United States Environmental Protection Agency (USEPA)

Radiological Study

Santa Susana Field Laboratory (SSFL)

SSFL Technical Stakeholder Group Meeting

July 14, 2010

Agenda

- Introductions and Ground Rules
- Project Schedule Update
- Background Study Laboratory
- Groundwater, Surface Water, and Sediment Sampling
- HSA Update
- Soil Sampling Plan and GIS-Based Mapping
- Gamma Scanning Update
- Set Next Meeting Date
- Adjourn

Project Schedule Update

Key Background Study Project Milestones

Task	Estimated Completion Date	Actual Completion Date
Laboratory Analysis	August 2010	---
Technical Memorandum	September 2010	---
Statistical Analysis	October 2010	---
Final Report	December 2010	---

Key Area IV Project Milestones

Task	Estimated Start Date	Actual Start Date
Gamma Scanning	July 2010	July 2010
Ground Water Sampling	August 2010	---
Surface Water and Sediment Sampling	November 2010	---
Soil Sampling	October 2010	---
Laboratory Analyses	November 2010	---
Task	**Estimated Completion Date**	**Actual Completion Date**
Environmental Compliance	July 2011	---
All Field Activities	December 2011	---

Schedule Risk – Gamma Scanning

- Risk
  - Actual production rate is uncertain
  - Production rate will be constrained by the availability of specialized gamma scanning equipment
- Mitigation Approach
  - EPA will require extended work days and/or weekend work if the productivity rate is lower than anticipated

Schedule Risk – Soil Sampling Plan Development

- Risk
  - Requires multiple inputs – which could be delayed (e.g., gamma scanning data, geophysical survey, HSA)
  - Stakeholder input on selection of sample locations is important.
- Mitigation Approach
  - FSP addenda containing sample locations and analyte lists will be developed as soon as all information is available for a given area.
  - If necessary, additional staff will be added to soil sampling team. Working hours can also be extended.

Schedule Risk – Laboratory

- Risk
  - Up-front evaluation of labs will delay procurement.
  - A large number of samples will need to be analyzed in a short time period.
  - The laboratory throughput is unknown.
- Mitigation Approach
  - Soil sampling will begin prior to procuring a laboratory and samples will be stored.
  - Subcontracts will be issued to multiple labs.
  - Increase detection limits if supported by the Background Study results.

Schedule Risk – Reporting

- Risk
  - A large amount of interim data will be generated, and these data will require stakeholder review. The concurrent review of a large number of reports will require significant time.
- Mitigation Approach
  - Interim results will be transmitted to stakeholders via tables and maps.
  - Interim results will be posted on a website.

Background Study Update

Radiological Background Study Objectives

- The purpose of the Background Study is to determine the level of "ambient or background" radioactivity found in soil.

- The results of the Background Study will be compared to radiological data collected at the SSFL to determine the extent of radiological contamination.

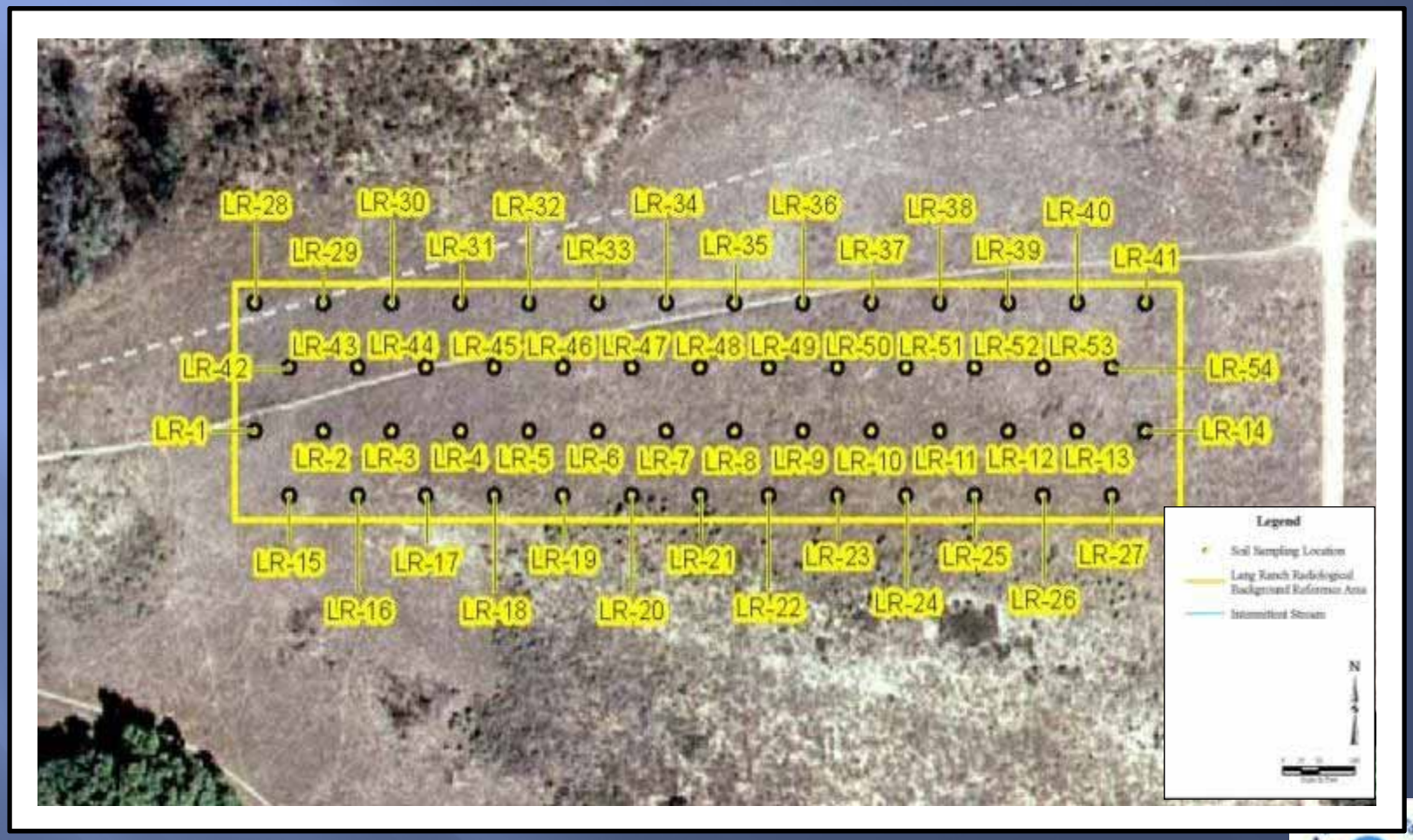
Status of Radiological Background Study

- ✓ Initial project planning
- ✓ Background location evaluation and selection
- ✓ Sampling Plan preparation
- ✓ Sampling preparation and mobilization
- ✓ Sampling – Mobilization 1 (August-September 2009)
- ✓ Sampling – Mobilization 2 (November 2009)
- ➢ Laboratory analyses
- ➢ Data validation
- ❑ Issue Tech Memo on surface soil results
- ❑ Data evaluation, statistical analysis, and stakeholder review
- ❑ Report preparation

Background Study Update

1. Initial Strontium-90 Data
2. Summary of First Audit
3. Summary of Second Audit
4. Response to Second Audit Findings
5. Current Status
6. Project Schedule

Strontium-90 Data Sample Locations Lang Ranch RBRA Surface Samples



Strontium-90 Data

Sample ID	Analyte	Result (pCi/g)	Qualifier	Uncertainty* (+/- pCi/g)	MDC (pCi/g)	Agricultural 10-6 PRG (pCi/g)	Agricultural 10-4 PRG (pCi/g)
LR-1-SUR	Sr-90	2.38E-02		1.33E-02	1.85E-02	1.39E-03	1.39E-01
LR-2-SUR	Sr-90	2.52E-02		1.19E-02	1.52E-02	1.39E-03	1.39E-01
LR-3-SUR	Sr-90	1.69E-02	J	1.21E-02	1.83E-02	1.39E-03	1.39E-01
LR-4-SUR	Sr-90	1.90E-02		1.04E-02	1.42E-02	1.39E-03	1.39E-01
LR-5-SUR	Sr-90	3.11E-02		1.45E-02	1.84E-02	1.39E-03	1.39E-01
LR-6-SUR	Sr-90	5.29E-02		1.70E-02	1.61E-02	1.39E-03	1.39E-01
LR-7-SUR	Sr-90	3.48E-02		1.40E-02	1.59E-02	1.39E-03	1.39E-01
LR-8-SUR	Sr-90	2.71E-02		1.31E-02	1.70E-02	1.39E-03	1.39E-01
LR-9-SUR	Sr-90	5.07E-02		1.65E-02	1.61E-02	1.39E-03	1.39E-01
LR-10-SUR	Sr-90	1.75E-02		1.06E-02	1.51E-02	1.39E-03	1.39E-01
LR-11-SUR	Sr-90	2.71E-02		1.24E-02	1.57E-02	1.39E-03	1.39E-01

Preliminary Draft

Strontium-90 Data - Continued

Sample ID	Analyte	Result (pCi/g)	Qualifier	Uncertainty* (+/- pCi/g)	MDC (pCi/g)	Agricultural 10-6 PRG (pCi/g)	Agricultural 10-4 PRG (pCi/g)
LR-12-SUR	Sr-90	1.39E-02	J	1.03E-02	1.57E-02	1.39E-03	1.39E-01
LR-13-SUR	Sr-90	5.28E-02		1.83E-02	1.87E-02	1.39E-03	1.39E-01
LR-14-SUR	Sr-90	2.69E-02		1.30E-02	1.67E-02	1.39E-03	1.39E-01
LR-15-SUR	Sr-90	1.65E-02	J	1.17E-02	1.77E-02	1.39E-03	1.39E-01
LR-16-SUR	Sr-90	2.80E-02		1.32E-02	1.70E-02	1.39E-03	1.39E-01
LR-17-SUR	Sr-90	2.50E-02		1.34E-02	1.83E-02	1.39E-03	1.39E-01
LR-18-SUR	Sr-90	1.39E-02	J	1.06E-02	1.65E-02	1.39E-03	1.39E-01

Notes:

All samples are surface soil samples
pCi/g – Picocuries per gram
MDC – Minimum Detectable Concentration
PRG – Preliminary Remediation Goal
J – The analyte was detected at the reported concentration: the quantitation is an estimate
* This represents the 95% confidence interval uncertainty for this particular sample

Preliminary Draft

Summary of First Audit (Oct. 2009)

- Results from the first audit indicated that Pace had the resources and capabilities to perform acceptably on the project.
- However, laboratory practices showed weaknesses which needed to be corrected before any sample analysis could proceed.
  - Training Records
  - Adherence to Procedures
  - Gamma Spectrometry Technical Oversight
  - Formality of Operations

Summary of First Audit (Oct. 2009)

- Pace submitted Corrective Action Plan (CAP) in November 2009.
- From November 2009 to May 2010;
  - Pace implemented CAP and provided supporting documentation.
  - HGL verified documentation, authorized Pace to begin analyzing project samples.
  - Ensured verifiable capabilities to meet project requirements.
- Resolution of the findings from the first audit has delayed the project by about 6 months.

