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**FINAL**  
**SUBAREA 5D ROUND 2 ADDENDUM**  
**TO THE FINAL FSP FOR SOIL SAMPLING**  
**SANTA SUSANA FIELD LABORATORY SITE**  
**AREA IV RADIOLOGICAL STUDY**

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**SUBJECT:** FSP Addendum for Subarea 5D Round 2

**CONTRACT NO:** EP-S7-05-05  
**TASK ORDER NO:** 0038

## **INTRODUCTION**

HydroGeoLogic, Inc. (HGL) has been tasked by the U.S. Environmental Protection Agency (USEPA) to conduct a radiological characterization study of Area IV and the Northern Buffer Zone (NBZ) at the Santa Susana Field Laboratory (SSFL) site in Ventura County, California. This work is being executed under USEPA Region 7 Architect and Engineering Services Contract EP-S7-05-05, Task Order 0038, Amendment 3. The technical lead on the project is USEPA Region 9.

This document supports the field implementation of the overall soil sampling program and is an addendum to the Final Field Sampling Plan (FSP) for Soil Sampling (HGL, 2012a). A description of the overall project goals, data quality objectives, sampling strategy, laboratory analytical suites, sample depth interval selection, data quality control, and data evaluation are described in the FSP.

## **PURPOSE**

This addendum documents the rationale used to determine the location and depth of soil samples to be collected during round 2 soil sampling within Subarea 5D. Sample locations are summarized in Table 1 (Attachment 1) and illustrated on figures provided in Attachment 2. This addendum also documents the laboratory analyses that will be performed for each soil sample.

Specific sample locations presented herein were discussed during a technical review meeting held on May 30, 2012, with members of USEPA’s SSFL Technical Stakeholder group consisting of representatives of U.S. Department of Energy (DOE), the State of California Department of Toxic Substances Control (DTSC), The Boeing Company, USEPA, and the community members. Recommendations and action items identified at the technical review meeting, including those on the topic of Likely Decontamination and Decommissioning Zones (LD&DZ) and Likely Chemical Remediation Zones (LCRZ) have been incorporated into this FSP Addendum. USEPA understands that most, if not all, surface soil and infrastructure (building structures, concrete slabs, above-ground pipelines and underground pipelines etc.) may be excavated and removed from areas identified as LD&DZ and LCRZs. Therefore, USEPA placed a reduced number of surface and subsurface samples around the perimeter of these zones to better define the potential extent of contamination.

In accordance with the USEPA’s role under the Administrative Order on Consent (AOC) for Remedial Action (DTSC, 2010) agreement between DTSC and DOE for the SSFL site, USEPA will conduct confirmation soil sampling to verify that site remediation goals have been achieved at all such remediation zones. If the LD&DZ and LCRZs will not be excavated or removed, a data gap may exist. Additional investigations in the future may be necessary to address the potential data gap. These follow-on efforts are not included in the current scope of work and will be accomplished using additional external funding.

## **ROUND 1 ANALYTICAL SUMMARY**

During round 1 sampling Subarea 5D was divided into two smaller subareas, Subarea 5D-North and Subarea 5D-South, for operational reasons. Subarea 5D will be treated as one subarea during the round 2 sampling effort and in this FSP. A total of 465 soil samples (210 surface, 240 subsurface, and 15 drainage) were collected during round 1 sampling in Subarea 5D. Analysis of the 465 samples identified 21 samples with man-made radionuclide concentrations exceeding radiological trigger levels (RTL) developed for the Area IV Santa Susana Field Laboratory Radiological Study. In these samples 22 man-made radionuclides were identified exceeding their respective RTLs. The process used to derive the RTLs is presented in the Technical Memorandum, Radiological Trigger Levels (HGL, 2011a). The samples identified with exceedances were collected from the following areas within Subarea 5D.

- Hot Lab (former Building 4020)
- Building 4055 Area
- Pond Dredge Area and Former Buildings 4375/4874/4875
- Former Building 4353 and Former Buildings 4173/4865 - Ground Scar
- Subarea 5D-South

Table 2 Summarizes the radionuclide RTL exceedances identified during round 1 sampling by number of locations, samples and man-made radionuclides exceeding RTLs.

**Table 2**  
**Round 1 Locations, Samples and Man-made Radionuclides with Exceedances**

Area of RTL Exceedance	Locations	Samples	Man-made Radionuclides Exceeding RTLs
Hot Lab (former Building 4020)	8	8	9
Building 4055 Area	2	2	2
Pond Dredge Area and Former Buildings 4375/4874/4875	3	4	4
Former Building 4353 Area and Former Buildings 4173/4865 Ground Scar	5	5	5
Subarea 5D-South	2	2	2
<b>Totals</b>	<b>20</b>	<b>21</b>	<b>22</b>

Table 3 summarizes the radionuclides and range of activity detected within each of these areas. Figure 1 provides an overview map showing the location of each round 1 sample with radionuclide activities exceeding RTLs (Attachment 2). Round 1 soil sample results are presented in the Technical Memorandum Subarea 5D Round 1 Soil Sample Results (HGL, 2012b).

**Table 3**  
**Round 1 Radiological Trigger Level Exceedances**

Area of RTL Exceedance	Analyte	Number of Exceedances	Range of Concentration	RTL
Hot Lab (former Building 4020)	Cs-137	1	1.42	0.207
	Sr-90	8	0.486-1.55	0.485
Building 4055 Area	Sr-90	2	0.52-0.662	0.485
Pond Dredge Area and Former Buildings 4375/4874/4875	Pu-238	1	0.0492	0.0415
	Sr-90	3	0.487-1.43	0.485
Former Building 4353 and Former Buildings 4173/4865 Ground Scar	Am-241	1	0.0589	0.0454
	Pu-239/240	1	0.0526	0.0404
	Sr-90	3	0.619-1.27	0.485
5D-South	Cs-137	1	0.227	0.207
	Pu-239/240	1	0.0502	0.0404

**Notes:**

Reporting units in picocuries per gram.

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

**NATURALLY OCCURRING RADIONUCLIDE EXCEEDANCES**

In addition to the 22 site related man-made radionuclide exceedances, the subsurface soil sample collected from Location 5DN-00024 contained one naturally occurring radionuclide

which exceeded RTLs. The sample contained a concentration of uranium (U)-235/236 at 0.234 picocuries per gram (pCi/g) which exceeded the RTL of 0.151 pCi/g. Three round 2 step-out samples are planned for this location (Figure 2).

## ROUND 2 PROPOSED SAMPLING LOCATIONS

Lines of evidence presented in the round 1 Subarea 5D-North FSP Addendum (HGL, 2011b) and Subarea 5D-South FSP Addendum, (HGL, 2011c), such as gamma scanning survey results, aerial photographic interpretation, and historical process knowledge were evaluated to assist with the placement of round 2 soil sampling locations. In addition to these lines of evidence, results from the round 1 soil sampling event were also evaluated. A total of 134 soil samples (67 step-out locations) are proposed for round 2 soil sampling. Exceedances within the LCRZ do not require step-out locations, as the soils within the LCRZs are scheduled to be remediated or removed. Therefore, proposed step-out samples were placed around the zone's perimeter to better define the potential extent of contamination associated with such zones but did not place step-out locations around exceedances detected within the LCRZ. Table 4 summarizes the number of samples proposed to be collected within each area where radionuclide activity was detected above the RTLs in round 1 soil samples.

**Table 4**  
**Round 2 Samples by Area**

<b>Area of Round 1 RTL Exceedances</b>	<b>Drainage</b>	<b>Surface</b>	<b>Subsurface</b>	<b>Total</b>
Hot Lab (former Building 4020)	2	21	23	46
Building 4055 Area	0	7	7	14
Pond Dredge Area and Former Buildings 4375/4874/4875	0	9	9	18
Former Building 4353 Area and Former Buildings 4173/4865 Ground Scar	0	20	20	40
5D-South	0	8	8	16
<b>Total</b>	<b>2</b>	<b>65</b>	<b>67</b>	<b>134</b>

## SCHEDULE

Round 2 soil sampling within Subarea 5D will commence in June and be completed in July 2012. USEPA will provide periodic updates to SSFL Stakeholders regarding the status of the soil sampling program as well as the laboratory analysis and data interpretation.

## REFERENCES

Department of Toxic Substances Control, 2010. Administrative Order On Consent For Remedial Action, Santa Susana Field Laboratory, Simi Hills, Ventura County, California. December.

HydroGeoLogic, Inc., 2011a. Technical Memorandum, Radiological Trigger Levels, Santa Susana Field Laboratory, Area IV Radiological Study. December.

HydroGeoLogic, Inc., 2011b. Subarea 5D-North FSP Addendum, Area IV Radiological Study, Santa Susana Field Laboratory Ventura County, California. May.

HydroGeoLogic, Inc., 2011c. Subarea 5D-South FSP Addendum, Area IV Radiological Study, Santa Susana Field Laboratory Ventura County, California. September.

HydroGeoLogic, Inc., 2012a. Final Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory Ventura County, California. January.

HydroGeoLogic, Inc., 2012b. Draft Technical Memorandum, Subarea 5D Round 1 Soil Sample Results, Santa Susana Field Laboratory Area IV Radiological Study. June.

#### **LIST OF ATTACHMENTS**

Attachment 1	Table 1
Attachment 2	Figures 1- 6
Attachment 3	Support Figures

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**ATTACHMENT 1**

Table 1      Summary of Soil Sample Locations

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**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00208	Surface	Approximately 15 feet north of Location 6 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00208	Subsurface	Approximately 15 feet north of Location 6 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00209	Drainage	Approximately 60 feet southwest of Location 6 within the drainage ditch in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00209	Subsurface	Approximately 60 feet southwest of Location 6 within the drainage ditch in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00210	Surface	Approximately 15 feet south of Location 6 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00210	Subsurface	Approximately 15 feet south of Location 6 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00211	Drainage	Approximately 40 feet east of Location 6 within the drainage ditch in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00211	Subsurface	Approximately 40 feet east of Location 6 within the drainage ditch in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.55 pCi/g in the surface soil at sample Location 6, and potential radiological contamination in soil/sediment originating from former Building 4020.	Sr-90
5DN-00212	Surface	Former Building 4020 - Approximately 15 feet north of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00212	Subsurface	Former Building 4020 - Approximately 15 feet north of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00213	Surface	Former Building 4020 - Approximately 15 feet west of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00213	Subsurface	Former Building 4020 - Approximately 15 feet west of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00214	Surface	Former Building 4020 - Approximately 15 feet south of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00214	Subsurface	Former Building 4020 - Approximately 15 feet south of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00215	Surface	Former Building 4020 - Approximately 15 feet east of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00215	Subsurface	Former Building 4020 - Approximately 15 feet east of Location 8 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.821 pCi/g in the surface soil at sample Location 8, aerial photo feature, "Possible Open Storage" and proximity to former Building 4020.	Sr-90
5DN-00216	Surface	Former Building 4020 - Approximately 15 feet north of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00216	Subsurface	Former Building 4020 - Approximately 15 feet north of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00217	Surface	Former Building 4020 - Approximately 15 feet west of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00217	Subsurface	Former Building 4020 - Approximately 15 feet west of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00218	Surface	Former Building 4020 - Approximately 15 feet south of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00218	Subsurface	Former Building 4020 - Approximately 15 feet south of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00219	Surface	Former Building 4020 - Approximately 15 feet east of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00219	Subsurface	Former Building 4020 - Approximately 15 feet east of Location 207 in Subarea 5D-North.	Cs-137 and Sr-90 were detected at concentrations of 1.42 pCi/g and 0.631 pCi/g in surface soils at sample Location 207, gamma scanning indicated elevated survey measurements.	Sr-90, Gamma Spec
5DN-00220	Surface	Former Building 4020 - Approximately 15 feet northwest of Location 17 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.49 pCi/g in the subsurface soil at sample Location 17, potential residual soil contamination from the former gaseous fission product hold-up tanks, horizontally delineate Likely Chemical Remediation Zone to the north.	Sr-90
5DN-00220	Subsurface	Former Building 4020 - Approximately 15 feet northwest of Location 17 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.49 pCi/g in the subsurface soil at sample Location 17, potential residual soil contamination from the former gaseous fission product hold-up tanks, horizontally delineate Likely Chemical Remediation Zone to the north.	Sr-90
5DN-00221	Surface	Former Building 4020 - Approximately 15 feet northeast of Location 17 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.49 pCi/g in the subsurface soil at sample Location 17, potential residual soil contamination from the former gaseous fission product hold-up tanks, horizontally delineate Likely Chemical Remediation Zone to the north.	Sr-90
5DN-00221	Subsurface	Former Building 4020 - Approximately 15 feet northeast of Location 17 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.49 pCi/g in the subsurface soil at sample Location 17, potential residual soil contamination from the former gaseous fission product hold-up tanks, horizontally delineate Likely Chemical Remediation Zone to the north.	Sr-90
5DN-00222	Surface	Former Building 4020 - Approximately 15 feet northwest of Location 27 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.654 pCi/g in the subsurface soil at sample Location 27, geophysical anomaly, "Conductivity and Magnetometer".	Sr-90
5DN-00222	Subsurface	Former Building 4020 - Approximately 15 feet northwest of Location 27 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.654 pCi/g in the subsurface soil at sample Location 27, geophysical anomaly, "Conductivity and Magnetometer".	Sr-90
5DN-00223	Surface	Former Building 4020 - Approximately 15 feet southwest of Location 27 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.654 pCi/g in the subsurface soil at sample Location 27, geophysical anomaly, "Conductivity and Magnetometer".	Sr-90
5DN-00223	Subsurface	Former Building 4020 - Approximately 15 feet southwest of Location 27 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.654 pCi/g in the subsurface soil at sample Location 27, geophysical anomaly, "Conductivity and Magnetometer".	Sr-90
5DN-00224	Surface	Former Building 4020 - Approximately 15 feet west of Location 25 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.486 pCi/g in the subsurface soil at sample Location 25, possible residual contamination from former 500 gallon radioactive waste holdup tanks in the basement of former Building 4020.	Sr-90

