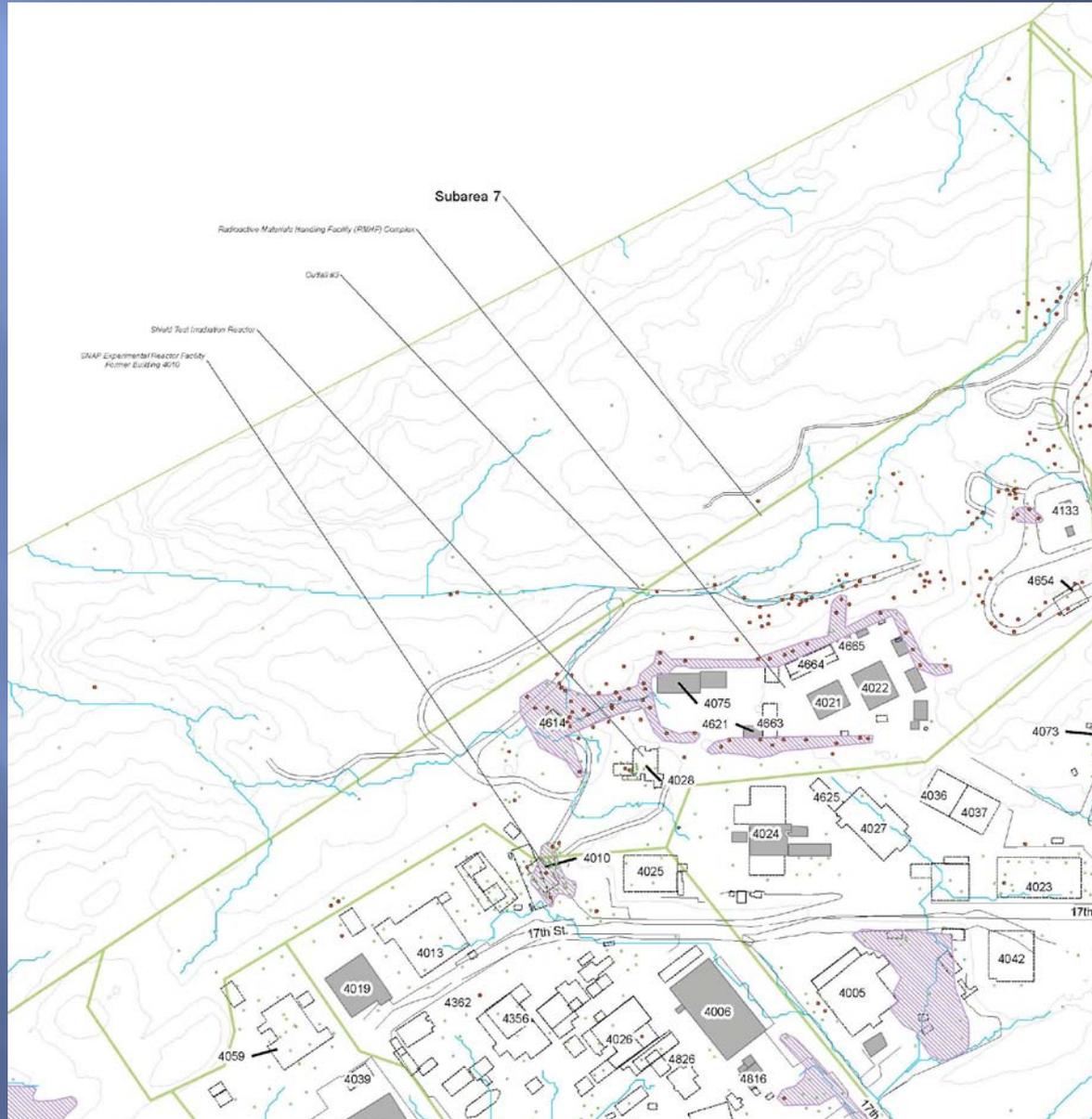




# Subarea 6 Results



# Subarea 7 Results



# EPA Project Close Out

- Final Surface Water and Sediment Report (December 21)
  - Final Radiological Characterization of Soils Report (December 21)
  - Contract Close Out (December 31)
- 

## Question & Answer Session



# Contact Information

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# Department of Toxic Substances Control

## Santa Susana Field Laboratory

December 12, 2012

# DTSC Presentation

- Appreciation to EPA
- Commitment to AOC
- Status of EPA documents
  - DTSC Repository
- Ongoing Public Participation Opportunities
- Next Steps

# Status of EPA Documents

- EPA Final documents to reside on DTSC website
- DTSC expects to have them posted in January 2013
- Historical Site Assessment (HSA) too large to post
  - Versions available at DTSC Chatsworth office.
  - Need to make appointment to access Chatsworth file

# Ongoing Public Participation Opportunities

- Written Communications
- Website

CA.GOV California Department of Toxic Substances Control

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## Santa Susana Field Laboratory



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### Welcome

- [Application for Membership on the Community Advisory Group SSFL](#)
- [Solicitud de Membresía del Grupo Asesor Comunitario](#)

**SSFL FAQ \*updated November 9, 2012\***  
 Welcome to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) Web site for the investigation and cleanup of environmental contamination at the **Santa Susana Field Laboratory (SSFL)**.

DTSC's mission is to provide the highest level of public safety, and to protect public health and the environment from toxic harm.

DTSC is the lead regulatory agency overseeing the investigation and cleanup of contaminated soil and groundwater at the SSFL. Multiple state, federal and local government agencies also play a role in the cleanup under way at the SSFL site. Their activities are also described on this site.

Investigation and cleanup activities at the SSFL include soils investigations

# Ongoing Public Participation Opportunities

- **Public Forums**
- **Next Steps**

# DTSC Community Contact

For additional information:

Marina Perez DTSC Public Participation Specialist

[Marina.Perez@dtsc.ca.gov](mailto:Marina.Perez@dtsc.ca.gov)

SSFL Website

[http://www.dtsc.ca.gov/SiteCleanup/Santa\\_Susana\\_Field\\_Lab/](http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/)