Summary of Second Audit (May 2010)

- A second, unannounced audit verified that most deficiencies noted in the original audit were corrected.
  - Standard Operating Procedures (SOPs) in place.
  - Method verification studies and analyst demonstrations of competency in place.
  - Gamma spectrometry oversight in place.
- However several new issues were identified, related to the processing of project samples and associated analytical data.

Summary of Second Audit (May 2010)

- Primary Audit Findings:
  - General laboratory practices including sample handling, adherence to established SOPs, completion of appropriate laboratory documentation.
  - Implementation of project-specific requirements related to equipment and instrument blank processing and analysis.
  - Lack of formality in review and approval of data, resulting in the delivery (and rejection) of non-compliant results.

Response to Second Audit Findings

- Pace has submitted a CAP to implement all changes identified in the May 2010 audit report
  - Includes upper management oversight , additional staff training, and hiring of additional lab and technical staff.
- EPA and HGL have taken the following measures to ensure adequate monitoring of Pace:
  1. Onsite audits (2-5 days a week) from June 2010 until August 2010.
  2. Weekly conference calls to monitor progress (Have been conducted since November 2009).
  3. Weekly updates from Pace on the project sample analysis schedule (Have been occurring since November 2009).

Current Status

- Pace has shown significant improvement in laboratory procedures.
  - No significant issues noted since weekly onsite audits. Minor issues corrected real-time.
- Pace has made significant improvement in quality assurance and quality control.
  - Greatly improved “formality of operations”.
- Pace has started delivering analytical data packages that addresses the project data quality objectives.

Project Schedule

Activity	Planned Date
Laboratory Analysis Completion	August 2010
Data Validation Completion	October 2010
Tech Memo	September 2010

Groundwater, Surface Water and Sediment Sampling

Project Objectives Recap

- Provide independent high quality data for comparison to data reported by others
- Provide data on radionuclides not previously assessed
- Provide data for locations that may require additional assessment

Status of Water Testing Plans

- ☑ Draft Final FSP – April 2010
- ☑ Stakeholder Comments – May 2010
- ⊡ Revised Phased Approach
  - Final Phase I FSP and Final QAPP – July 2010
  - Phase II FSP

Phase I Strategy

- Limited to Area IV and the Northern Buffer Zone
- August 2010
  - All viable monitor wells (up to 70) in Area IV
- Winter 2010-2011
  - 35 sediment locations
  - 34 surface water locations
  - 10 spring and seep locations

Phase I Strategy

Phase I Groundwater Analysis

- Priority 1 Radionuclide Analysis
  - Gamma Emitters
  - Tritium
  - Uranium
  - Strontium 90
  - Gross Alpha and Beta
- Priority 2 Radionuclide Analysis (select wells)
  - Carbon 14
  - Technetium 99
  - Iodine 129
  - Radium 226
  - Americium
  - Curium
  - Plutonium
- Surface Water, Springs and Sediment will be analyzed for the full radionuclide list used for the background study

Key Points

- Boeing will purge wells under EPA supervision.
- EPA will collect all samples and maintain custody.
- Area IV wells will not be retrofitted with low-flow sampling equipment until EPA has completed winter 2011 Phase II sampling.
- The following procedure has been added to the FSP:
  - Collect samples during purging from wells that may go dry and stay dry
  - Analyze these samples as screening samples if there is no other water to analyze

Laboratory Selection – Phase I

- Test America Laboratories [TAL] is under evaluation for the Phase I analytical work
- Boeing's contractor also is using TAL
- EPA is developing a Conflict of Interest Mitigation Plan that would include:
  - EPA samples will be analyzed at TAL St. Louis
  - Boeing samples to be subcontracted by TAL to Eberline
  - EPA and Boeing samples will never be co-located at same Facility
  - EPA and Boeing samples will be on separate lab databases – no access to data between databases
  - TAL project manager for EPA will be different from Boeing

Phase II Strategy

- Optimize Phase II Sampling
  - Use data from Phase I sampling
  - Use data from gamma scanning, soil sampling, and HSA
  - Incorporate Stakeholder input
- Coordinate access for off site sampling locations

Tritium Contaminated Water Disposal Alternatives

- EPA managed on-site storage — ~$10,000 / yr
  - Length of storage undetermined
  - Requires ongoing maintenance and inspection
  - Ongoing risk
- Evaporation — ~$ 1,000
  - Inexpensive
  - Easy to implement
  - Low Risk
- Off-Site Disposal — ~$26,000
  - Expensive
  - Transport off-site

Tritium Contaminated Water

- EPA proposed that DTSC consider allowing on-site evaporation
- DTSC will not allow evaporation of tritium-contaminated water until completion of DOE's EIS (July 2010 letter)

Schedule

- Issue Phase I FSP – July 2010
- Issue QAPP – July 2010
- Phase I Groundwater Sampling – August 2010
- Phase I Surface Water, Sediment , and Spring Sampling – Winter 2010

Historical Site Assessment Update

Presentation Outline

- Overview of Technical Memoranda Corrective Actions
- Integration of Spatial Information
- Technical Memoranda Schedule
- Overview of Historical Site Assessment Interviews

Overview of HSA Technical Memoranda Corrective Action

- Integrate additional spatial information into the TMs (e.g., tanks, leach fields, pipelines)
- Incorporate aerial photo interpretation and remediation / D&D information
- Incorporate additional information from previously reviewed records and new information provided by Boeing
- Include section providing recommendations for soil sampling

Overview of HSA Technical Memoranda Corrective Action, cont.

- Present full reference list that includes all documents that were reviewed for the TM preparation
- Address stakeholder comments on HSA 5C Technical Memorandum (TM)

Summary of Historical Information – HSA 5C Subarea

HSA 5C TM Status

- TM HSA-5C has been revised to address stakeholder comments
- Revisions currently under internal review and slated for EPA review within a week
- Revised TM anticipated to be ready for stakeholder re-review sometime in late July

HSA TM Schedule

- Revised TM HSA-5C (early-August)
- Revised TM HSA-5B (late-August)
- Revised TM HSA-5A (mid-September)

SSFL Area IV
Historical Site Assessment
Interviews

Historical Site Assessment Interviews

- EPA and DOE, together and independently, are conducting interviews with former employees of Rocketdyne / Atomics International ("FEs") , and others, with knowledge of Area IV operations and activities.

- The EPA's primary objective of the interviews is to help direct the soil sampling crews to potential source areas identified during the course of each interview. All information on potential source areas, corroborated or not, will be recorded in EPA's HSA and considered as possible sources of contamination.

USEPA Interviews

- **Locating Interviewees**
  - Local Media (newspaper ads, radio interviews);
  - Community Outreach and "word-of-mouth";
  - Historical Document Review; and,
  - Other interviewees

- **Interviewees**

  EPA is interviewing anyone with information about activities in Area IV.

  Thirty (30) individuals have been interviewed so far and have consisted of:
  - Former Employees (e.g., health physicists, electricians, mechanics, construction inspectors, nuclear technicians, etc.)
  - Survivors of Former Employees;
  - Former Contractors (and one survivor of a former Contractor);
  - Community Stakeholders;
  - Residents in surrounding areas.

- **Interviewers**
  - EPA's Andrew Taylor;
  - EPA's contractor HGL;
  - EPA Senior Science Advisor, Gregg Dempsey, participates at his discretion, in interviews with individuals thought to have highly technical information to share.

USEPA Interviews (cont.)

- **Potential Source Area Identification**
  - Interviewees that may be able to identify areas of interest (i.e. possible "source areas") in Area IV are shown aerial photographs that cover years when they worked in Area IV (or are otherwise familiar Area IV), and asked to point out locations of particular interest (ie, possible "source areas").

- **Results (to date)**
  - Approximately two locations in Area IV identified as possible potential source areas not already identified in previous investigations reviewed by EPA (e.g., construction debris dumping areas, storage tank spills, etc.)
  - The names of 40+ (ever growing) additional FEs that may have more information about Area IV have been provided by interviewees.

- **Next Steps**
  - 4 additional interviews planed for July and August.
  - Locating the 40+ individuals named by interviewees.

DOE/EPA Joint Interview Project

- **Boeing/DOE Mass Mailing**

  Boeing, on behalf of DOE, mailed letters to 10,000 FEs of ALL Southern California Facilities (ie not just SSFL):

  - The letters included DOE cover-letters and pre-addressed return post-cards containing a check-list for the FE's to fill out, including, whether they would like to be interviewed about their work at SSFL and by whom (EPA, DOE, or both).
  - 308 post-cards were returned of which:
    - 2 requested interviews by EPA;
    - 19 requested interviews by both EPA and DOE;
    - 107 requested interviews by DOE;
    - 32 never worked in Area IV nor have knowledge of operations there;
    - 51 could not be reached; and,
    - 97 did not want to be interviewed

DOE/EPA Joint Interview Project (cont.)

- **Screening of DOE Letter respondents**
  - DOE and DOE contractor, with EPA assistance, trained personnel to conduct screening interviews by phone using a script developed by DOE and EPA.
  - Screening interviews helped DOE and EPA Prioritize and Plan Interviews:
    - High Priority were assigned to Area IV FEs, FEs that handled radiological or chemical materials / waste (any Area of SSFL); and FEs with job titles that indicate they may have relevant knowledge (e.g. "Health Physicist")
    - Lower Priority were assigned to individuals that did not work in Area IV or have any information about operations and activities in Area IV.
  - Screening interviews have been completed and "full interviews" have begun.