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00224	Subsurface <sup>1</sup>	Former Building 4020 - Approximately 15 feet west of Location 25 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.486 pCi/g in the subsurface soil at sample Location 25, possible residual contamination from former 500 gallon radioactive waste holdup tanks in the basement of former Building 4020.	Sr-90
5DN-00225	Surface	Former Building 4020 - Approximately 15 feet east of Location 25 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.486 pCi/g in the subsurface soil at sample Location 25, possible residual contamination from former 500 gallon radioactive waste holdup tanks in the basement of former Building 4020.	Sr-90
5DN-00225	Subsurface <sup>1</sup>	Former Building 4020 - Approximately 15 feet east of Location 25 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.486 pCi/g in the subsurface soil at sample Location 25, possible residual contamination from former 500 gallon radioactive waste holdup tanks in the basement of former Building 4020.	Sr-90
5DN-00226	Surface	Former Building 4020 - Approximately 15 feet west of Location 41 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.0 pCi/g in the subsurface soil at sample Location 41, Location of former leach pits and leach field, aerial photo feature, "Open Storage".	Sr-90
5DN-00226	Subsurface	Former Building 4020 - Approximately 15 feet west of Location 41 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.0 pCi/g in the subsurface soil at sample Location 41, Location of former leach pits and leach field, aerial photo feature, "Open Storage".	Sr-90
5DN-00227	Surface	Former Building 4020 - Approximately 15 feet northwest of Location 45 and approximately 15 feet east of Location 41 in Subarea 5D-North.	Sr-90 was detected at a concentrations of 1.0 pCi/g and 1.4 pCi/g in the subsurface soil at sample Locations 41 and 45, historical data showed slightly elevated concentrations of man made radionuclides, Cs-137, Eu-155 and U-235 at Location 45.	Sr-90
5DN-00227	Subsurface	Former Building 4020 - Approximately 15 feet northwest of Location 45 and approximately 15 feet east of Location 41 in Subarea 5D-North.	Sr-90 was detected at a concentrations of 1.0 pCi/g and 1.4 pCi/g in the subsurface soil at sample Locations 41 and 45, historical data showed slightly elevated concentrations of man made radionuclides, Cs-137, Eu-155 and U-235 at Location 45.	Sr-90, Gamma Spec
5DN-00228	Surface	Building 4055 - Approximately 15 feet north of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90, Gamma Spec
5DN-00228	Subsurface	Building 4055 - Approximately 15 feet north of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90
5DN-00229	Surface	Building 4055 - Approximately 15 feet west of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90, Gamma Spec
5DN-00229	Subsurface	Building 4055 - Approximately 15 feet west of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90
5DN-00230	Surface	Building 4055 - Approximately 15 feet south of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90, Gamma Spec
5DN-00230	Subsurface	Building 4055 - Approximately 15 feet south of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90
5DN-00231	Surface	Approximately 15 feet east of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90, Gamma Spec
5DN-00231	Subsurface	Approximately 15 feet east of Location 73 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.662 pCi/g in the subsurface soil at sample Location 73, potential radiological contamination associated with activities conducted within Building 4055.	Sr-90
5DN-00232	Surface	Former Building 4373 - Approximately 15 feet north of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90
5DN-00232	Subsurface	Former Building 4373 - Approximately 15 feet north of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00233	Surface	Former Building 4373 - Approximately 15 feet west of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90
5DN-00233	Subsurface	Former Building 4373 - Approximately 15 feet west of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90
5DN-00234	Surface	Former Building 4373 - Approximately 15 feet east of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90
5DN-00234	Subsurface	Former Building 4373 - Approximately 15 feet east of Location 89 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.52 pCi/g in the surface soil at sample Location 89, characterize potential radiological contamination associated with the leach field south of former Building 4373.	Sr-90
5DN-00235	Surface	Former Building 4875 - Approximately 15 feet north of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00235	Subsurface	Former Building 4875 - Approximately 15 feet north of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00236	Surface	Former Building 4875 - Approximately 15 feet west of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00236	Subsurface	Former Building 4875 - Approximately 15 feet west of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00237	Surface	Former Building 4875 - Approximately 15 feet south of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00237	Subsurface	Former Building 4875 - Approximately 15 feet south of Location 117 in Subarea 5D-North.	Pu-238 and Sr-90 were detected at concentrations of 0.0492 pCi/g and 0.545 pCi/g in surface and subsurface soils (respectively) at sample Location 117, potential radiological contamination associated with activities at former Building 4875.	Sr-90, Np-237, Pu Default
5DN-00238	Surface	Former Building 4875 - Approximately 15 feet southwest of Location 120 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.43 pCi/g in the subsurface soil at sample Location 120, potential radiological contamination associated with former pit tank drain line.	Sr-90
5DN-00238	Subsurface	Former Building 4875 - Approximately 15 feet southwest of Location 120 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.43 pCi/g in the subsurface soil at sample Location 120, potential radiological contamination associated with former pit tank drain line.	Sr-90
5DN-00239	Surface	Former Building 4875 - Approximately 15 feet southeast of Location 120 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.43 pCi/g in the subsurface soil at sample Location 120, potential radiological contamination associated with former pit tank drain line.	Sr-90
5DN-00239	Subsurface	Former Building 4875 - Approximately 15 feet southeast of Location 120 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.43 pCi/g in the subsurface soil at sample Location 120, potential radiological contamination associated with former pit tank drain line.	Sr-90
5DN-00240	Surface	Former Building 4353 - Approximately 15 feet north of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00240	Subsurface	Former Building 4353 - Approximately 15 feet north of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00241	Surface	Former Building 4353 - Approximately 15 feet west of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00241	Subsurface	Former Building 4353 - Approximately 15 feet west of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00242	Surface	Former Building 4353 - Approximately 15 feet south of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00242	Subsurface	Former Building 4353 - Approximately 15 feet south of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00243	Surface	Former Building 4353 - Approximately 15 feet east of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00243	Subsurface	Former Building 4353 - Approximately 15 feet east of Location 146 in Subarea 5D-North.	Pu-239/240 was detected at a concentration of 0.0526 pCi/g in the subsurface soil at sample Location 146, characterize subsurface soil in ditch on the south side of former L Street.	Np-237, Pu Default
5DN-00244	Surface	Former Building 4353 - Approximately 15 feet north of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00244	Subsurface	Former Building 4353 - Approximately 15 feet north of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00245	Surface	Former Building 4353 - Approximately 15 feet west of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00245	Subsurface	Former Building 4353 - Approximately 15 feet west of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00246	Surface	Former Building 4353 - Approximately 15 feet south of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00246	Subsurface	Former Building 4353 - Approximately 15 feet south of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00247	Surface	Former Building 4353 - Approximately 15 feet east of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00247	Subsurface	Former Building 4353 - Approximately 15 feet east of Location 144 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.619 pCi/g in the surface soil at sample Location 144, aerial photo feature, "Possible Open Storage".	Sr-90
5DN-00248	Surface	Former Building 4353 - Approximately 15 feet north of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00248	Subsurface	Former Building 4353 - Approximately 15 feet north of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00249	Surface	Former Building 4353 - Approximately 15 feet west of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00249	Subsurface	Former Building 4353 - Approximately 15 feet west of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00250	Surface	Former Building 4353 - Approximately 15 feet south of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00250	Subsurface	Former Building 4353 - Approximately 15 feet south of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00251	Surface	Former Building 4353 - Approximately 15 feet east of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00251	Subsurface	Former Building 4353 - Approximately 15 feet east of Location 143 in Subarea 5D-North.	Sr-90 was detected at a concentration of 1.27 pCi/g in the surface soil at sample Location 143, aerial photo feature, "Drainage", geophysical anomaly, "Conductivity".	Sr-90
5DN-00252	Surface	Pond Dredge Area - Approximately 15 feet north of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90
5DN-00252	Subsurface	Pond Dredge Area - Approximately 15 feet north of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90, Gamma Spec
5DN-00253	Surface	Pond Dredge Area - Approximately 15 feet west of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90
5DN-00253	Subsurface	Pond Dredge Area - Approximately 15 feet west of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90, Gamma Spec
5DN-00254	Surface	Pond Dredge Area - Approximately 15 feet south of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90
5DN-00254	Subsurface	Pond Dredge Area - Approximately 15 feet south of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90, Gamma Spec
5DN-00255	Surface	Pond Dredge Area - Approximately 15 feet east of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90
5DN-00255	Subsurface	Pond Dredge Area - Approximately 15 feet east of Location 194 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.487 pCi/g in the subsurface soil at sample Location 194, geophysical anomaly, "Conductivity and Magnetometer" and aerial photo feature, "Fill".	Sr-90, Gamma Spec
5DN-00256	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet north of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00256	Subsurface	Approximately 15 feet north of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00257	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet west of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00257	Subsurface	Approximately 15 feet west of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00258	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet south of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00258	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet south of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00259	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet east of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00259	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet east of Location 162 in Subarea 5D-North.	Sr-90 was detected at a concentration of 0.648 pCi/g in the surface soil at sample Location 162, aerial photo feature, "Ground Scar".	Sr-90
5DN-00260	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet north of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00260	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet north of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00261	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet west of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00261	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet west of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00262	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet south of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00262	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet south of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00263	Surface	Former Building 4173/4865 Ground Scar - Approximately 15 feet east of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00263	Subsurface	Former Building 4173/4865 Ground Scar - Approximately 15 feet east of Location 161 in Subarea 5D-North.	Am-241 was detected at a concentration of 0.0589 pCi/g in the subsurface soil at sample Location 161, aerial photo feature, "Trench".	Am-241
5DN-00264	Surface	Former Building 4020 - Approximately 15 feet west of Location 24 in Subarea 5D-North.	U-235/236 was detected at a concentration of 0.234 pCi/g in the subsurface soil at sample Location 24, possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	U Default, U-232
5DN-00264	Subsurface	Former Building 4020 - Approximately 15 feet west of Location 24 in Subarea 5D-North.	U-235/236 was detected at a concentration of 0.234 pCi/g in the subsurface soil at sample Location 24, possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	U Default, U-232
5DN-00265	Surface	Former Building 4020 - Approximately 15 feet south of Location 24 and 15 feet north of Location 25 in Subarea 5D-North.	U-235/236 and Sr-90 were detected at concentrations of 0.234 pCi/g and 0.486 pCi/g in the subsurface soil at sample Location 24 and 25 (respectively), possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	Sr-90, U Default, U-232
5DN-00265	Subsurface <sup>2</sup>	Former Building 4020 - Approximately 15 feet south of Location 24 and 15 feet north of Location 25 in Subarea 5D-North.	U-235/236 and Sr-90 were detected at concentrations of 0.234 pCi/g and 0.486 pCi/g in the subsurface soil at sample Location 24 and 25 (respectively), possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	Sr-90, U Default, U-232

