# TECHNICAL MEMORANDUM
# SUBAREA 5C, ROUND 2, SOIL SAMPLE RESULTS
# SANTA SUSANA FIELD LABORATORY SITE
# AREA IV RADIOLOGICAL STUDY

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**DATE:** November 26, 2012
**SUBJECT:** Subarea 5C, Round 2 Soil Sample Results

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

## 1.0 INTRODUCTION

HydroGeoLogic, Inc. (HGL) is conducting a comprehensive 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 U.S. Environmental Protection Agency (USEPA) Region 7 Architect and Engineering Services Contract EP-S7-05-05, Task Order 0038. The technical lead on the project is USEPA Region 9.

As part of the radiological study, surface and subsurface soil samples were collected from locations identified from geophysical surveys, gamma scanning, historical aerial photographs and findings of the Historical Site Assessment. Sampling efforts in the study area were divided into subareas. Analytical results from the Round 1 sampling activities were reviewed in conjunction with the aforementioned lines of evidence, and sample locations were targeted for further investigation in the Round 2 soil sampling effort. This technical memorandum documents the soil sampling activities, analytical results, and conclusions of the Round 2 soil sampling. The primary objective of the Round 2 soil sampling effort was to further investigate potential radionuclide contamination by laterally and vertically delineating radionuclide concentrations that exceeded project established Radiological Trigger Levels (RTL) detected during the Round 1 sampling activities. This objective was achieved through the collection and analysis of step-out surface and subsurface soil samples, as described in Section 4.2 of the Final Field Sampling Plan (FSP) for Soil Sampling (HGL, 2012a). If an exceedance was isolated, a step-out location was place approximately 15 feet north, south, east, and west of the Round 1 exceedance location. If there were multiple Round 1 exceedances grouped together, step-out sampling locations were targeted around the exceedances to best characterize the lateral and vertical extent of potential radionuclide impacted soils.

The approach for Round 2 soil sampling was to identify potential sample locations from the lines of evidence listed above, prepare a Round 2 FSP Addendum for the subarea, present the FSP to USEPA's SSFL Technical Stakeholder Workgroup, and review and finalize proposed locations with the Workgroup.

## 2.0 SOIL SAMPLING ACTIVITIES

### 2.1 Soil Sample Location Placement and Utility Clearance

A total of nine surface and 10 subsurface samples were proposed based on Round 1 sample exceedances detected at two locations, Former Building 4100 Area (Round 1 soil sample Location 56) and fill area (Round 1 soil sample Location 141). A Round 2 surface soil sample was not collected at Round 1 Location 141; however a Round 2 subsurface sample was collected. The rationale for soil step-out sample locations is detailed in the Subarea 5C Round 2 Addendum to the Final FSP for Soil Sampling (HGL, 2012b). Table 1 below summarizes the proposed samples and lists the samples collected. Figure 1 illustrates all the soil sample locations (proposed and collected). Deviations from the FSP are discussed in Section 2.3.

**Table 1**
**Summary of Planned and Collected Step-out Samples by Location**

| Round 1 Sample Location | Surface | | Subsurface | | Total | |
|---|---|---|---|---|---|---|
| | Planned | Collected | Planned | Collected | Planned | Collected |
| 56 | 5 | 5 | 5 | 5 | 10 | 10 |
| 141 | 4 | 4 | 5 | 5 | 9 | 9 |
| Total | 9 | 9 | 10 | 10 | 19 | 19 |

The proposed sampling locations were discussed during the technical review meeting held on December 14, 2011, with members of USEPA's SSFL Technical Stakeholder Workgroup consisting of representatives of the Department of Energy (DOE), the State of California Department of Toxic Substances Control (DTSC), The Boeing Company (Boeing), USEPA, and the community.

After the locations were finalized with the Stakeholder Workgroup, proposed sampling locations were marked in the field using a SPS 852 handheld Trimble global positioning system (GPS) and magnetic survey spikes. Before sampling activities commenced, utility clearances were performed at each location by Underground Service Alert (Dig Alert) and a private utility locator.

### 2.2 Sample Collection

Surface soil samples were collected using a stainless steel trowel or shovel. Subsurface samples were collected using a Geoprobe 6600 Series direct-push technology unit or a hand auger. Soil samples were collected in accordance with the procedures detailed in the Final FSP for Soil Sampling (HGL, 2012a), and the FSP Addendum for Subarea 5C (HGL, 2012b).

Soil cores were logged and the boring logs are provided in Attachment 2. A total of 19 surface and subsurface soil samples were collected within Subarea 5C from March 5 to March 23, 2012, and on June 1, 2012. Nine surface and nine subsurface soil samples were collected from March 5 to March 23. On March 24 the area around Location 5C-00153 was designated a biological exclusion zone by the project biological monitor due to the presents of a nesting owl. Sampling activities in the area were halted; therefore the subsurface soil sample from Location 5C-00153 could not be collected. On June 1, 2012 the biological monitor cleared the area because the owls were no longer nesting. The subsurface sample was immediately collected from Location 5C-00153 and sent to the laboratory for analysis. A total of nine surface and 10 subsurface samples were collected from within Subarea 5C.

During the December 14, 2011, technical review meeting, recommendations and action items were discussed, including those on the topics of Likely Chemical Remediation Zones (LCRZ) and Likely Decontamination and Decommissioning Zone (LD&DZ). Building 4100 was designated as an LD&DZ and the area around Round 1 soil sample Location 141 (potential fill area) was designated as an LCRZ. 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 LCRZ. In accordance with USEPA's role under the Administrative Order on Consent (AOC) for Remedial Action (DTSC, 2010) 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. These follow-on efforts are not included in the current scope of work and will be accomplished using additional external funding.