- **Interviewers**
  - DOE Contractor and same EPA team of interviewers; varies per situation.
  - EPA (Gregg Dempsey) and DOE technical experts may participate in some highly technical interviews (*Boeing is not involved in any interviews*).

DOE/EPA Joint Interview Project (cont.)

- **Potential Source Area Identification**

  DOE is using the same set of EPA historical aerial photographs as EPA and forwarding all "potential source area" locations to EPA's sampling team.

- **Nest Steps**
  - 2 EPA-only interviews planned for August
  - 28 DOE-only interviews completed; remaining scheduled for July
  - 4 Joint Interviews completed; 13 scheduled for July; remainder in August
  - Information, including potential source area locations, that are relevant to EPA's HSA and Sampling Team will be used as it is obtained in interviews.

Soil Sampling Plan and GIS-Based Mapping

Today's Discussion

- Review EPA's Objectives for Soil Sampling
- Provide Overview of Soil Sampling Approach
  - Targeted sampling
  - Random sampling
- Use "5C Subarea" to Demonstrate Approach
- Next Steps and Schedule
  - Gamma scan and soil sampling under outfall filter media and liner
  - Rolling out Area IV sampling

EPA's Soil Sampling Objectives

- Primary Objective: Define Nature and Extent of Radiological Soil Contamination Above Background or Ag PRGs
- Potential Secondary Objectives
  - Collect data of sufficient quality that could be used to support the following:
    - Screening-level ecological risk assessment
    - Human health risk assessment
    - Development and evaluation of remedial alternatives
  - Provide data that can be used for a MARSSIM final status survey

Overview of EPA's Soil Sampling Approach

Step 1: Evaluate a wide range of information to identify potential source areas

Step 2: Use GIS Mapping to spatially locate each potential source area

Step 3: Prioritize and select potential source areas

Step 4: Layout targeted sample locations

Step 5: Collect and analyze samples - 1st round

Step 6: Evaluate and Publish 1st round data results

Step 7: Collect and analyze targeted and random samples - 2nd round

Step 8: Evaluate and publish all data results

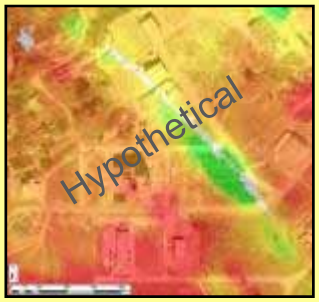
Step 1: Information to Identify Potential Source Areas

Historical Site Assessment

- Process knowledge and facility operation history
- Former worker interviews
- Aerial Photo Interpretation
- Past remediation and D&D

Gamma Survey

- Gamma radiation anomalies



Hypothetical Gamma Survey Results

Identify PSAs

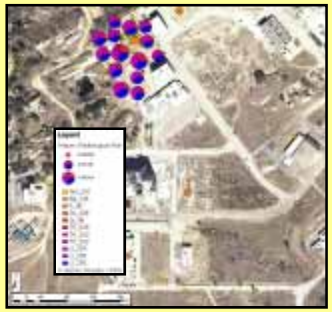
Field Observations

- Deposition or erosion areas
- Topography
- Drainages

Geophysical Survey

- Utilities
- Former excavation areas
- Areas identified by aerial photos and/or former worker interviews

Past Environmental Data



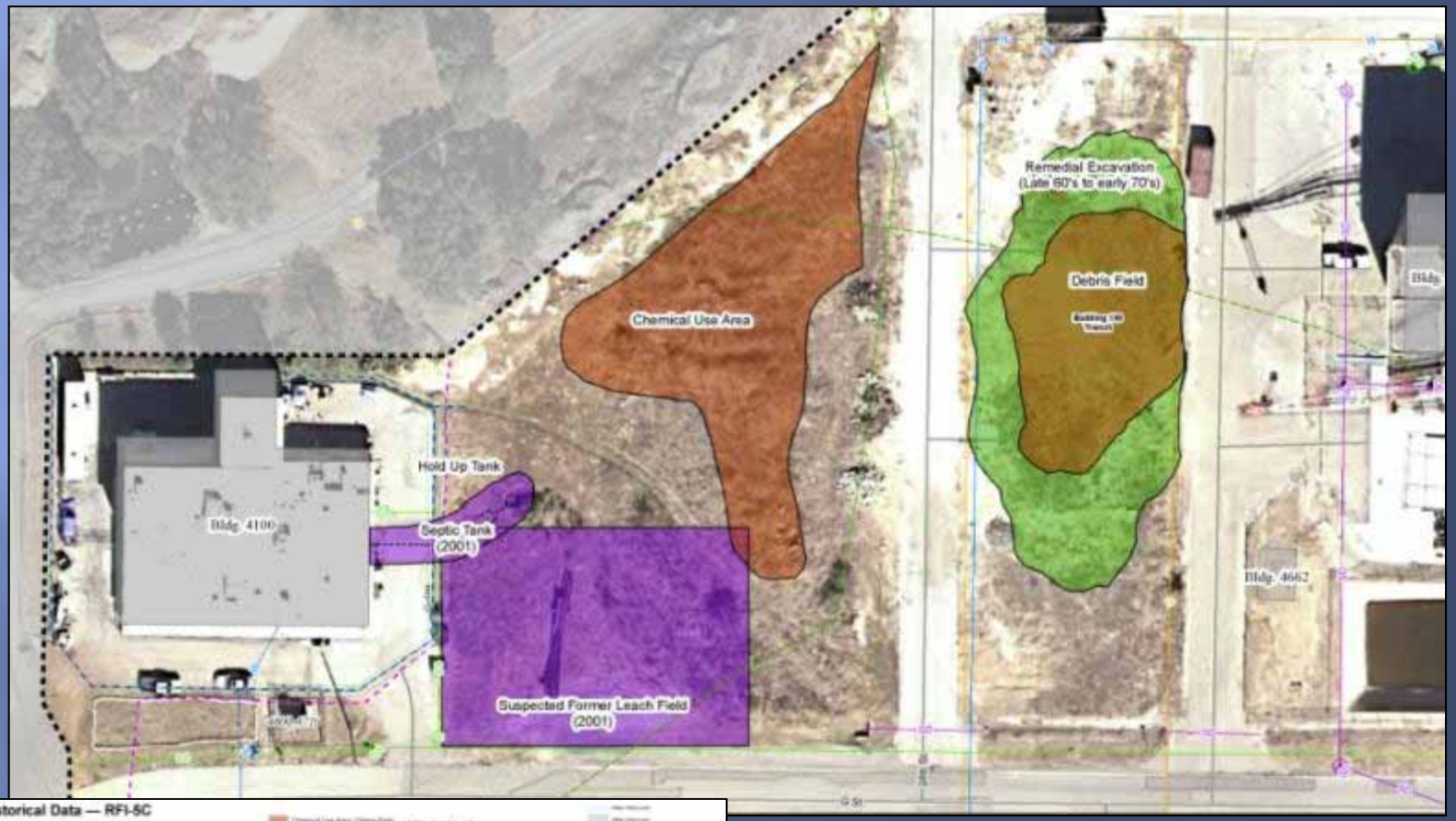
- Past characterization studies
- Confirmation sampling results

Step 1: Evaluate Technical Inputs -- HSA Subarea 5C

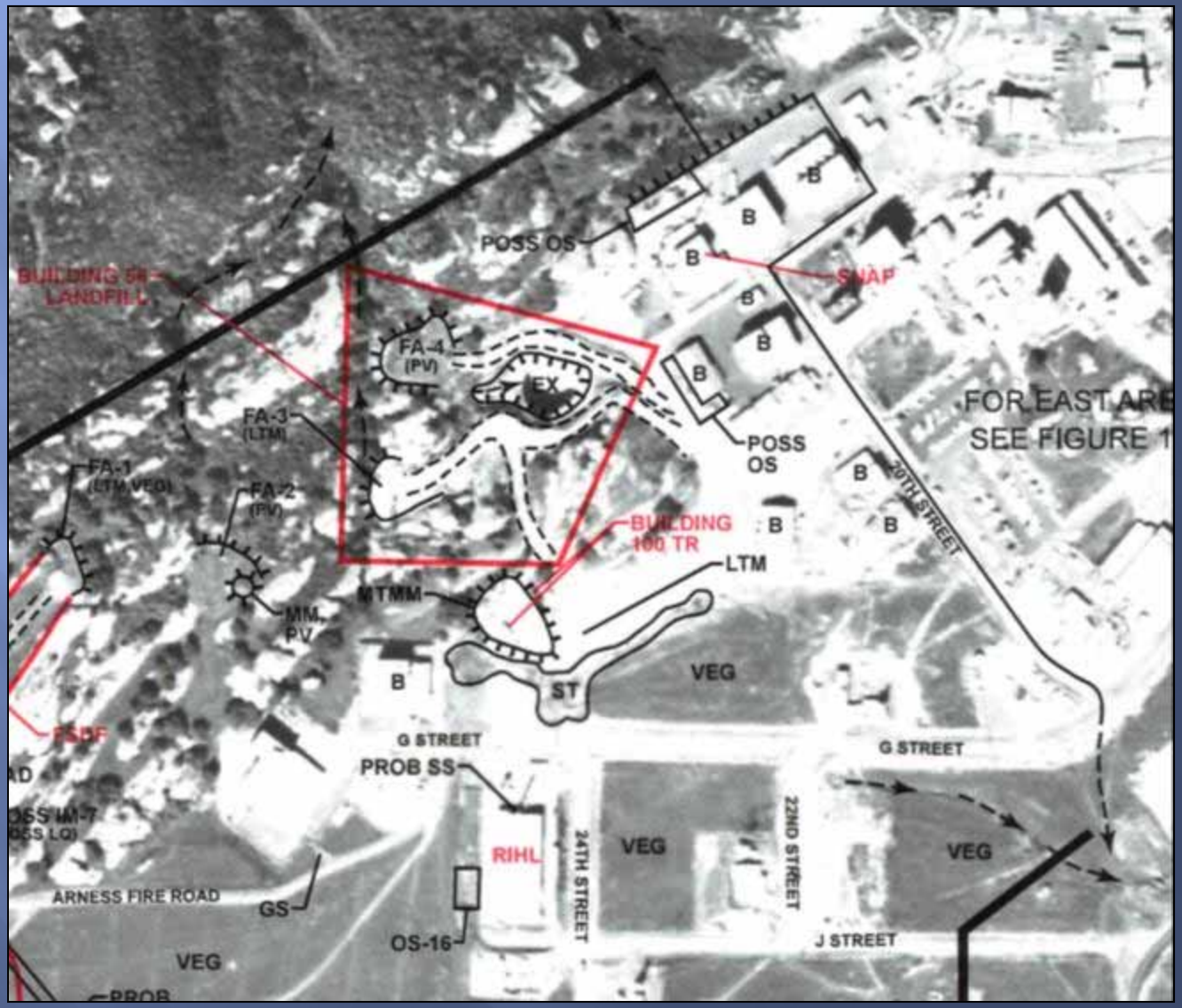
- Process Knowledge and Facility Operation History
- Aerial Photo Analysis
- Information From Former Worker Interviews
- Facility Maps
  - Storm drains
  - Sanitary sewer pipelines
  - Septic systems
  - Waste Tanks
  - Drainages
- Past Remediation and D&D