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DN-00266	Surface	Former Building 4020 - Approximately 15 feet east of Location 24 in Subarea 5D-North.	U-235/236 was detected at a concentration of 0.234 pCi/g in the subsurface soil at sample Location 24, possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	U Default, U-232
5DN-00266	Subsurface	Former Building 4020 - Approximately 15 feet east of Location 24 in Subarea 5D-North.	U-235/236 was detected at a concentration of 0.234 pCi/g in the subsurface soil at sample Location 24, possible residual contamination from former radioactive waste holdup tanks in the basement of former Building 4020, geophysical anomaly "Conductivity".	U Default, U-232
5DS-00041	Surface	Subarea 5D-South - Approximately 15 feet north of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00041	Subsurface	Subarea 5D-South - Approximately 15 feet north of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00042	Surface	Subarea 5D-South - Approximately 15 feet west of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00042	Subsurface	Subarea 5D-South - Approximately 15 feet west of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00043	Surface	Subarea 5D-South - Approximately 15 feet south of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00043	Subsurface	Subarea 5D-South - Approximately 15 feet south of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00044	Surface	Subarea 5D-South - Approximately 15 feet east of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00044	Subsurface	Subarea 5D-South - Approximately 15 feet east of Location 4 in Subarea 5D-South.	Cs-137 was detected at a concentration 0.227 pCi/g in the surface soil at sample Location 4 , gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 4T.	U Default, Gamma Spec
5DS-00045	Surface	Subarea 5D-South - Approximately 15 feet north of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00045	Subsurface	Subarea 5D-South - Approximately 15 feet north of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00046	Surface	Subarea 5D-South - Approximately 15 feet west of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00046	Subsurface	Subarea 5D-South - Approximately 15 feet west of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00047	Surface	Subarea 5D-South - Approximately 15 feet south of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec

**Table 1**  
**Summary of Soil Sample Locations**  
**Subarea 5D, Round 2**

Location Identification	Sample Type	Location Description	Technical Justification	Analytical Suite
5DS-00047	Subsurface	Subarea 5D-South - Approximately 15 feet south of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00048	Surface	Subarea 5D-South - Approximately 15 feet east of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec
5DS-00048	Subsurface	Subarea 5D-South - Approximately 15 feet east of Location 6 in Subarea 5D-South.	Pu-239/240 and Cs-137 were detected at a concentrations of 0.0502 pCi/g and 0.227 pCi/g in the surface soil at sample Locations 6 and 4 (respectively), gamma scanning results indicated elevated gamma radiation levels associated with PGRAY 6T.	Np-237, Pu Default, U Default, Gamma Spec

**Notes:**

<sup>1</sup>During D&D activities at former Building 4020 a 1 foot sand layer was placed in the bottom of the building excavation. A targeted subsurface sample of native soil will be collected below the 1 foot sand layer, at the soil/bedrock interface, if possible. If refusal is encountered before bedrock is reached, a soil sample will be collected just above the depth refusal was encountered. In addition to this subsurface sample, soil samples will be collected based on the results of the borehole gamma logging in accordance with the Final Field Sampling Plan for Soil Sampling (HGL, 2012a). Collection of a default 1-5 foot sample is not required at this location.

<sup>2</sup>During D&D activities at former Building 4020 a 1 foot sand layer was placed in the bottom of the building excavation. A targeted subsurface sample of native soil will be collected below the 1 foot sand layer, at the soil/bedrock interface, if possible. If refusal is encountered before bedrock is reached, a soil sample will be collected just above the depth refusal was encountered. In addition to this subsurface sample, soil samples will be collected based on the results of the borehole gamma logging in accordance with the Final Field Sampling Plan for Soil Sampling (HGL, 2012a). If borehole gamma logging results show no elevated gamma reading then a composite soil sample will be collected from the 1-5 foot interval. A minimum of two subsurface soil samples will be collected from each subsurface boring location.

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

D&D - decontamination and decommissioning

pCi/g - picocuries per gram

PGRAY - potential gamma radiation anomaly.

**ATTACHMENT 2**

- Figure 1 Round 1 Sample Locations
- Figure 2 Hot Lab (former Building 4020)
- Figure 3 Building 4055 Area
- Figure 4 Pond Dredge Area and Former Buildings 4875/4375/4874
- Figure 5 Former Building 4353 Area and Former Buildings 4173/4865  
Ground Scar
- Figure 6 Subarea 5D-South

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**Figure 1**  
**Round 1 Sample Locations**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**

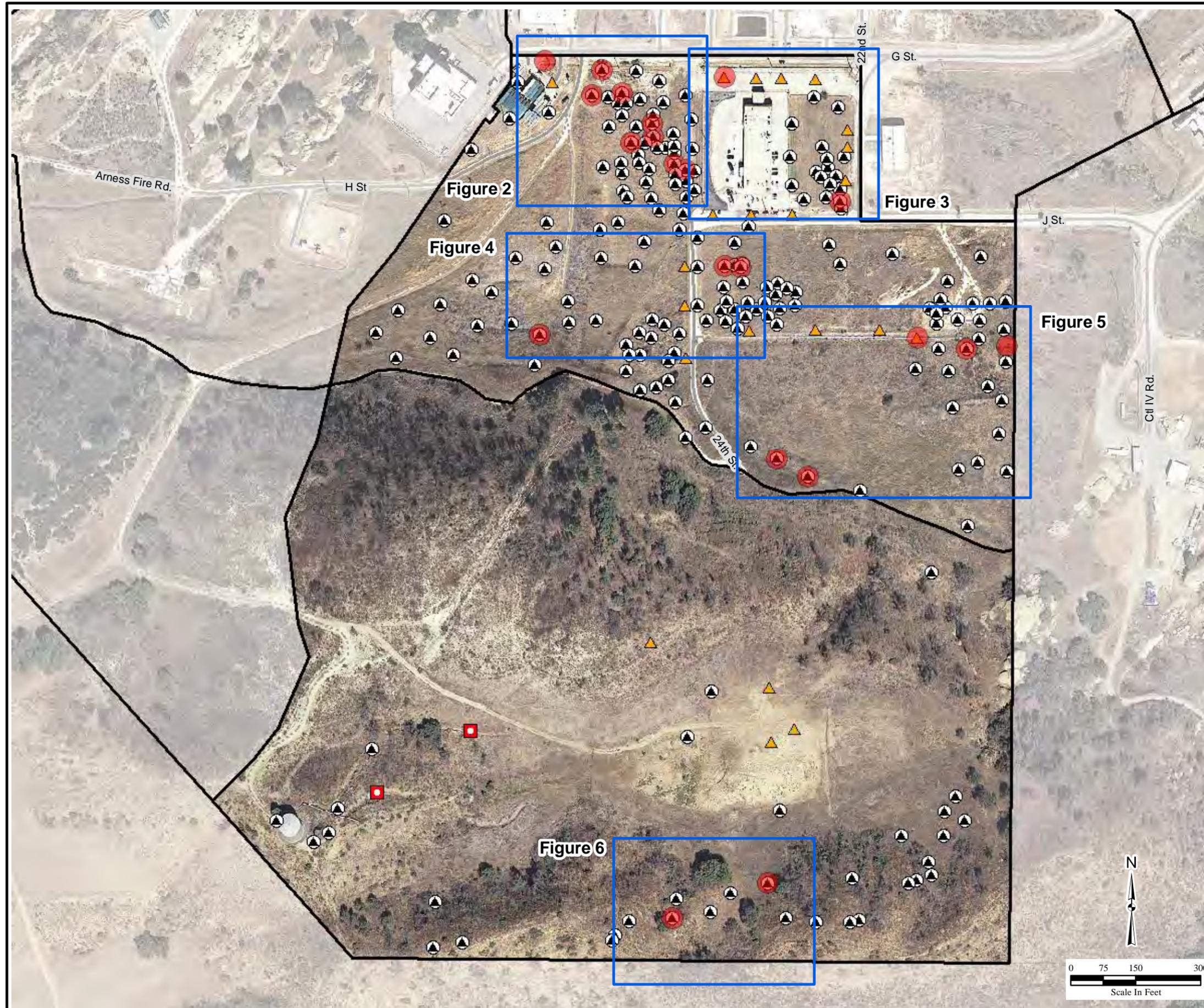
**U.S. EPA Region 9**



**Legend**

- Exceed RTLs
- Round 1 Sample Location**
  - Drainage
  - Subsurface
  - Surface Subsurface
- Subareas
- Figure Inset

**Note:**  
RTL - Radiological trigger level



**Figure 2**  
**Hot Lab (former Building 4020)**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**

**U.S. EPA Region 9**

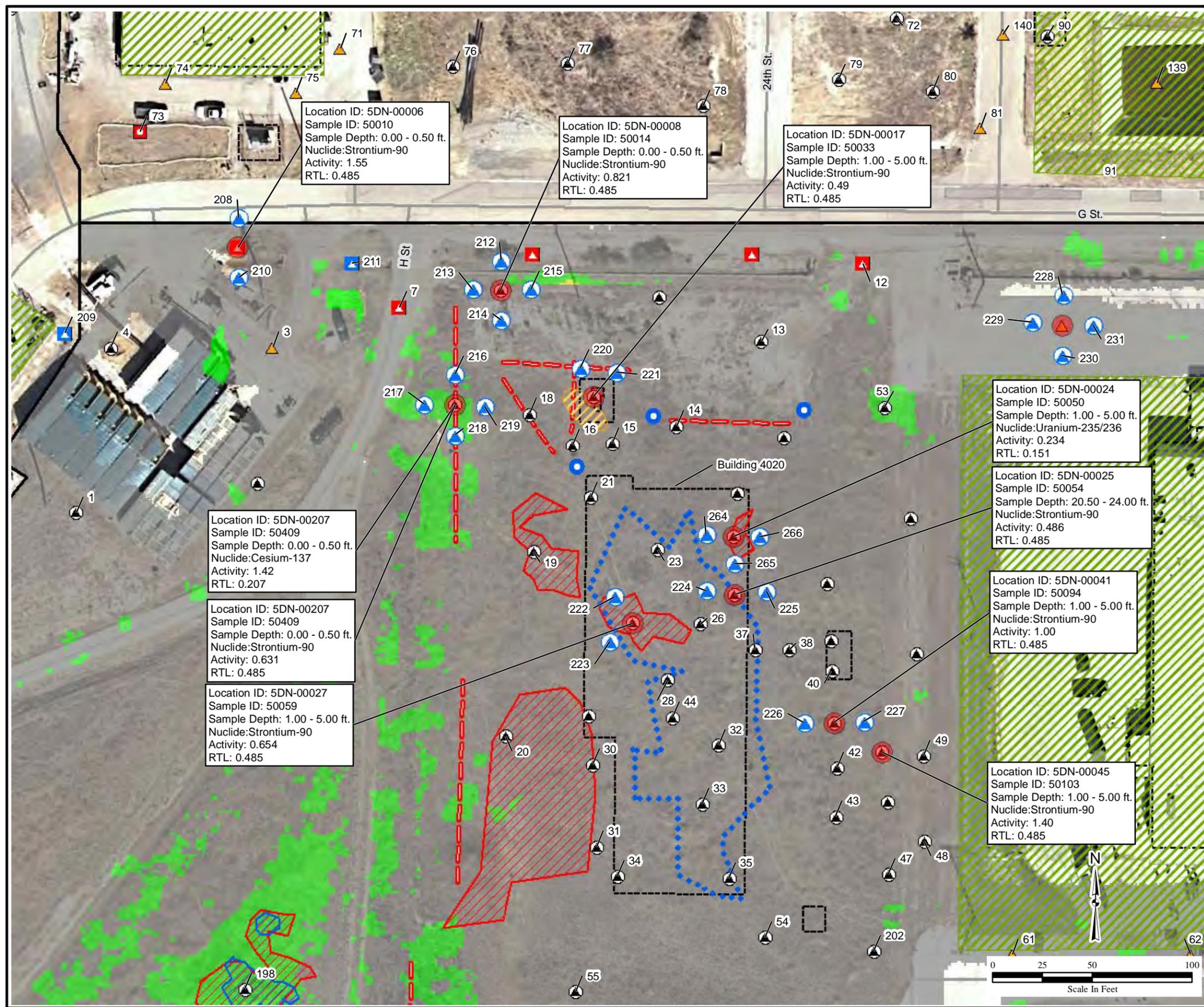


**Legend**

- Exceed RTLs
  - Round 2 Proposed Step-out Locations**
  - ▲ Drainage Subsurface
  - Surface Subsurface
  - Round 1 Sample Location**
  - Drainage
  - ▲ Drainage Subsurface
  - ▲ Subsurface
  - ▲ Surface Subsurface
  - Geophysical Anomalies**
  - Magnetometer
  - - - Terrain Conductivity
  - ▨ Magnetometer
  - ▨ Terrain Conductivity
  - Magnetometer Anomaly Area
  - Likely Remediation Zones**
  - ▨ Chemical
  - ▨ Decontamination and Decommissioning
  - Demolished Building
  - Subareas
- 145 Location ID
- Gamma Total Count (counts per second)**
- |           |               |               |               |
|-----------|---------------|---------------|---------------|
| 0 - 12400 | 12400 - 13600 | 13600 - 14800 | 14800 - 16000 |
|-----------|---------------|---------------|---------------|

**Notes:**  
 RTL - Radiological trigger level  
 ft - Feet  
 ID - Identification  
 All units reported in picocuries per gram

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 Fig2\_HotLab.mxd  
 6/4/2012 pbillock  
 Source:HGL 2010, CIRGIS 2007



Location ID: 5DN-00006  
 Sample ID: 50010  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide:Strontium-90  
 Activity: 1.55  
 RTL: 0.485

Location ID: 5DN-00008  
 Sample ID: 50014  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide:Strontium-90  
 Activity: 0.821  
 RTL: 0.485

Location ID: 5DN-00017  
 Sample ID: 50033  
 Sample Depth: 1.00 - 5.00 ft.  
 Nuclide:Strontium-90  
 Activity: 0.49  
 RTL: 0.485

Location ID: 5DN-00207  
 Sample ID: 50409  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide:Cesium-137  
 Activity: 1.42  
 RTL: 0.207

Location ID: 5DN-00207  
 Sample ID: 50409  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide:Strontium-90  
 Activity: 0.631  
 RTL: 0.485

Location ID: 5DN-00027  
 Sample ID: 50059  
 Sample Depth: 1.00 - 5.00 ft.  
 Nuclide:Strontium-90  
 Activity: 0.654  
 RTL: 0.485

Location ID: 5DN-00024  
 Sample ID: 50050  
 Sample Depth: 1.00 - 5.00 ft.  
 Nuclide:Uranium-235/236  
 Activity: 0.234  
 RTL: 0.151

Location ID: 5DN-00025  
 Sample ID: 50054  
 Sample Depth: 20.50 - 24.00 ft.  
 Nuclide:Strontium-90  
 Activity: 0.486  
 RTL: 0.485

Location ID: 5DN-00041  
 Sample ID: 50094  
 Sample Depth: 1.00 - 5.00 ft.  
 Nuclide:Strontium-90  
 Activity: 1.00  
 RTL: 0.485

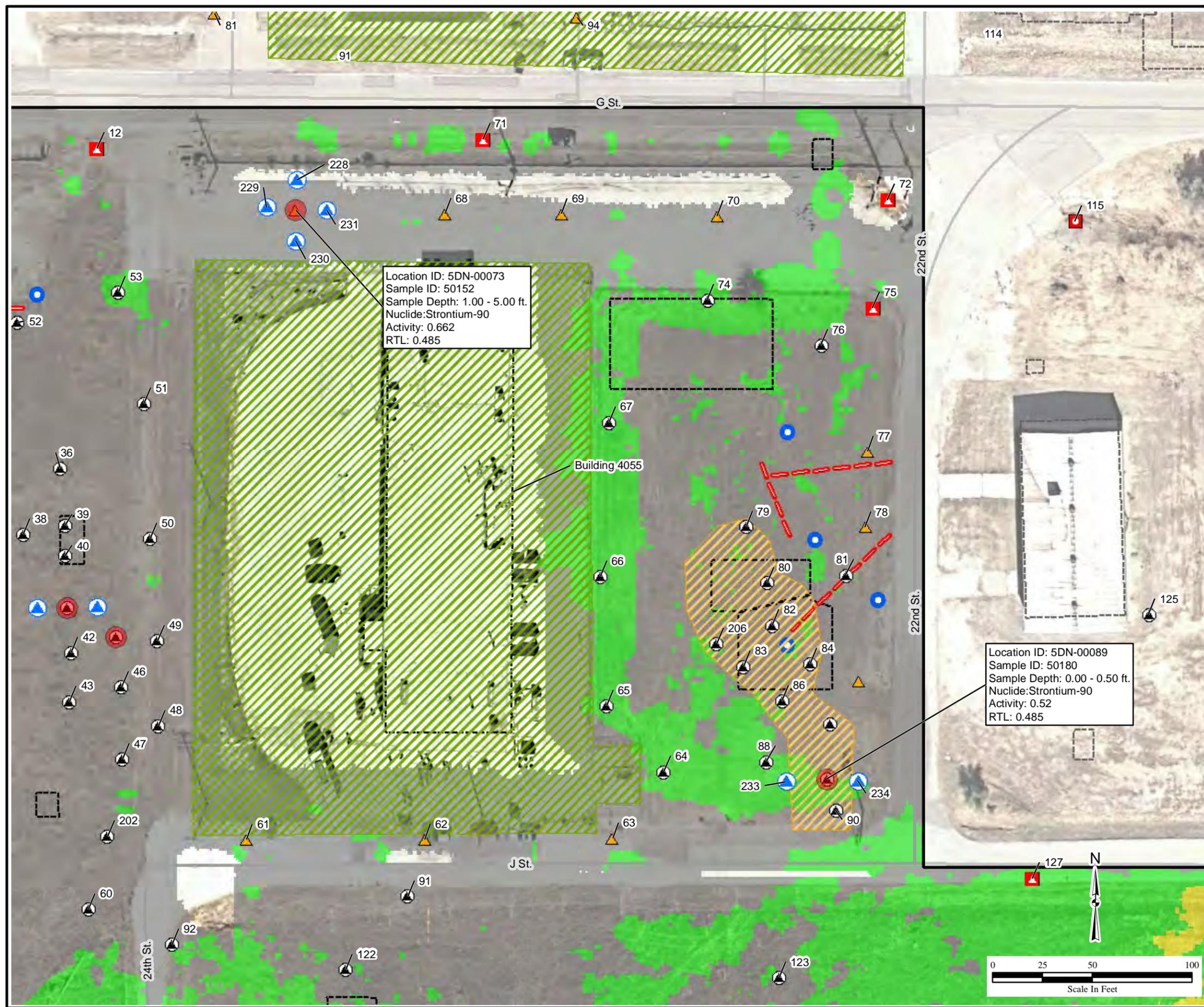
Location ID: 5DN-00045  
 Sample ID: 50103  
 Sample Depth: 1.00 - 5.00 ft.  
 Nuclide:Strontium-90  
 Activity: 1.40  
 RTL: 0.485

**Figure 3**  
**Building 4055 Area**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**



**Legend**

- Exceed RTLs
- Round 2 Proposed Step-out Locations**
- ▲ Surface Subsurface
- Round 1 Sample Location**
- Drainage
- ▲ Drainage Subsurface
- ▲ Subsurface
- ▲ Surface Subsurface
- Geophysical Anomalies**
- Magnetometer
- Terrain Conductivity
- Likely Remediation Zones**
- Chemical
- Decontamination and Decommissioning
- Demolished Building
- Subareas
- 145 Location ID
- Gamma Total Count (counts per second)**
- 12400 13600 14800 16000
- Notes:**
- RTL - Radiological trigger level
- ft - Feet
- ID - Identification
- All units reported in picocuries per gram



Y:\Santa\_Susana\EP9038\Soil\_Sampling\SubArea5D\Round2\_Addendum\  
 Fig3\_4055Area.mxd  
 6/6/2012 pbillock  
 Source:HGL 2010, CIRGIS 2007



**Figure 4**  
**Pond Dredge Area and**  
**Former Buildings 4875/4375/4874**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**

**U.S. EPA Region 9**

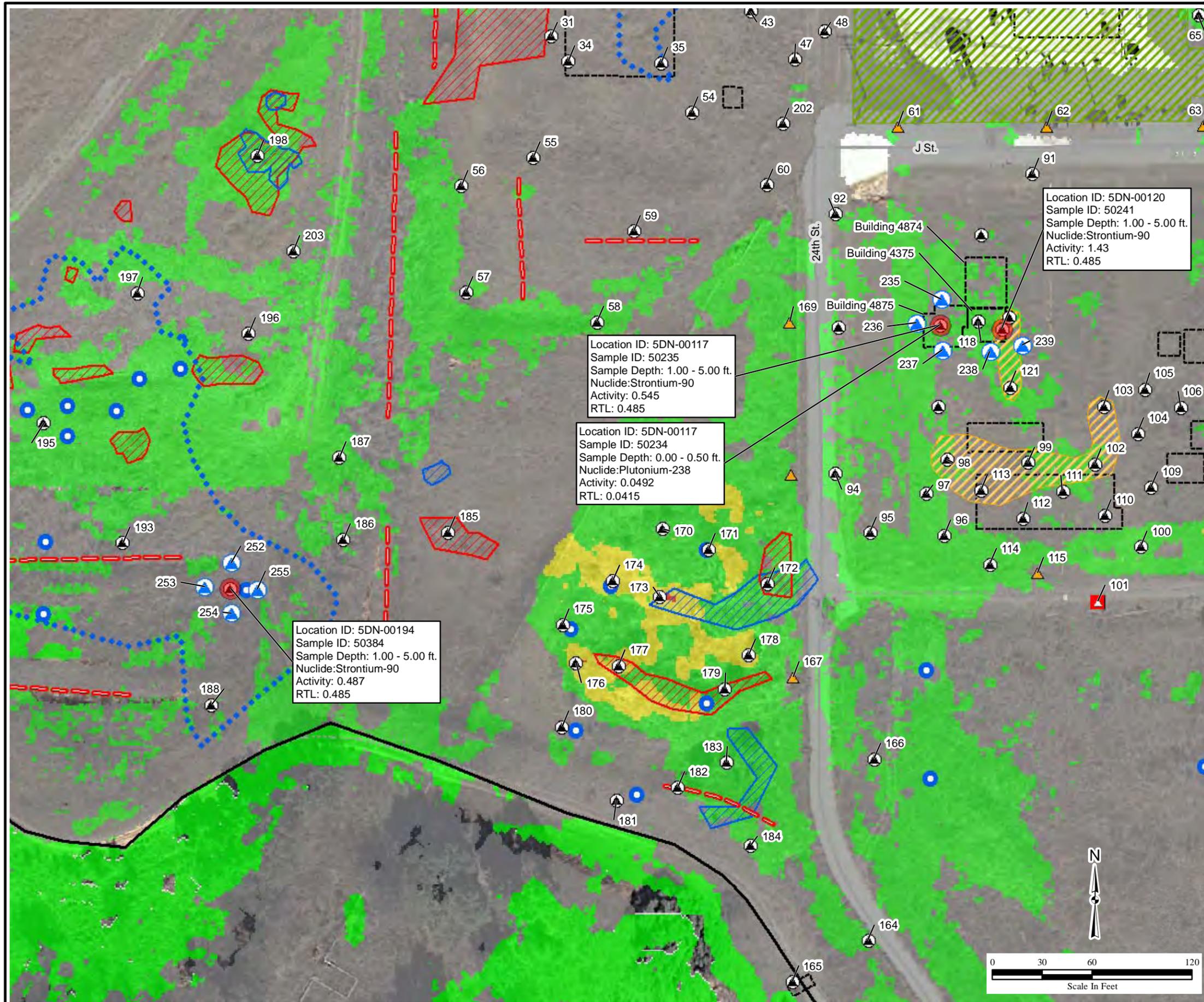


**Legend**

- Exceed RTLs
- Round 2 Proposed Step-out Locations**
- ▲ Surface Subsurface
- Round 1 Sample Location**
- ▲ Drainage Subsurface
- ▲ Subsurface
- ▲ Surface Subsurface
- Geophysical Anomalies**
- Magnetometer
- Terrain Conductivity
- ▨ Magnetometer
- ▨ Terrain Conductivity
- Magnetometer Anomaly Area
- Likely Remediation Zones**
- ▨ Chemical
- ▨ Decontamination and Decommissioning
- Demolished Building
- Subareas
- 145 Location ID
- Standard Deviations Above the Mean Total Count Rate**
- 0 2 4 6

Notes:  
 RTL - Radiological trigger level  
 ft - Feet  
 ID - Identification  
 All units reported in picocuries per gram

Y:\Santa\_Susana\EP9038\Soil\_Sampling\SubArea5D\Round2\_Addendum\  
 Fig4\_PondDredge\_4875.mxd  
 6/6/2012 pbillock  
 Source:HGL 2010, CIRGIS 2007