Step1: Historical Records – HSA 5C Subarea

Step1: Historical Records – Building 4100 Area

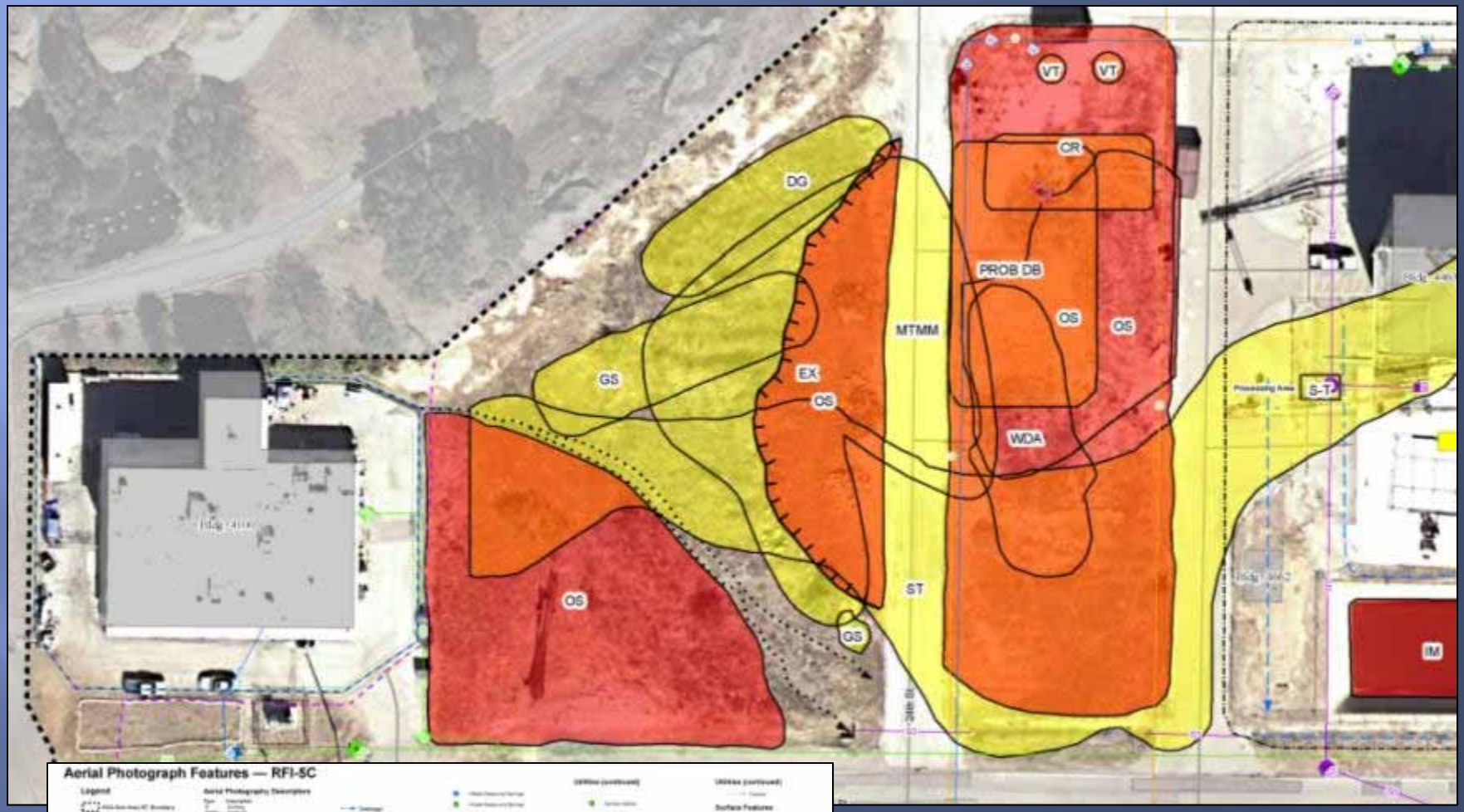


Step 1: Aerial Photo Interpretation (1965) – HSA 5C Subarea

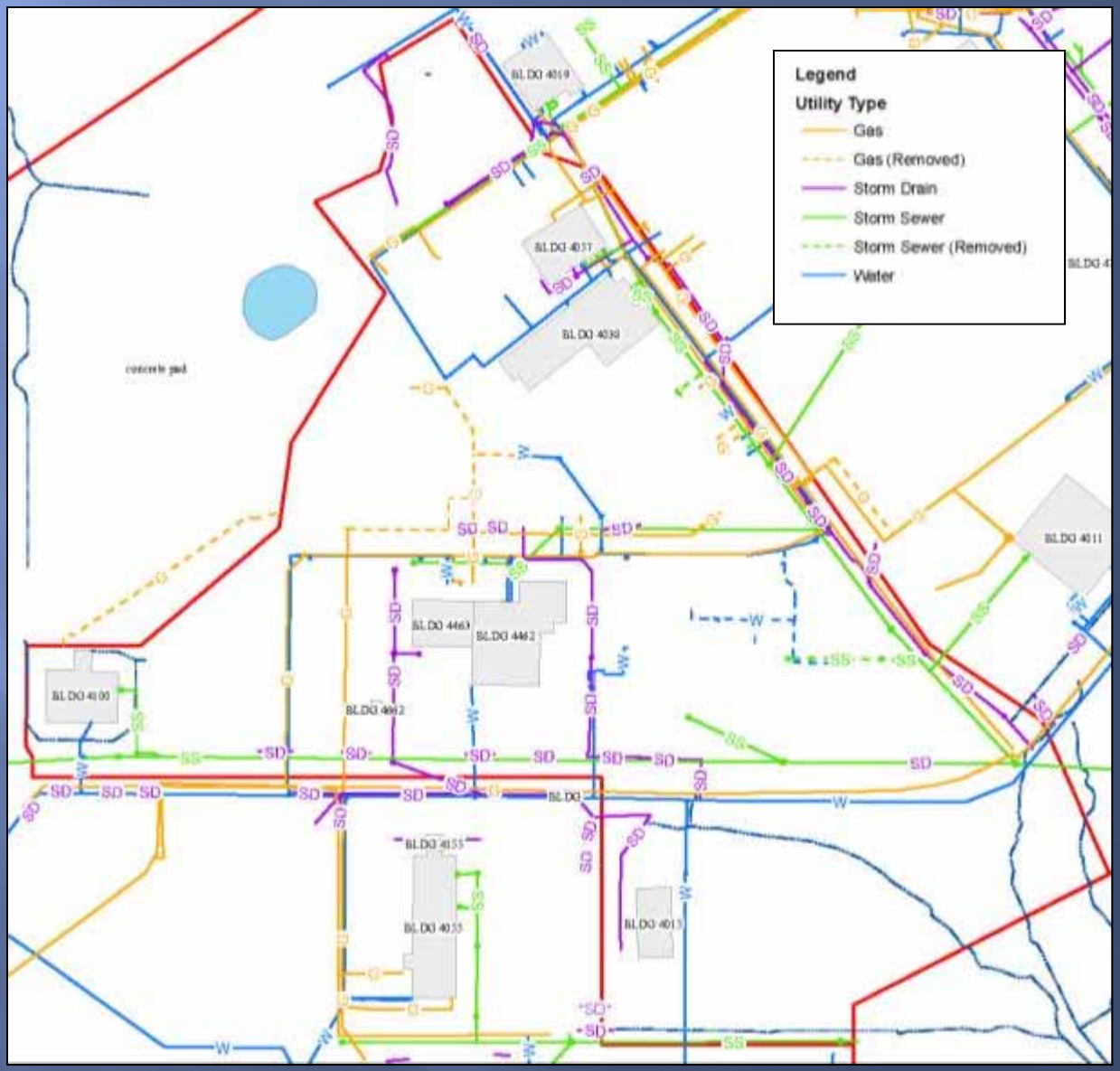


Step1: Aerial Photo Interpretation – HSA 5C Subarea