**Figure 5**  
**Former Building 4353 Area and**  
**Former Buildings 4173/4865 Ground Scar**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**

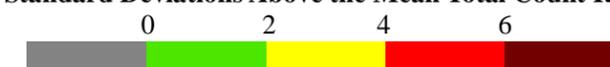
U.S. EPA Region 9



**Legend**

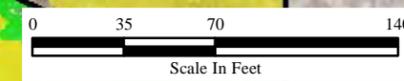
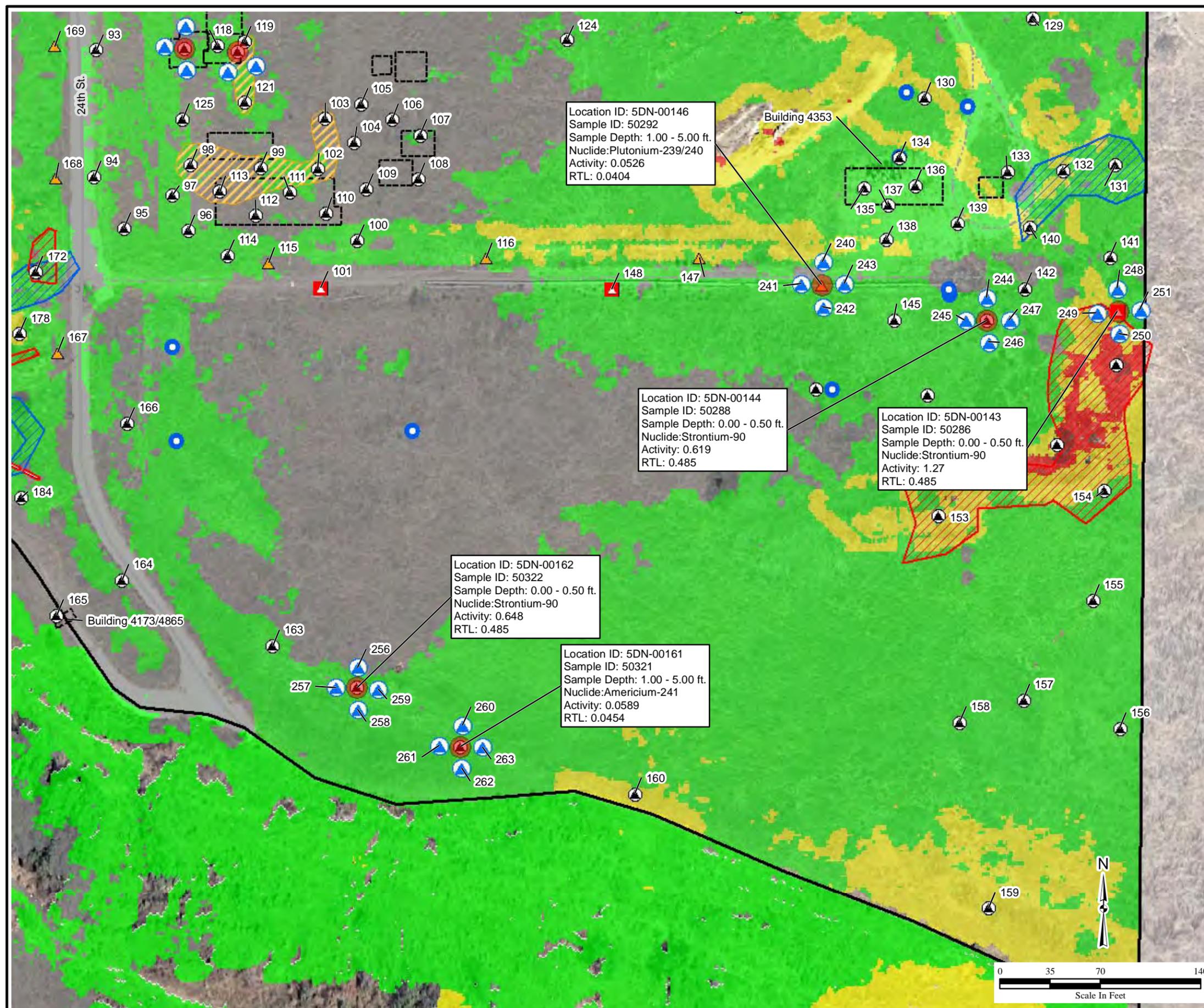
- Exceed RTLs
- Round 2 Proposed Step-out Locations**
- ▲ Surface Subsurface
- Round 1 Sample Location**
- ▲ Drainage Subsurface
- ▲ Subsurface
- ▲ Surface Subsurface
- Geophysical Anomalies**
- Magnetometer
- Terrain Conductivity
- Magnetometer
- Terrain Conductivity
- Likely Remediation Zones**
- Chemical
- Demolished Building
- Subareas
- 145 Location ID

**Standard Deviations Above the Mean Total Count Rate**



**Notes:**  
 RTL - Radiological trigger level  
 ft - Feet  
 ID - Identification  
 All units reported in picocuries per gram

Y:\Santa\_Susana\EP9038\Soil\_Sampling\SubArea5D\Round2\_Addendum\  
 Fig5\_4353Area\_4865\_GroundScar.mxd  
 6/6/2012 pbillock  
 Source:HGL 2010, CIRGIS 2007



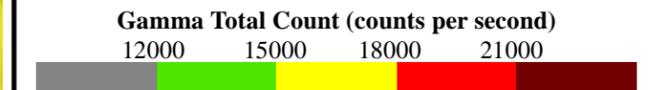
**Figure 6**  
**Subarea 5D-South**  
**Subarea 5D, Round 2**  
**Santa Susana Field Laboratory**

U.S. EPA Region 9

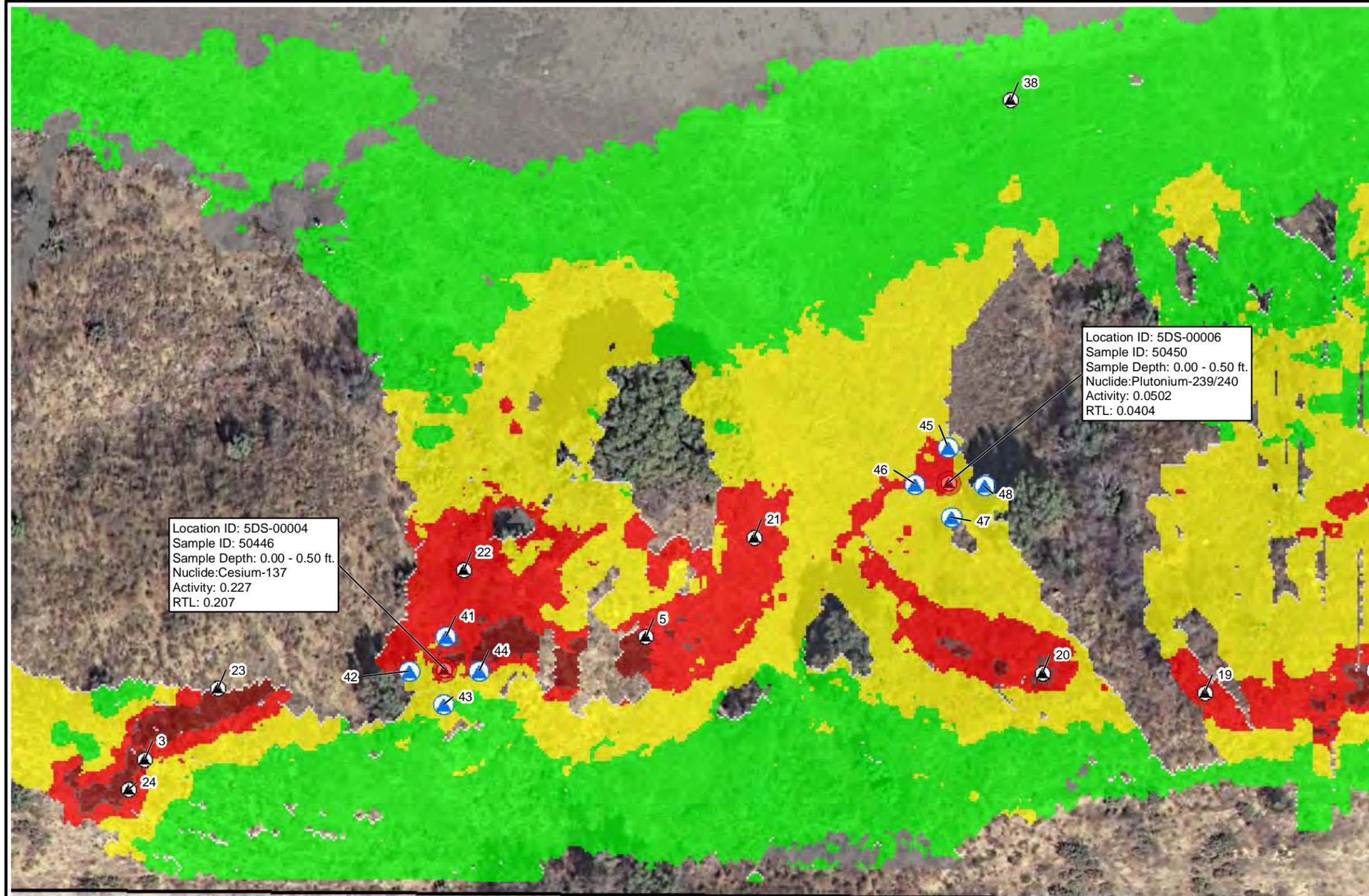


**Legend**

- Exceed RTLs
- Round 2 Proposed Step-out Locations**
- ▲ Surface Subsurface
- Round 1 Sample Location**
- ▲ Surface Subsurface
- Subareas
- 145 Location ID

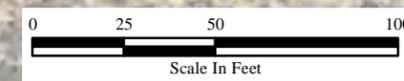


**Notes:**  
 RTL - Radiological trigger level  
 ft - Feet  
 ID - Identification  
 All units reported in picocuries per gram



Location ID: 5DS-00004  
 Sample ID: 50446  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide: Cesium-137  
 Activity: 0.227  
 RTL: 0.207

Location ID: 5DS-00006  
 Sample ID: 50450  
 Sample Depth: 0.00 - 0.50 ft.  
 Nuclide: Plutonium-239/240  
 Activity: 0.0502  
 RTL: 0.0404



### **ATTACHMENT 3**

Gamma Scanning Results, Subarea 5D-North  
Geophysical Anomalies, Subarea 5D-North  
Past Radiological Soil Investigations, Subarea 5D - Map 1  
Past Radiological Soil Investigations, Subarea 5D - Map 2  
Aerial Photo Features, Subarea HSA-5D  
Process Knowledge, Subarea HSA-D  
Gamma Anomalies, Static Count, Subarea 5D-South and 8-South  
Geophysical Anomalies, Subarea 5D-South  
Past Radiological Soil Investigations, Subarea 5D-South  
Plate 1, Subarea HSA-5D

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**Legend**

Subarea 5D North Groups

**Centerline Roads**  
 Primary Roads  
 Secondary Roads  
 Tertiary Roads

**Buildings**  
 Demolished  
 Existing

**Geophysical Anomalies**

- Magnetometer Point Features
- Terrain Conductivity Point Features
- Geophysical Anomaly Linear
- - - Interpreted Drain Remnants
- ▨ Magnetometer
- ▨ Terrain Conductivity
- ▨ Cut and Fill
- ▨ Cut and Fill

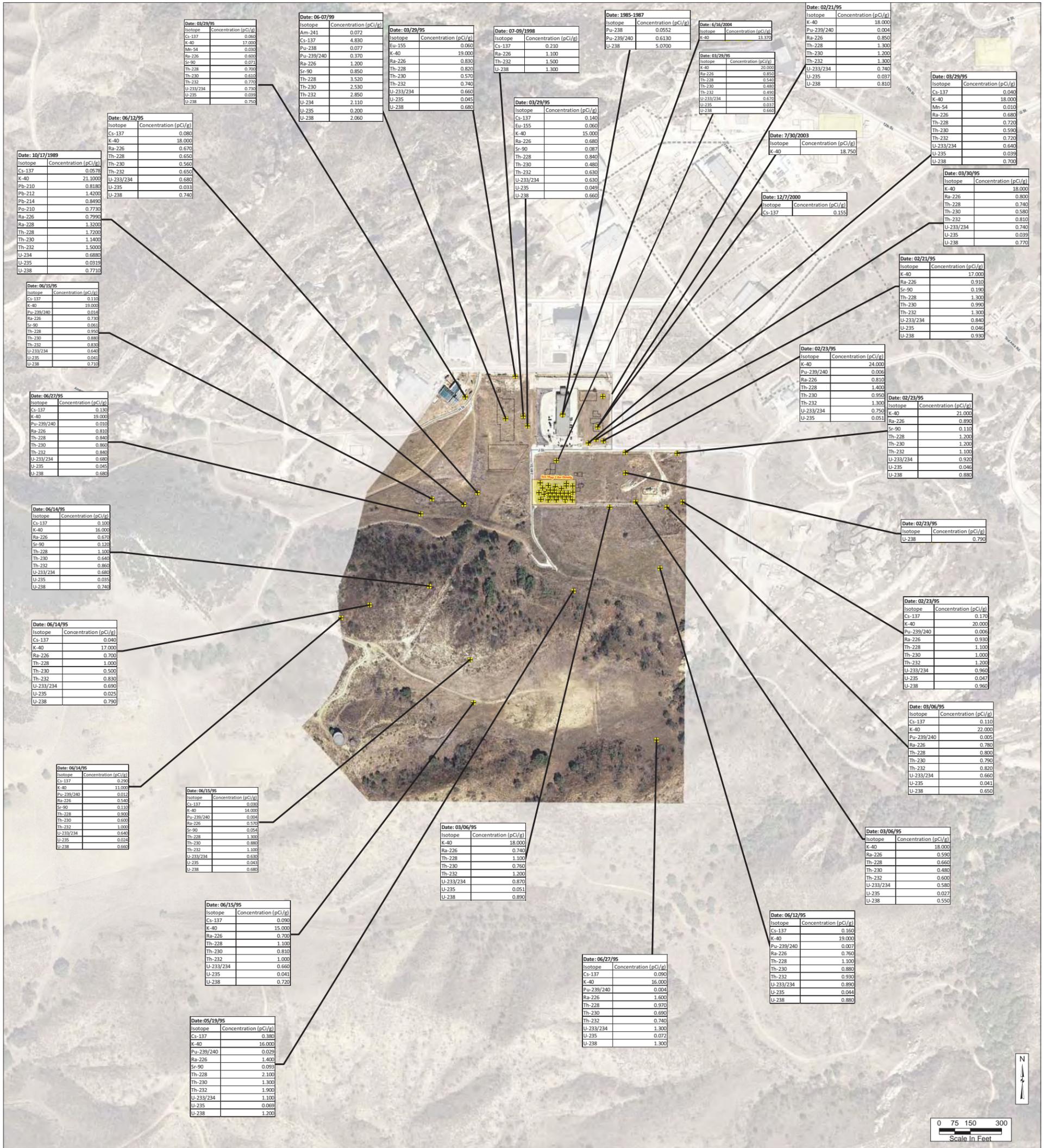
**Geophysical Anomalies  
 Subarea 5D North  
 Santa Susana Field Laboratory**

**U.S. EPA Region 9**



J:\Santa\_Susana\EP9038\Geophysical\  
 Copy of Subarea5DN\_Anomaly\_Fix20110415.mxd  
 5/4/2011 subarea5dn.mxd  
 Source:HGL 2010, CIRGIS 2007





**Legend**

- + Above NDA
- + Below NDA
- Subarea 5D Groups
- Map Frame
- Primary Roads
- Secondary Roads
- Tertiary Roads
- Demolished
- Existing

**Past Radiological Soil Investigations  
Subarea 5D - Map 1  
Santa Susana Field Laboratory**

**U.S. EPA Region 9**



*Y:\Santa\_Susana\EP9038\Rad\Soil\Subarea5D\_RadSoil\_Map1.mxd  
4/18/2011 adallos-lopecky  
Source:HGL 2010, CIRGIS 2007*

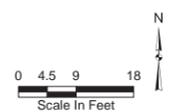




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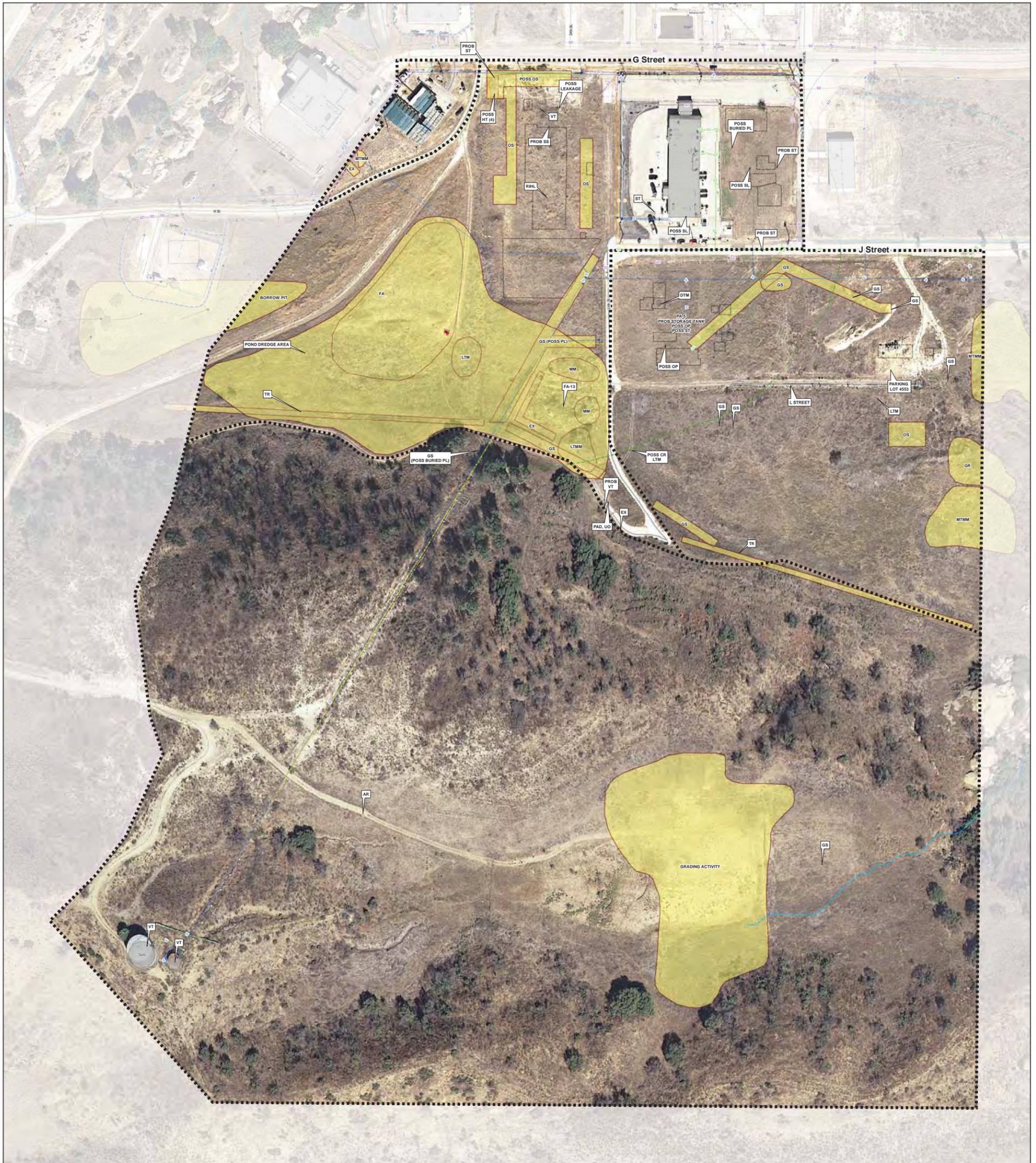
**Past Radiological Soil Investigations  
Subarea 5D - Map 2  
Santa Susana Field Laboratory**

U.S. EPA Region 9



Y:\Santa\_Susana\EP9038\Rad\Soil  
Subarea5D\_RadSoil\_Map2.mxd  
4/18/2011 adallos-lopecky  
Source:HGL 2010, CIRGIS 2007





**Legend**

- Subarea SD Groups
- Centerline Roads**
  - Primary Roads
  - Secondary Roads
  - Tertiary Roads
- Buildings**
  - Demolished
  - Existing
  - Parking Lots
- Surface Water**
  - Intermittent Stream
  - Permanent Stream
  - Surface Water
  - Lined Channel

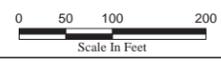
- Tanks**
  - Above ground Storage Tank
  - Underground Storage Tank
  - Unknown Tank Type
  - French Drain Holding Tank
  - Sump
  - Dry Well
  - Tank Footprint
  - Drain
  - Well
  - French Drain
  - Drainage
  - Leach Field
  - Septic System

- Aerial Photography Data**
  - Aerial Photography Features
- Utilities**
  - Gas
  - Storm Drain
  - Sanitary Sewer
  - Sanitary Waste
  - Water
  - Water (Removed)

- Surface Features**
  - Channel
  - Drain
  - Drain
  - Drainage Divide
  - Gutter
  - Tank
  - Tank
  - Vault
  - Well

- Aerial Photography Descriptors**

Type	Description
B	Building
CONT	Container
CR	Crates
DB	Debris
DG	Disturbed Ground
DTM	Dark Tone Material
EX	Excavation
FA	Fill Area
GS	Ground Scar
HT	Horizontal Tank
IM	Impoundment
LTMM	Light Toned Mounded Material
MTMM	Medium Toned Mounded Material
OS	Open Storage
PA	Processing Area
PL	Pipeline
POSS	Possible
PROB	Probable
SS	Smoke Stack
ST	Stain
S-T	Storage Tank
UO	Unidentified Object
VT	Vertical Tank
WDA	Waste Disposal Area



Historical Site Assessment  
Draft Technical Memorandum - HSA-5D

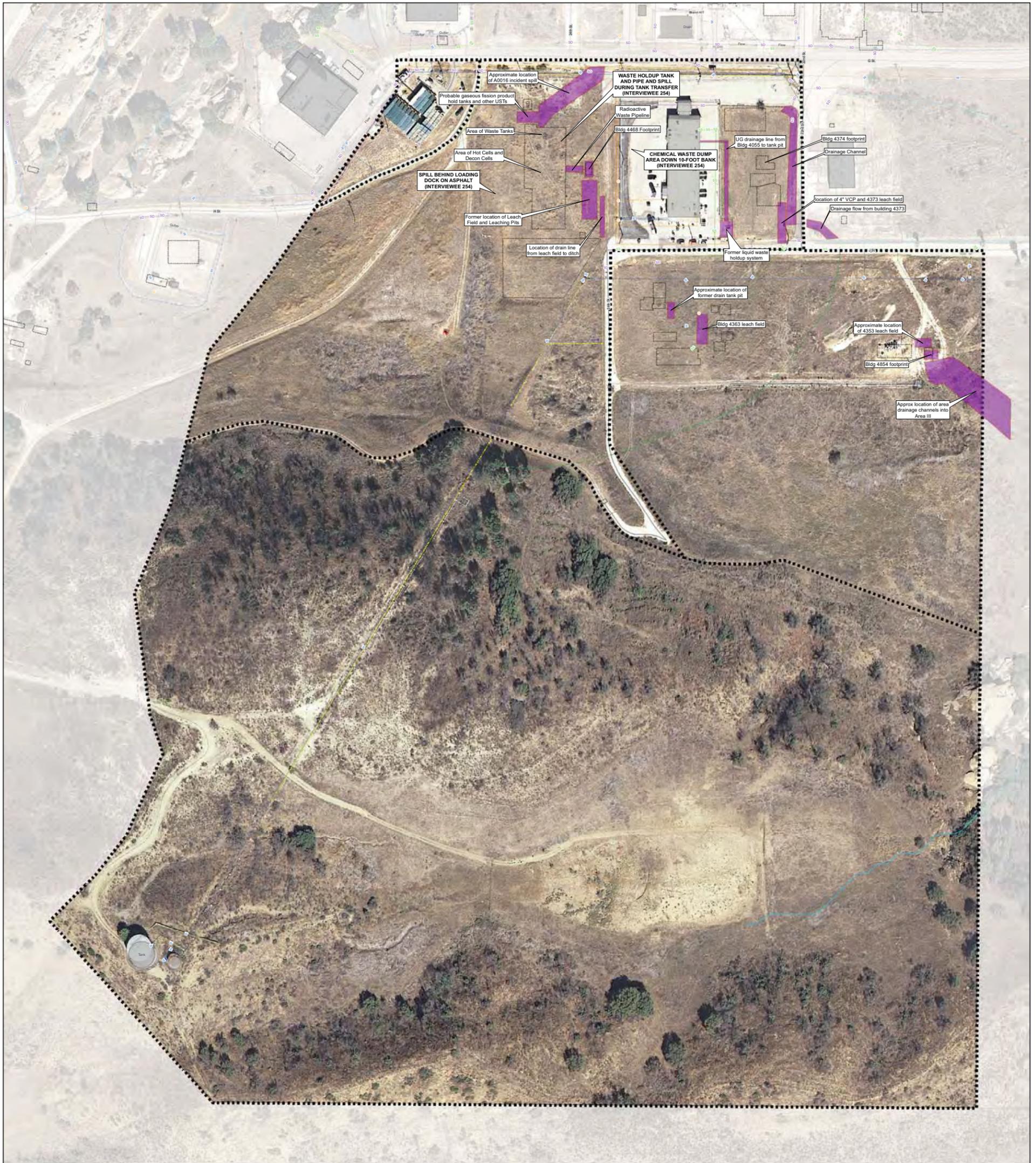
**Aerial Photo Features  
Subarea HSA-5D  
Santa Susana Field Laboratory**