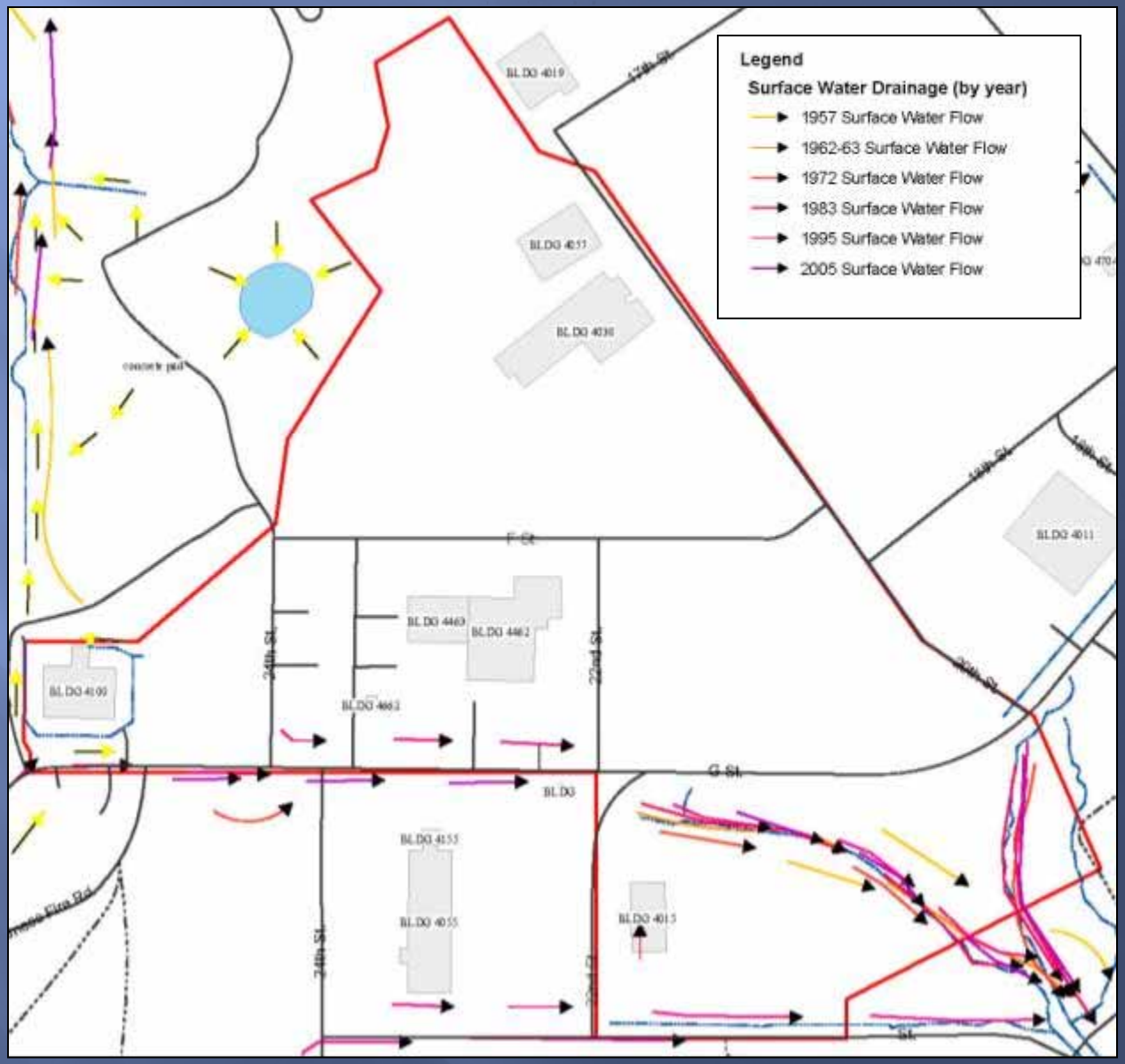
Step1: Aerial Photo Interpretation – Building 4100 Area



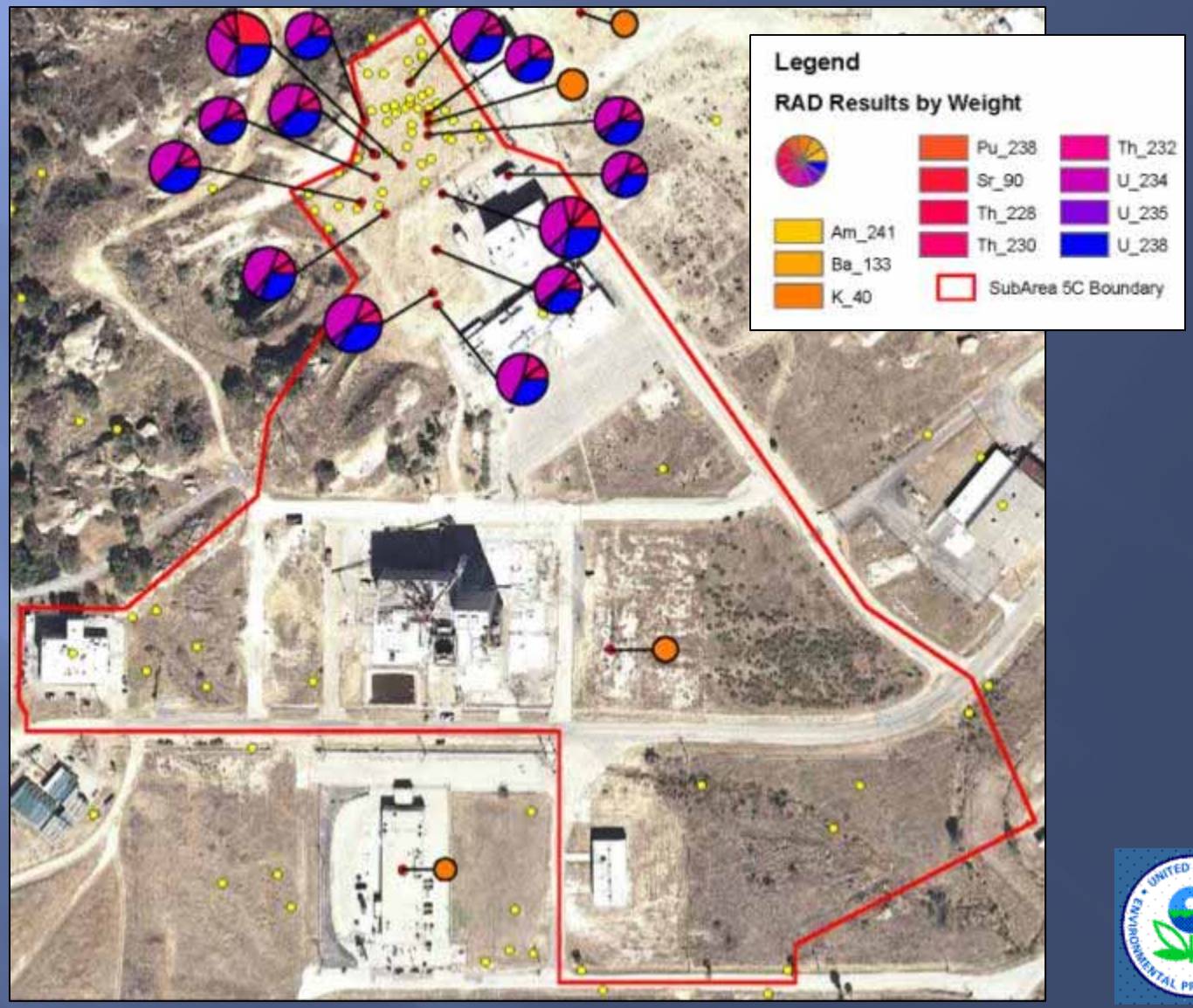
Step 1: Facility Map – HSA 5C Subarea



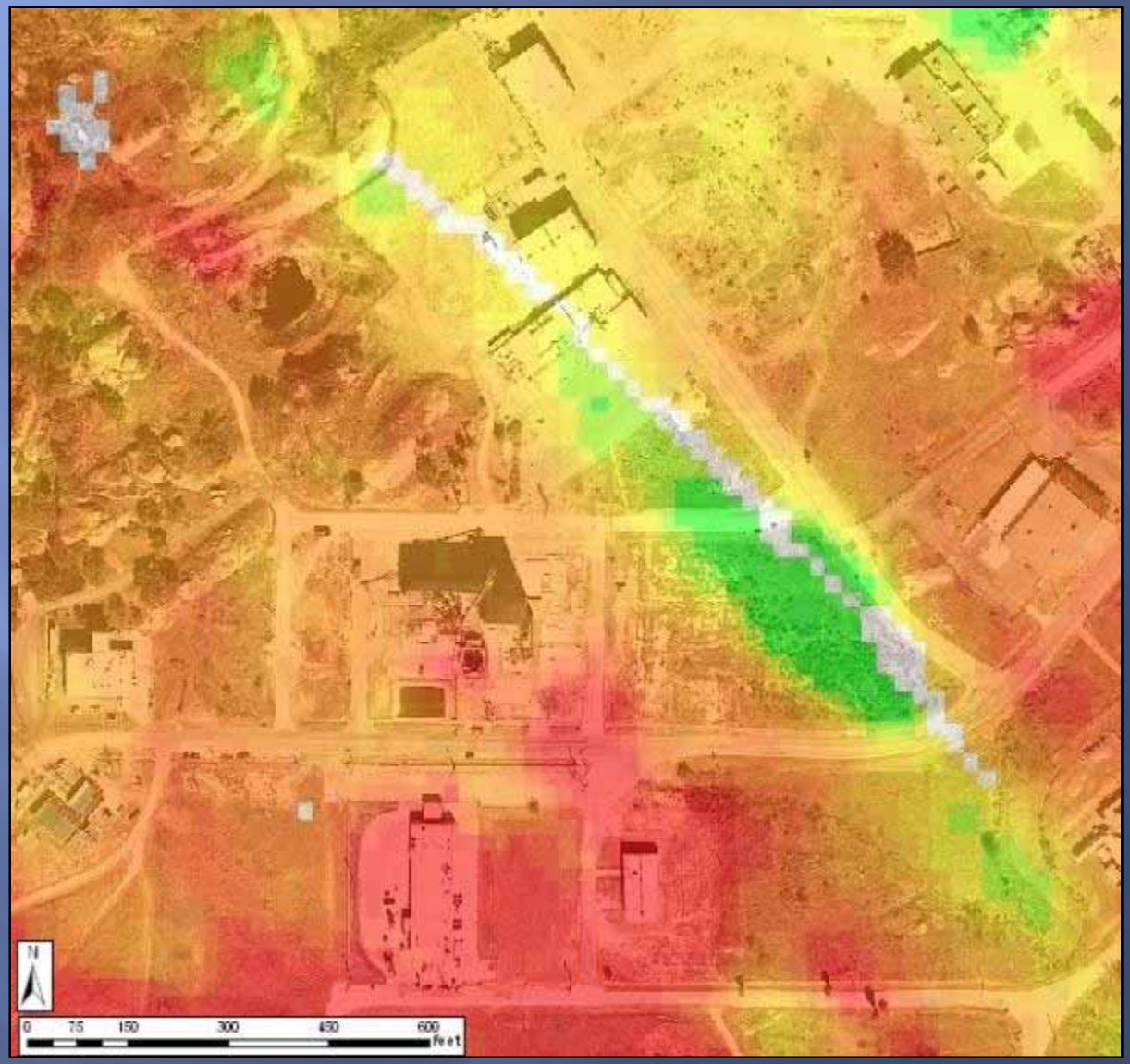
Step 1: Surface Water Drainages – HSA 5C Subarea