U.S. EPA Region 9



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Subarea-5D\_AerialPhotoFeatures\_20110415.mxd  
4/18/2011 adrallos-kopecky





**Legend**

- Subarea 5D Groups
- Centerline Roads**
  - Primary Roads
  - Secondary Roads
  - Tertiary Roads
- Buildings**
  - Demolished
  - Existing
  - Parking Lots
- Surface Water**
  - Intermittent Stream
  - Permanent Stream
  - Surface Water
  - Lined Channel

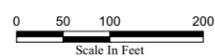
- Tanks**
  - Above ground Storage Tank
  - Underground Storage Tank
  - Unknown Tank Type
  - French Drain Holding Tank
  - Sump
  - Dry Well
  - Tank Footprint
  - Drain
  - Well
  - French Drain
  - Drainage
  - Leach Field
  - Septic System

- Aerial Photography Data**
  - Aerial Photography Features
- Utilities**
  - Gas
  - Storm Drain
  - Sanitary Sewer
  - Sanitary Waste
  - Water
  - Water (Removed)

- Surface Features**
  - Channel
  - Drain
  - Drain
  - Drainage Divide
  - Gutter
  - Tank
  - Vault
  - Well

- Aerial Photography Descriptors**

Type	Description
B	Building
CONT	Container
CR	Crates
DB	Debris
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DTM	Dark Tone Material
EX	Excavation
FA	Fill Area
GS	Ground Scar
HT	Horizontal Tank
IM	Impoundment
LTMM	Light Toned Mounded Material
MTMM	Medium Toned Mounded Material
OS	Open Storage
PA	Processing Area
PL	Pipeline
POSS	Possible
PROB	Probable
SS	Smoke Stack
ST	Stain
S-T	Storage Tank
UO	Unidentified Object
VT	Vertical Tank
WDA	Waste Disposal Area

Historical Site Assessment  
Draft Technical Memorandum - HSA-5D

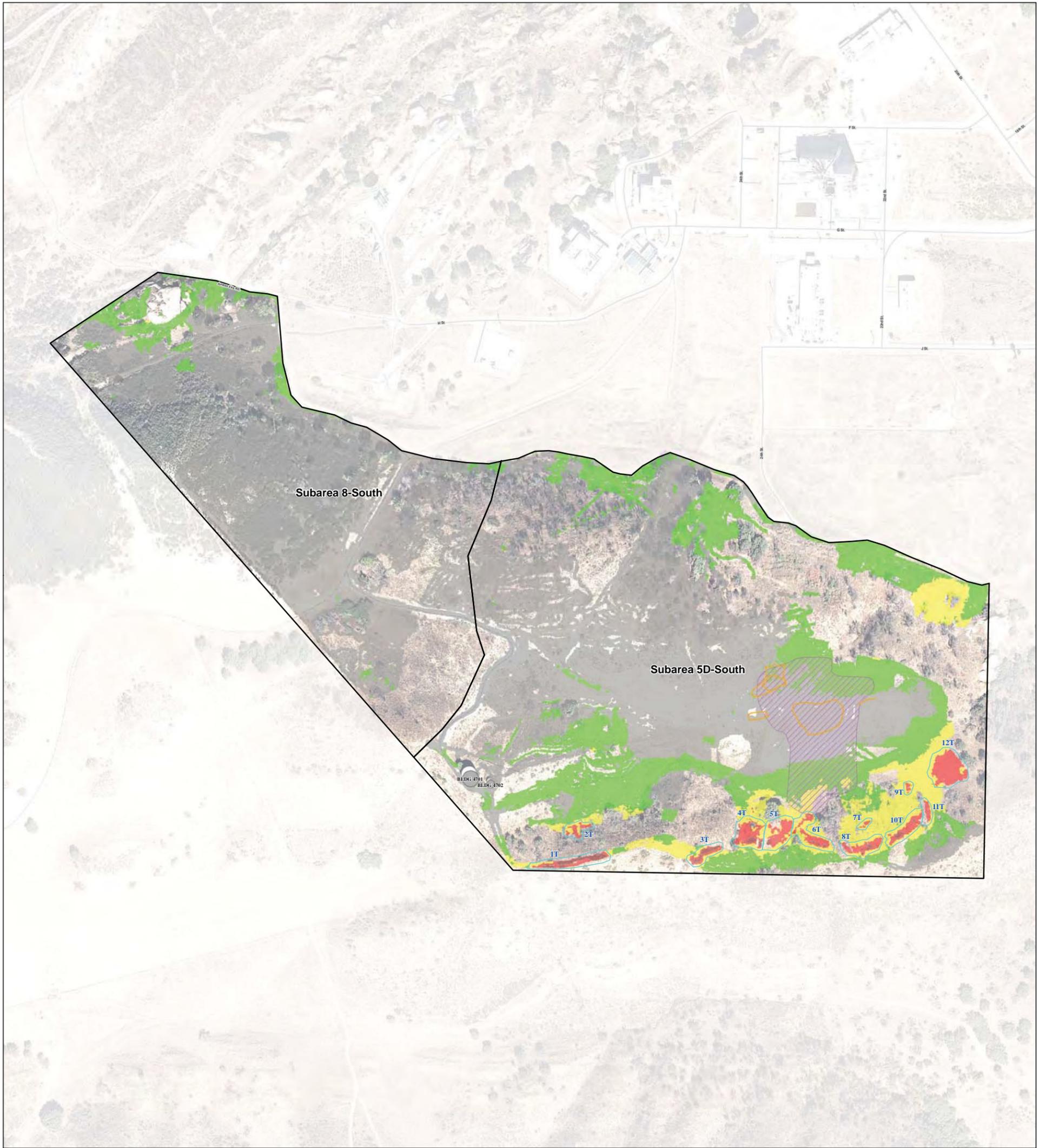
**Process Knowledge  
Subarea HSA-5D  
Santa Susana Field Laboratory**

U.S. EPA Region 9



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5/4/2011 subaltos-kopecny





**Legend**

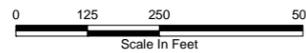
- PGRAY Boundary
- SubArea 5D South and 8 South Boundary
- Geophysical Anomalies
- HSA

**Buildings**

- DEMOLISHED
- EXISTING

**Centerline Roads**

- PRIMARY ROADS
- SECONDARY ROADS
- TERTIARY ROADS



**Gamma Anomalies  
Static Count  
Subarea 5D South and 8 South  
Santa Susana Field Laboratory**

**U.S. EPA Region 9**



Path: g:\epa-09\Geophysics\Bureau\EP9038\Gamma-counting\SubArea\_5D\_South\_8\_South\_HSA\_Geophysical\_Gamma\_Static\_Count\_20101026.mxd  
Project: EP9038  
Edited: 05/18/11 PL  
Source: Boeing Company, 2008  
CIRGIS, 2007





**Legend**

Subarea 5D South Groups

- Centerline Roads**
- Primary Roads
  - Secondary Roads
  - Tertiary Roads

- Buildings**
- Demolished
  - Existing

**Magnetometer Anomaly Area**

- Geophysical Anomalies**
- Terrain Conductivity
  - Magnetometer
  - Ground Penetrating Radar
  - Cut and Fill Boundaries
  - Magnetometer Anomaly Linear
  - Terrian Conductivity Anomaly Linear
  - Ground Penetrating Radar
  - Interpreted Drain Remnant
  - Buried Metals

- Surface Water**
- Intermittent Stream
  - Permanent Stream
  - Surface Water
  - Lined Channel

- Surface Water Flow**
- Surface Water Flow (From Boeing Database, 2008)

- Surface Features**
- Channel
  - Drain
  - Drain
  - Drainage Divide
  - Gutter
  - Tank
  - Tank
  - Vault
  - Well

- Utilities**
- Gas
  - Storm Drain
  - Sanitary Sewer
  - Water
  - Water (Removed)
  - Water (Removed)
  - Pipes (Unknown Type)
  - Pipes (Unknown Type)



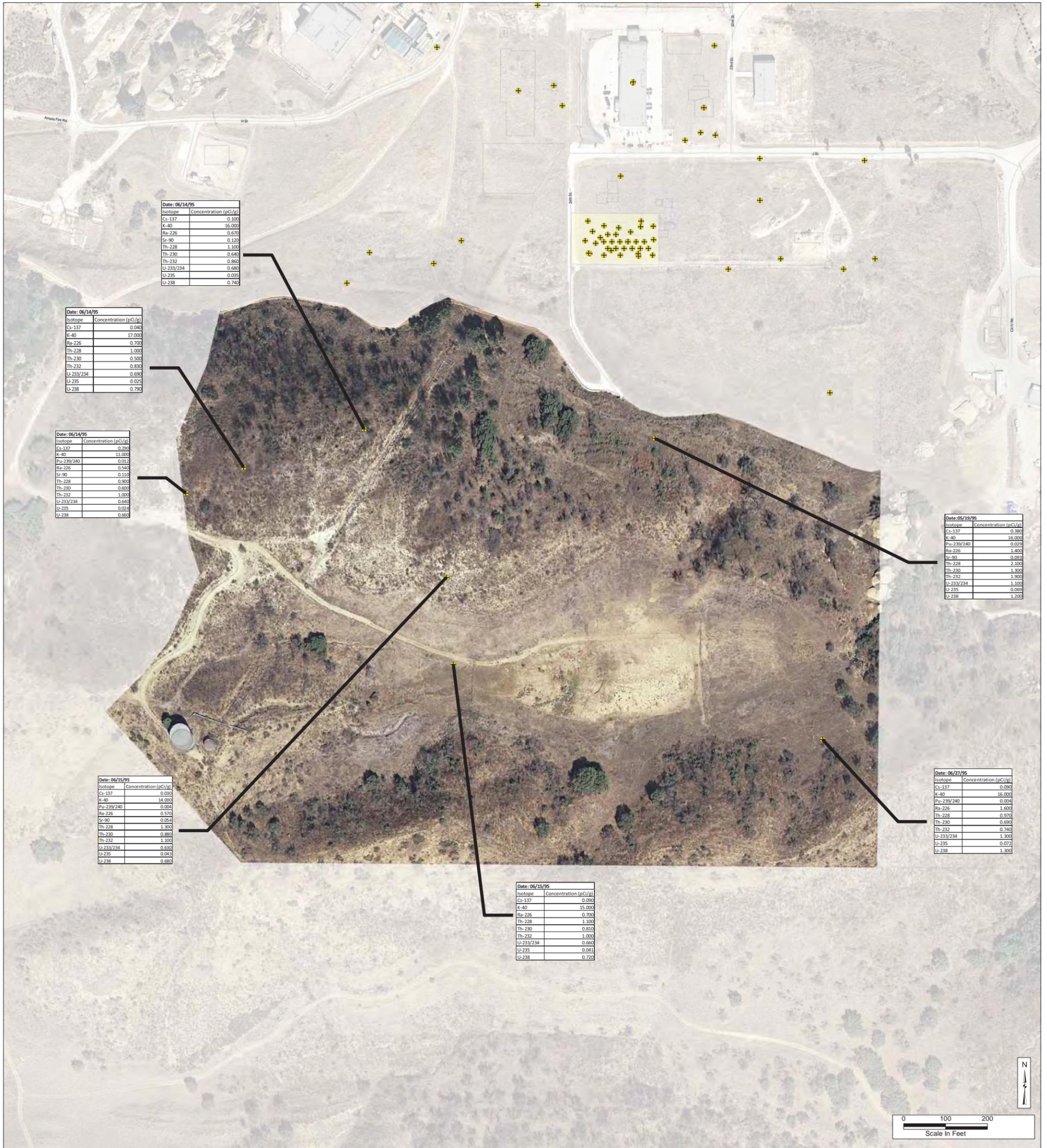
**Geophysical Anomalies  
Subarea 5D South  
Santa Susana Field Laboratory**