Step 1: Results of Past Environmental Investigations – HSA 5C Subarea



Step 1: Gamma Scanning Results – HSA 5C Subarea

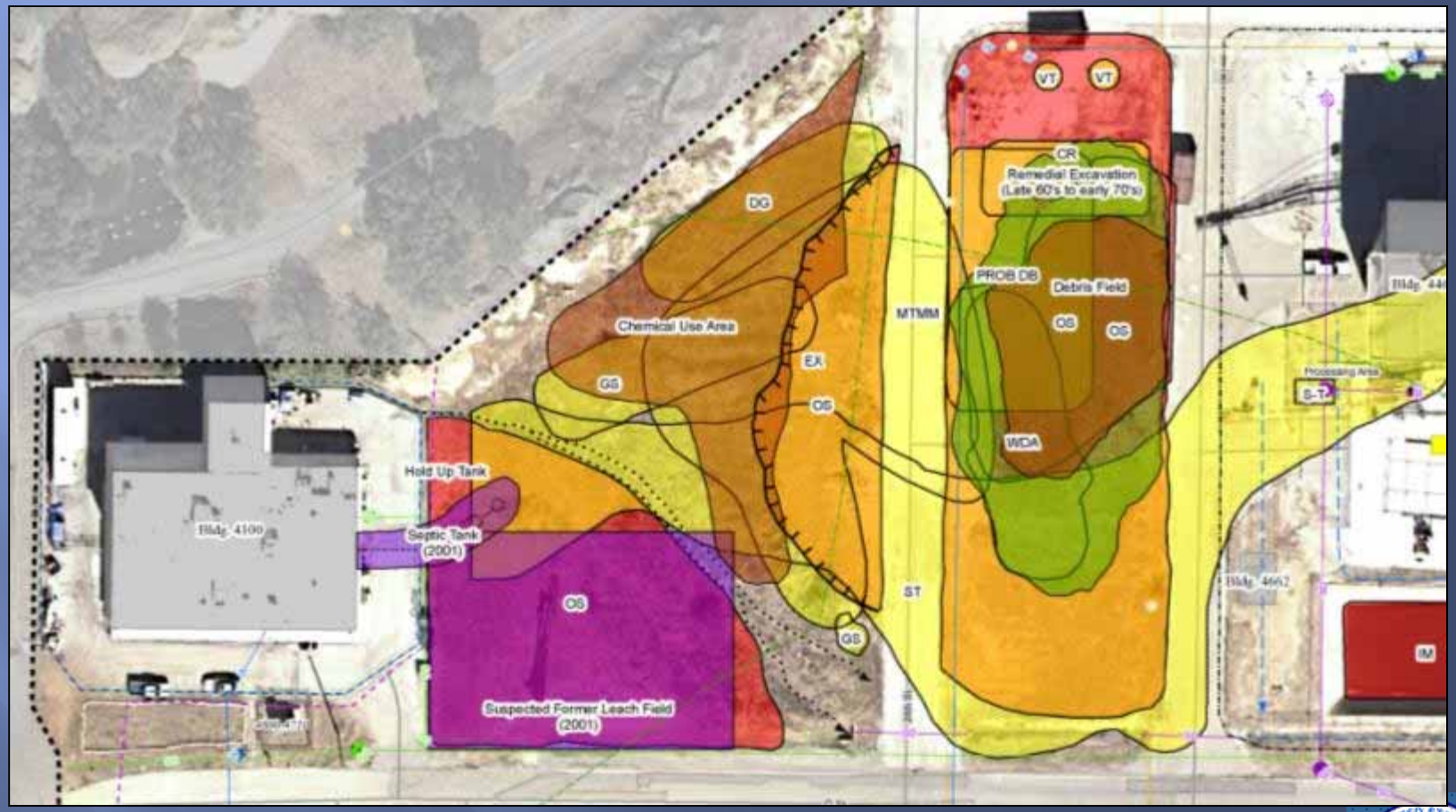


Step 1: Geophysics – HSA 5C Subarea

- Geophysics will be used to locate potential buried waste
- Likely technologies include:
  - Electromagnetic (detection of metallic objects)
  - Magnetometer (detection of metallic objects)
  - Ground penetrating radar (detection of ground disturbances)
- Geophysics will be used at limited locations based on aerial photo analysis, historical information, and former worker interviews

Step 2: Use GIS Mapping to Spatially Locate Each Potential Source Area In Subarea 5C

Step 2: Use GIS Mapping to Spatially Locate Each Potential Source Area In Subarea 5C



Step 3: Prioritize And Select Source Areas

- The list of all potential source areas (PSAs) will be prioritized for targeted sampling
- PSAs will be prioritized based on the weight of evidence for all technical inputs
- Stakeholder workshops will be conducted to facilitate stakeholder input is incorporated into sampling plan

Step 4: Layout Targeted Sample Locations For Selected Source Areas

- Targeted sample locations will be identified for selected PSAs
- Locations to be presented in the addendum to the Area IV master soil field sampling plan
- Rationale for sample location and density for 1st round sampling will be provided in addendum
- All soil FSP addendums will be shared and discussed with stakeholders

Steps 5 and 6: Collect, Analyze, Evaluate, and Publish 1st Round Results

- Targeted surface and subsurface soil samples will be collected following procedures outlined in the Soil FSP
- The FSP addendums will specify sampling locations, rationale, and the list of radionuclides
- Interim analytical results will be published in the form of tables and maps

Step 7: Collect 2nd Round Random Samples and Step Out Samples

- Source areas with samples results exceeding background or AgPRG may require additional sampling (step-out sampling)
- Plans for the second round of sampling will be documented in a FSP addenda
- Random sampling will be conducted during the second phase of sampling
- The random sampling approach will follow MARSSIM

Next Steps and Schedule

- Collect Soil Samples at NPDES Outfalls – July 2010
- Issue Soil Field Sampling Plan – August 2010
- Issue Geophysical Test Plan – August 2010
- Technical Breakout Session With Stakeholders To Discuss PSA Prioritization - Late August 2010
- Issue FSP Addendum for 5C Area – September 2010
- Begin sampling in HSA 5C – October 2010

Gamma Radiation Scanning Status Update

Agenda

- Milestones Progress and Accomplishments
- Equipment Sensitivity Testing
  - Walker Field Pads and Borehole Testing
  - Height and Field of View
- Background Data Collection
- Next Steps

Milestones Progress

- ✓ Initial project planning
- ✓ Final Gamma Radiation Scanning SAP
- ➢ Equipment purchase / lease and preparation
- ➢ Detection system integration / testing
- ➢ RBRA data collection
- ➢ Scanning survey of Study Area
- ❑ Continuous data evaluation and analysis
- ❑ Interim report preparation
- ❑ Final report preparation

Accomplishments

- ✓ May: Conduct sensitivity tests at Walker Field pads, Grand Junction, CO
- ✓ May: Participate in EPA Media Event
- ✓ May / June: Amend EPA's Radioactive Materials License for nuclear density gauge (NDG), and lease / receive NDG

Accomplishments (continued)

- ✓ June: Collect background data at Lang Ranch and Bridle Path with ERGS II and WMGS
- ✓ July: Conduct radiation and H&S training
- ✓ July: Started gamma scanning of roads and hard surfaces (parking lots, concrete pads, etc.)
- ✓ July: Install decontamination pad

Grand Junction, Colorado Walker Field Pads

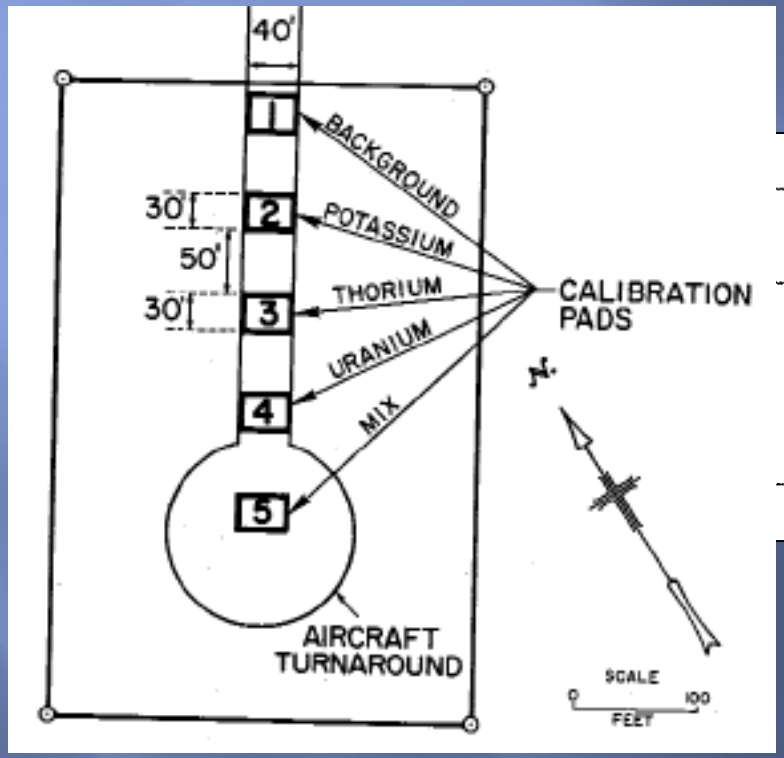


Table A–1. Assigned Parameters

Pad Designation	Concentration (pCi/g)[a]			Dry Bulk Density (g/cm^3)[b]	Partial Density H_2O (g/cm^3)[b]
	Ra–226	Th–232	K–40		
W1	0.82 ± 1.02	0.67 ± 0.10	12.67 ± 0.72	1.91	0.256
W2	1.92 ± 1.54	0.87 ± 0.12	45.58 ± 1.82	1.99	0.260
W3	1.70 ± 1.38	4.92 ± 0.26	17.07 ± 0.82	1.92	0.208
W4	12.07 ± 5.64	1.04 ± 0.12	17.56 ± 0.98	1.91	0.247
W5	8.36 ± 3.52	1.91 ± 0.16	34.68 ± 1.46	1.97	0.244

[a]Uncertainties are 95 percent confidence level. Assigned values taken from George, Novak, and Price (1985).
[b]Uncertainties for these values have not been determined.

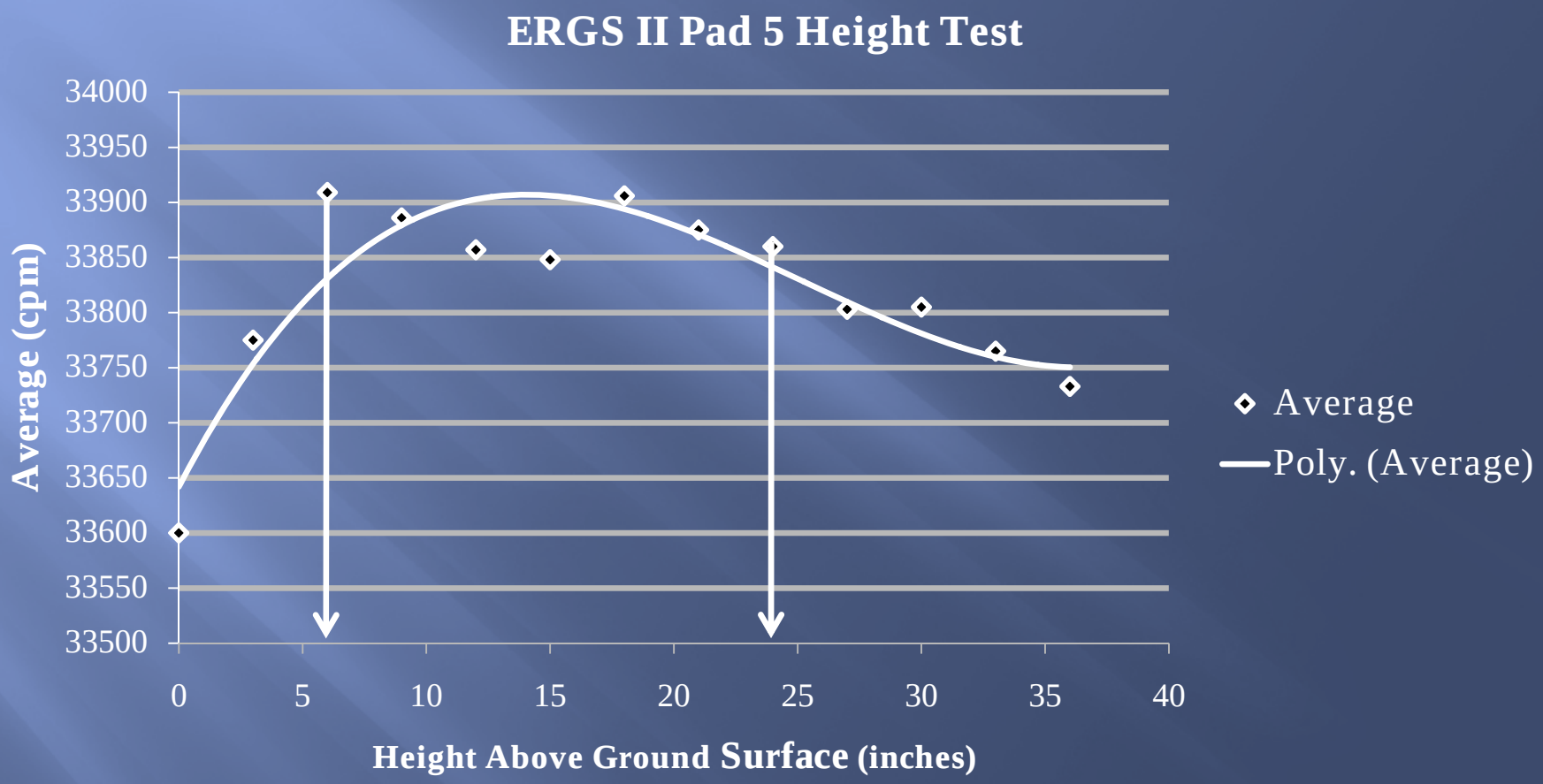
Detector Height Sensitivity Testing (Walker Field Pads)