**U.S. EPA Region 9**



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Source: HGL 2010, CIRGIS 2007  
Coordinate System: NAD83 CA State Plane V





Date: 06/14/95

Isotope	Concentration (pCi/g)
Cs-137	0.100
K-40	16.000
Ra-226	0.670
Sr-90	0.120
Th-228	1.100
Th-230	0.660
Th-232	0.860
U-233/234	0.680
U-235	0.035
U-238	0.740

Date: 06/14/95

Isotope	Concentration (pCi/g)
Cs-137	0.040
K-40	17.000
Ra-226	0.700
Th-228	1.000
Th-230	0.500
Th-232	0.830
U-233/234	0.690
U-235	0.025
U-238	0.790

Date: 06/14/95

Isotope	Concentration (pCi/g)
Cs-137	0.200
K-40	11.000
Pu-239/240	0.010
Ra-226	0.540
Sr-90	0.110
Th-228	0.900
Th-230	0.600
Th-232	1.000
U-233/234	0.640
U-235	0.024
U-238	0.660

Date: 06/15/95

Isotope	Concentration (pCi/g)
Cs-137	0.080
K-40	14.000
Pu-239/240	0.004
Ra-226	0.570
Sr-90	0.054
Th-228	1.300
Th-230	0.880
Th-232	1.100
U-233/234	0.630
U-235	0.043
U-238	0.680

Date: 06/15/95

Isotope	Concentration (pCi/g)
Cs-137	0.090
K-40	15.000
Ra-226	0.700
Th-228	1.100
Th-230	0.810
Th-232	1.000
U-233/234	0.660
U-235	0.041
U-238	0.720

Date: 06/19/95

Isotope	Concentration (pCi/g)
Cs-137	0.380
K-40	16.000
Pu-239/240	0.020
Ra-226	0.400
Sr-90	0.020
Th-228	2.100
Th-230	1.300
Th-232	1.900
U-233/234	1.100
U-235	0.069
U-238	1.200

Date: 06/22/95

Isotope	Concentration (pCi/g)
Cs-137	0.090
K-40	16.000
Pu-239/240	0.004
Ra-226	1.600
Th-228	0.970
Th-230	0.690
Th-232	0.740
U-233/234	1.300
U-235	0.072
U-238	1.300

**Legend**

**RAD Soil Location**

- + Above NDA
- Below NDA
- ScreenLayer
- Subarea 5D Groups
- Primary Roads
- Secondary Roads
- Tertiary Roads
- Demolished
- Existing

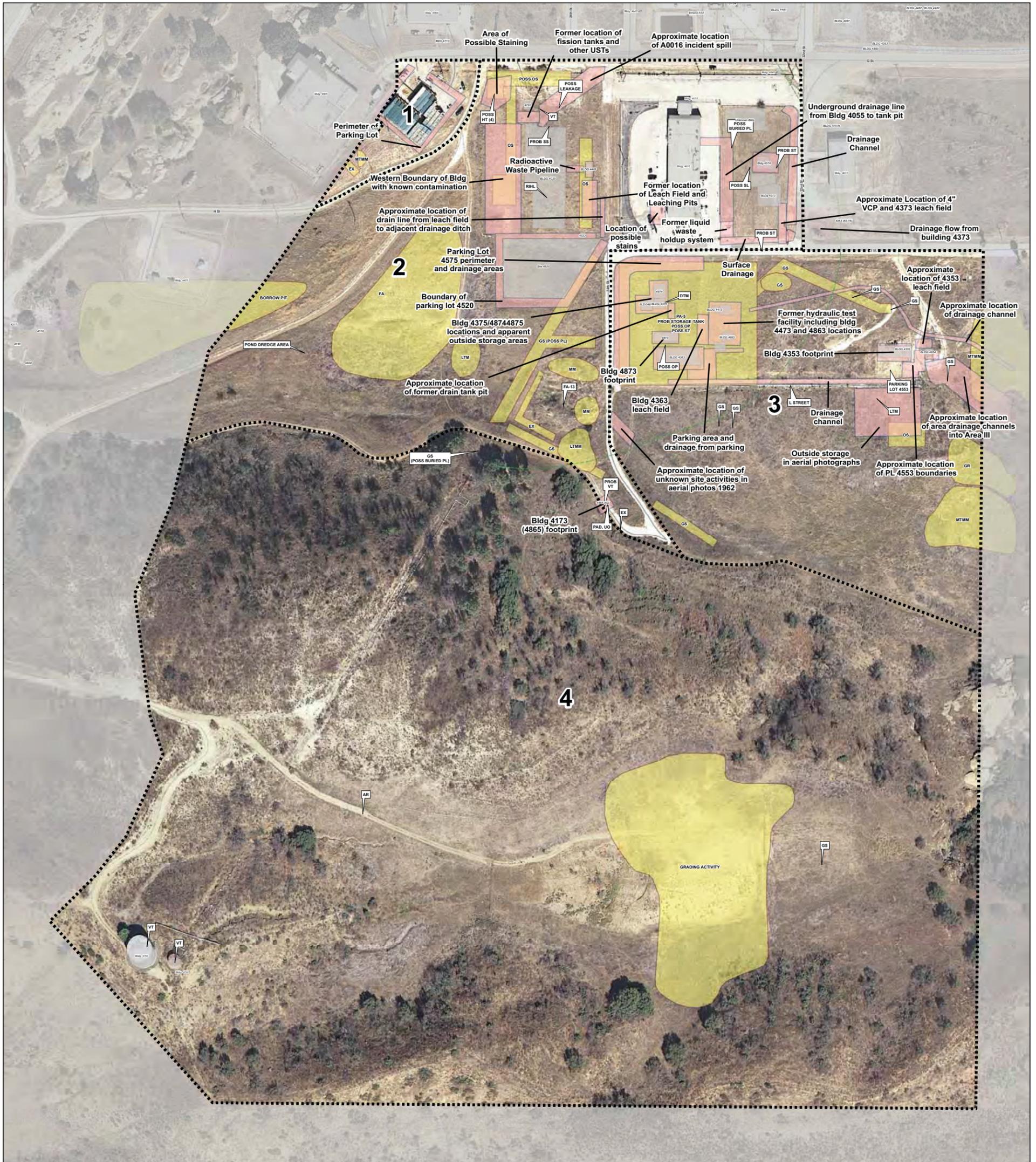
**Past Radiological Soil Investigations  
Subarea 5D South  
Santa Susana Field Laboratory**

U.S. EPA Region 9



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7/14/2011 sdmllos-lopecky  
Source:HGL 2010, CIRGIS 2007





**Legend**

- | <p><b>Centerline Roads</b></p> <ul style="list-style-type: none"> <li>— Primary Roads</li> <li>— Secondary Roads</li> <li>— Tertiary Roads</li> </ul> <p><b>Buildings</b></p> <ul style="list-style-type: none"> <li>□ Demolished</li> <li>□ Existing</li> <li>□ Parking Lots</li> </ul> <p><b>Surface Water</b></p> <ul style="list-style-type: none"> <li>— Intermittent Stream</li> <li>— Permanent Stream</li> <li>— Surface Water</li> <li>— Lined Channel</li> </ul> | <p><b>Tanks</b></p> <ul style="list-style-type: none"> <li>• Above ground Storage Tank</li> <li>• Underground Storage Tank</li> <li>• Unknown Tank Type</li> <li>• French Drain Holding Tank</li> <li>• Sump</li> <li>• Dry Well</li> <li>• Tank Footprint</li> <li>• Drain</li> <li>• Well</li> <li>• French Drain</li> <li>• Drainage</li> <li>• Leach Field</li> <li>• Septic System</li> </ul> | <p><b>Aerial Photography Data</b></p> <ul style="list-style-type: none"> <li>■ Aerial Photography Features</li> <li>■ Proposed Sampling Locations</li> </ul> <p><b>Utilities</b></p> <ul style="list-style-type: none"> <li>— Gas</li> <li>— Storm Drain</li> <li>— Sanitary Sewer</li> <li>— Sanitary Waste</li> <li>— Water</li> <li>— Water (Removed)</li> </ul> | <p><b>Surface Features</b></p> <ul style="list-style-type: none"> <li>— Channel</li> <li>— Drain</li> <li>— Drainage Divide</li> <li>— Gutter</li> <li>— Tank</li> <li>— Vault</li> <li>— Well</li> </ul> | <p><b>Aerial Photography Descriptors</b></p> <table border="0"> <tr><th>Type</th><th>Description</th></tr> <tr><td>B</td><td>Building</td></tr> <tr><td>CONT</td><td>Container</td></tr> <tr><td>CR</td><td>Crates</td></tr> <tr><td>DB</td><td>Debris</td></tr> <tr><td>DG</td><td>Disturbed Ground</td></tr> <tr><td>DTM</td><td>Dark Tone Material</td></tr> <tr><td>EX</td><td>Excavation</td></tr> <tr><td>FA</td><td>Fill Area</td></tr> <tr><td>GS</td><td>Ground Scar</td></tr> <tr><td>HT</td><td>Horizontal Tank</td></tr> <tr><td>IM</td><td>Impoundment</td></tr> <tr><td>LTMM</td><td>Light Toned Mounded Material</td></tr> <tr><td>MTMM</td><td>Medium Toned Mounded Material</td></tr> <tr><td>OS</td><td>Open Storage</td></tr> <tr><td>PA</td><td>Processing Area</td></tr> <tr><td>PL</td><td>Pipeline</td></tr> <tr><td>POSS</td><td>Possible</td></tr> <tr><td>PROB</td><td>Probable</td></tr> <tr><td>SS</td><td>Smoke Stack</td></tr> <tr><td>ST</td><td>Stain</td></tr> <tr><td>S-T</td><td>Storage Tank</td></tr> <tr><td>UO</td><td>Unidentified Object</td></tr> <tr><td>VT</td><td>Vertical Tank</td></tr> <tr><td>WDA</td><td>Waste Disposal Area</td></tr> </table> | Type | Description | B | Building | CONT | Container | CR | Crates | DB | Debris | DG | Disturbed Ground | DTM | Dark Tone Material | EX | Excavation | FA | Fill Area | GS | Ground Scar | HT | Horizontal Tank | IM | Impoundment | LTMM | Light Toned Mounded Material | MTMM | Medium Toned Mounded Material | OS | Open Storage | PA | Processing Area | PL | Pipeline | POSS | Possible | PROB | Probable | SS | Smoke Stack | ST | Stain | S-T | Storage Tank | UO | Unidentified Object | VT | Vertical Tank | WDA | Waste Disposal Area |
|--|--|---|---|---|------|-------------|---|----------|------|-----------|----|--------|----|--------|----|------------------|-----|--------------------|----|------------|----|-----------|----|-------------|----|-----------------|----|-------------|------|------------------------------|------|-------------------------------|----|--------------|----|-----------------|----|----------|------|----------|------|----------|----|-------------|----|-------|-----|--------------|----|---------------------|----|---------------|-----|---------------------|
| Type   | Description  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| B  | Building   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| CONT   | Container  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| CR   | Crates   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| DB   | Debris   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| DG   | Disturbed Ground   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| DTM  | Dark Tone Material   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| EX   | Excavation   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| FA   | Fill Area  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| GS   | Ground Scar  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| HT   | Horizontal Tank  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| IM   | Impoundment  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| LTMM   | Light Toned Mounded Material   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| MTMM   | Medium Toned Mounded Material  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| OS   | Open Storage   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| PA   | Processing Area  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| PL   | Pipeline   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| POSS   | Possible   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| PROB   | Probable   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| SS   | Smoke Stack  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| ST   | Stain  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| S-T  | Storage Tank   |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| UO   | Unidentified Object  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| VT   | Vertical Tank  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |
| WDA  | Waste Disposal Area  |   |   |   |      |             |   |          |      |           |    |        |    |        |    |                  |     |                    |    |            |    |           |    |             |    |                 |    |             |      |                              |      |                               |    |              |    |                 |    |          |      |          |      |          |    |             |    |       |     |              |    |                     |    |               |     |                     |

Historical Site Assessment  
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## Plate 1 Subarea HSA-5D Santa Susana Field Laboratory

**U.S. EPA Region 9**

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