ERGS II

MMGS

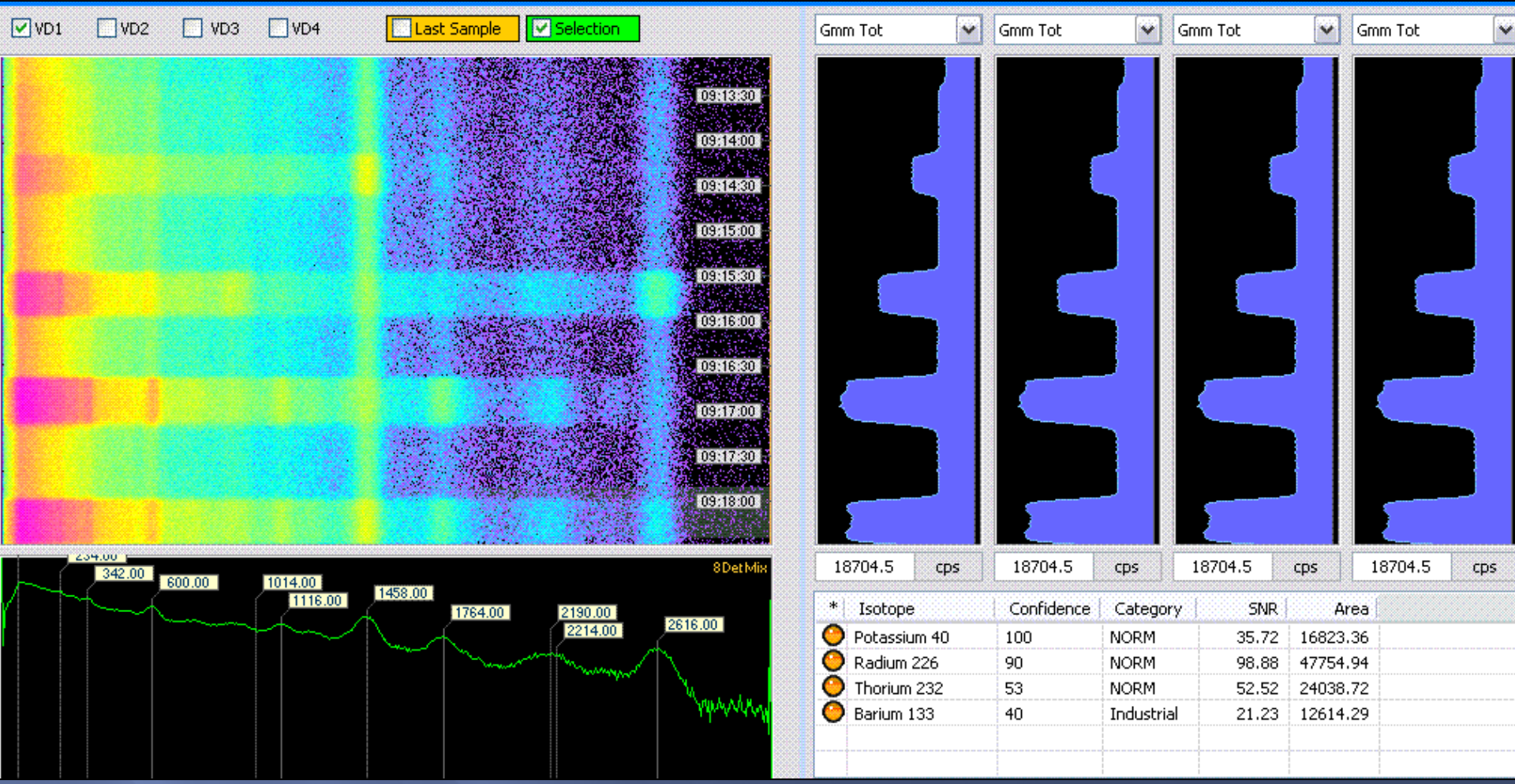
HHGS

DRAFT Pad 5 ERGS II Height Test Results



PRELIMINARY DRAFT

DRAFT ERGS II Results

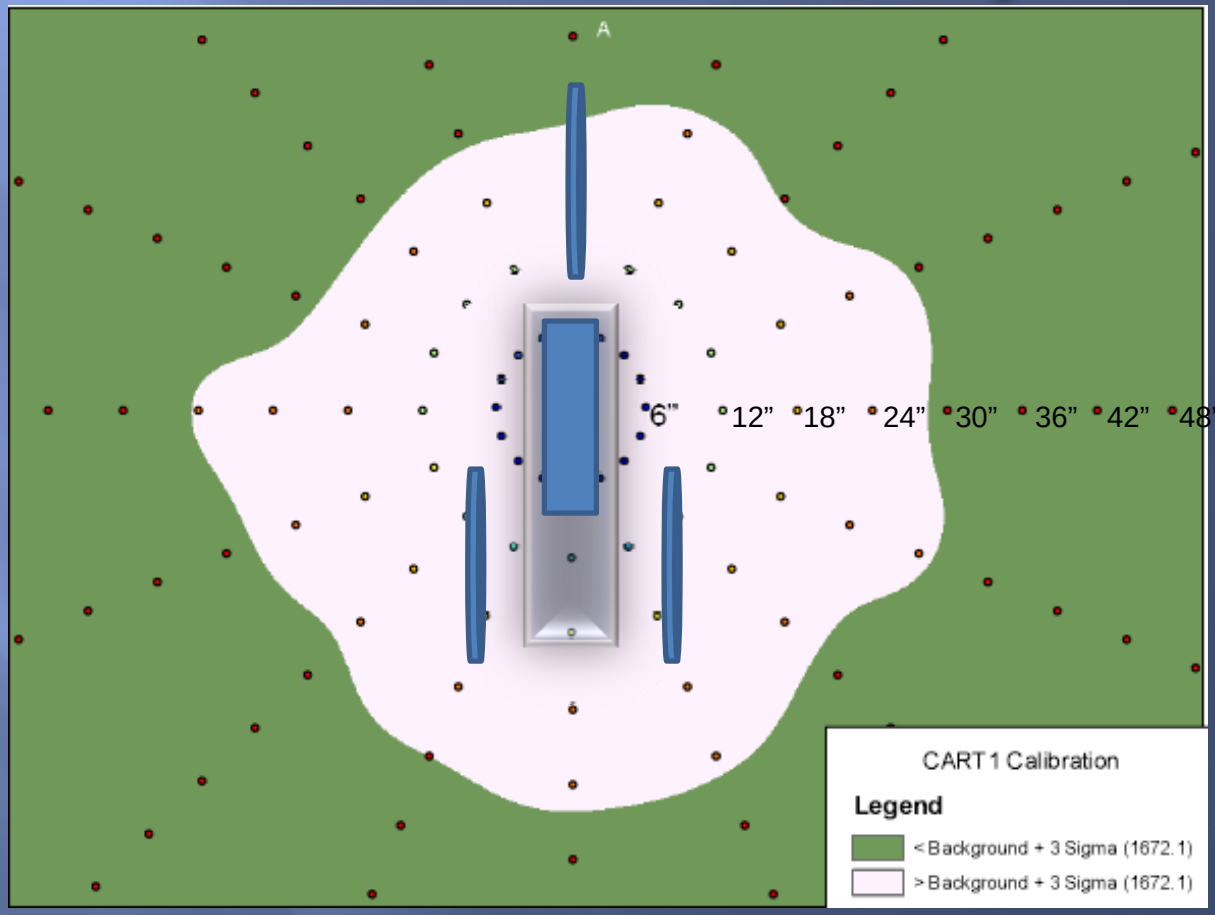


*	Isotope	Confidence	Category	SNR	Area
	Potassium 40	100	NORM	35.72	16823.36
	Radium 226	90	NORM	98.88	47754.94
	Thorium 232	53	NORM	52.52	24038.72
	Barium 133	40	Industrial	21.23	12614.29

PRELIMINARY DRAFT

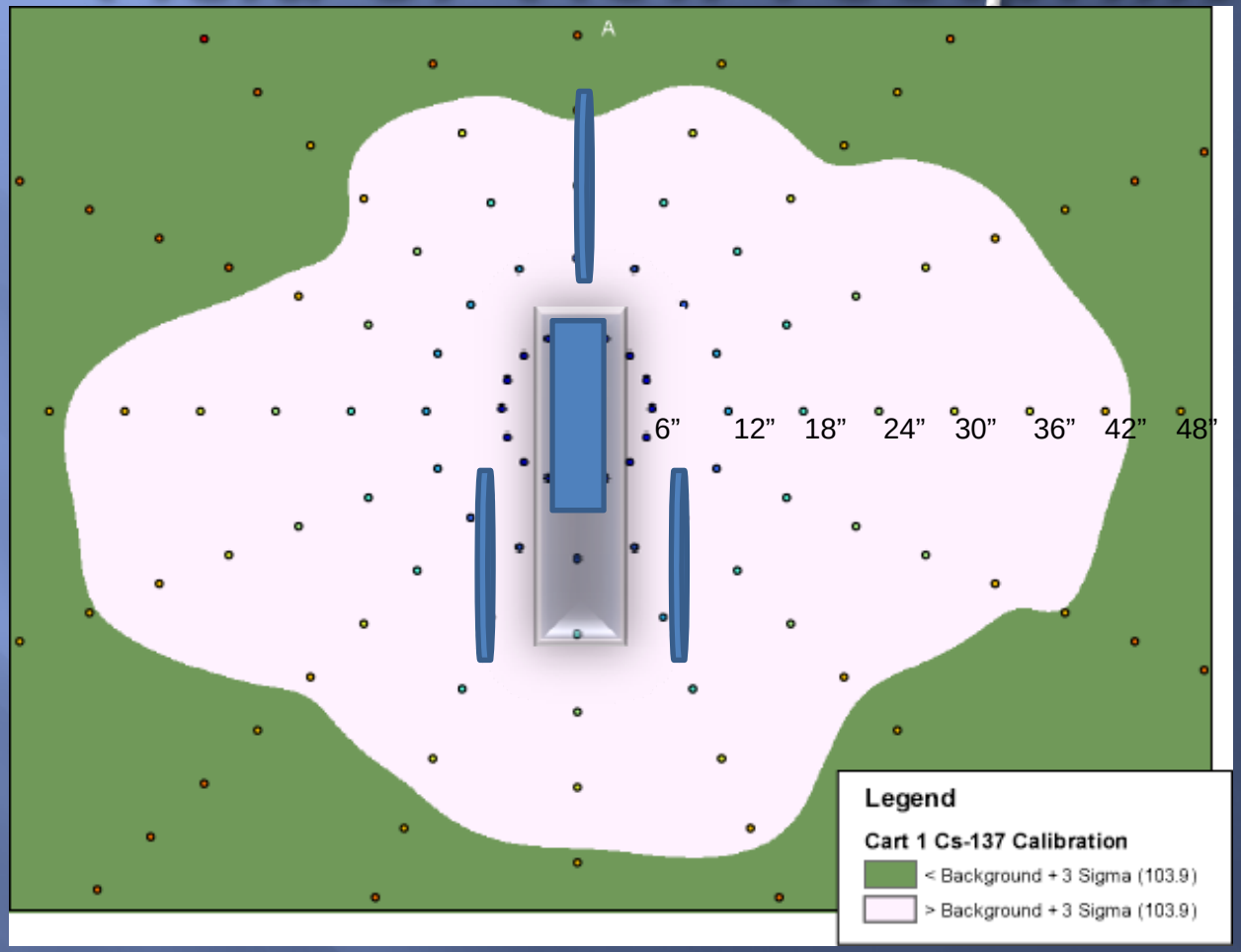
Borehole Sensitivity Testing
DOE Borehole Calibration Facility

WMGS Total Counts Field of View Footprint



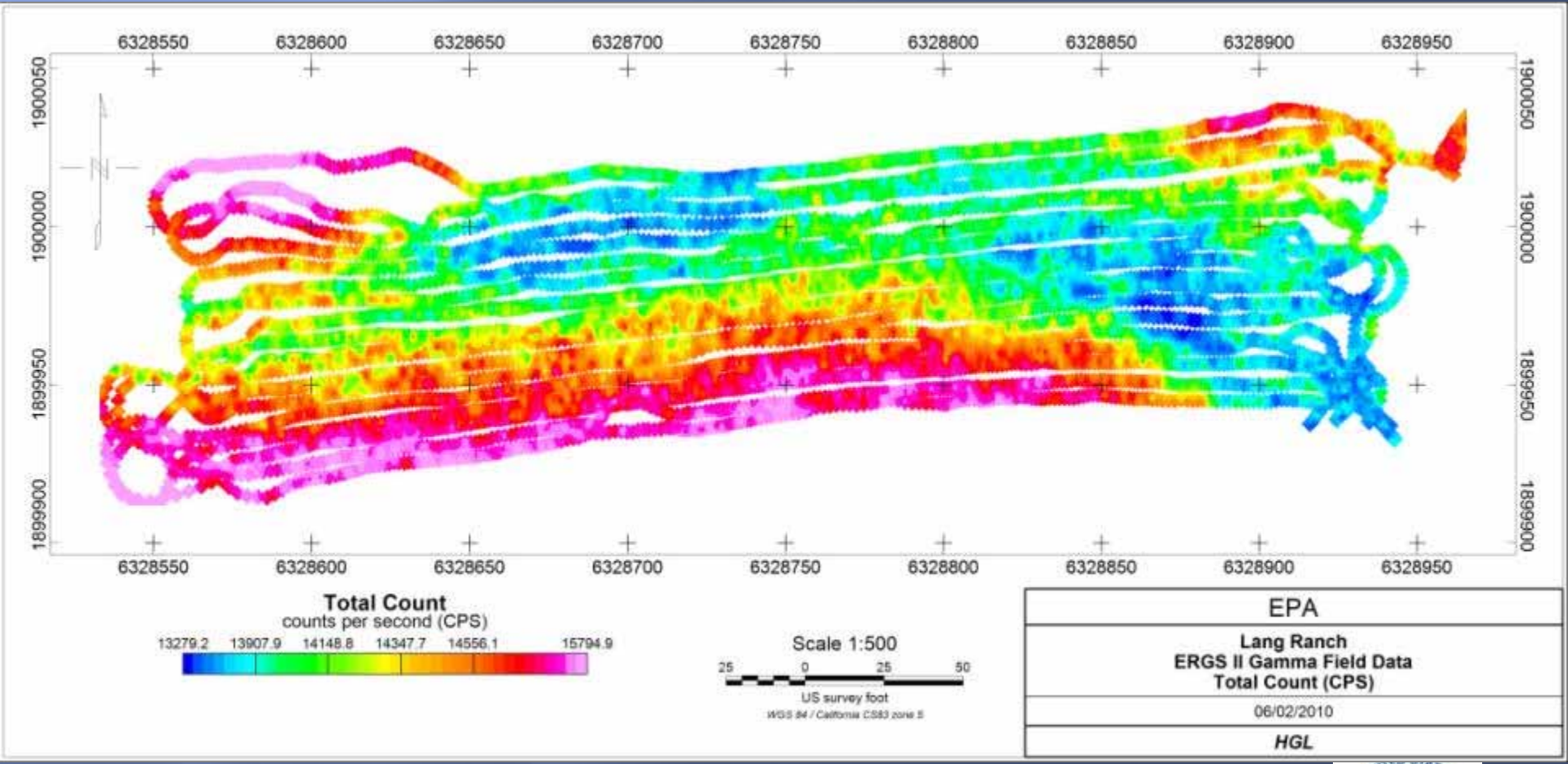
PRELIMINARY DRAFT

WMGS Cs-137 Counts Field of View Footprint



PRELIMINARY DRAFT

DRAFT Lang Ranch ERGS II Raw Data



PRELIMINARY DRAFT

DRAFT Lang Ranch ERGS II Processed Data

PRELIMINARY DRAFT

Next Steps

- July / August: Trim vegetation for terrain test area and RFI 5C
- July / August: Conduct terrain accessibility testing
- July / August: Locate Field QC Area in Area IV and conduct subsurface sensitivity tests
- August / September: Complete sensitivity testing and report