## 2.3 Deviations from the Field Sampling Plan Addendum

There were no deviations from the FSP Addendum. All proposed locations and samples were successfully completed and collected.

## 2.4 Soil Boring Summary

Ten subsurface borings were completed, of which three borings were advanced to 10 feet below ground surface (bgs), five were terminated between 5 to 10 feet bgs, and two were completed at a depth less than 5 feet bgs. Boreholes were terminated a depth less than 10 feet bgs due to refusal. Refusal was encountered in one boring because artificial fill was encountered, and in six borings due to bedrock before the proposed depth was reached.

Soil samples were classified and described in accordance with the Final FSP for Soil Sampling (HGL, 2012a). The most common soil types observed were sand, silty sand, silt, and silty clay. Fill material was encountered in all or a portion of the eight borings. The fill material consisted of soils that exhibited a mottled texture and frequently contained pea gravel. Native soil was encountered below fill material in seven of the eight borings. Only two borings consisted solely of native soil. A summary of the boring log information is presented in Table A.1 and the boring logs are provided in Attachment 2.

## 3.0 ROUND 2 SOIL ANALYTICAL RESULTS

Soil samples were analyzed in accordance with the Final Quality Assurance Project Plan (QAPP) for Soil Sampling (HGL, 2012c). Six analytes were removed from the gamma spectrometry method after Round 1 sampling was complete and were not analyzed in Round 2 samples for the following reasons:

- silver (Ag)-108 is derived from Ag-108m,
- barium (Ba)-133, could not be resolved in the presence of naturally occurring radionuclides,
- Ba-137m is directly derived from Cs-137,
- tellurium (Te)-125m is derived from antimony (Sb)-125 (and is therefore duplicative),
- radon (Rn)-220, and Rn-222 were calculated from other radionuclides.

For a discussion of how the Round 2 analyte list was developed, see Section 2.2 of the Final FSP for Soil Sampling (HGL, 2012a).

Surface and subsurface soil sample Locations 5C-00149 through 5C-00153 were sampled for gamma spectrometry default analytical suites based on the cesium (Cs)-137 exceedance found at Location 56 (surface sample) during the Round 1 soil sampling event.

Surface soil samples collected from Locations 5C-00154 through 5C-00157 and subsurface soil samples collected from Locations 5C-00141 and 5C-00154 through 5C-00157 were sampled for plutonium (Pu) default analytical suites and Pu site-specific analytical suites based on the Pu-239/240 exceedance found in the surface soil sample collected at Location 141 (surface sample) during the Round 1 soil sampling event.

All samples were collected and analyzed in accordance with the rationale presented in Table 2.3 of the Final FSP for Soil Sampling (HGL, 2012a).

Round 2 soil sampling locations where determined based on RTL exceedances detected in Round 1 soil samples. The Round 2 samples were tested for those analytes that were detected above the RTL in Round 1 samples.

Radiological trigger levels are reference soil concentrations for the radionuclides of concern for the SSFL Area IV Radiological Study. They were designed for screening analytical results of site soil and sediment collected during Round 1 sampling to inform decisions for Round 2 sampling (also called step-out sampling). Individual Round 1 analytical results were compared to RTLs and if results exceed an RTL step-out sampling was conducted. The primary purpose of the RTLs were to guide the placement of Round 2 sampling locations and will not be used to screen Round 2 sample results.

The Round 2 analytical results are documented in this technical memorandum; however, the analytical results have not been screened using the RTLs. The Subarea 5C Round 2 analytical

results will be evaluated, along with Round 1 results, using Field Action Level (FAL) established specifically for the SSFL Area IV Radiological Study. The results of the evaluation will be presented in the Radiological Characterization of Soils in Area IV and NBZ report.

Figure 1 presents the locations of the soil samples collected during the Round 1 and Round 2 sampling events. A summary of the Round 2 analytical results is provided in Table A.2.

## 4.0 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

In addition to the environmental samples collected, quality control samples were collected as described in the QAPP (HGL, 2012c). The results of the quality control samples collected and their affect on data usability are described in the following subsections.

### 4.1 Field Duplicates

Field duplicate soil samples were collected at a frequency of 1 per 20 samples (5 percent). A total of two field duplicate samples were collected during the Round 2 sampling event. The field duplicate evaluation criterion includes an additional 1σ uncertainty factor of 10 percent to allow for heterogeneity of co-located, but non-homogenized, field samples.

The comparability of a field duplicate result to that of the original sample is assessed by evaluating the Z-score ($Z_{DUP}$). The Z-score is a statistical test that indicates how many standard deviations an observation is from the expected value. The Z-score is defined in the QAPP (HGL, 2012c), and the $Z_{DUP}$ is calculated as follows:

$$Z_{DUP} = \frac{|X_s - X_d|}{\sqrt{{u_s}^2 + {u_d}^2}}$$

where:

| | | |
|---|---|---|
| *Xs* | = | activity of the sample |
| *Xd* | = | activity of the duplicate |
| $u_s$ | = | combined standard (1σ) uncertainty of the sample |
| $u_d$ | = | combined standard (1σ) uncertainty of the duplicate |

Higher $Z_{DUP}$ scores indicate greater disparity between the sample and the duplicate results. A $Z_{DUP}$ score of 2.0, for example, indicates that the duplicate result differs from the sample result by twice the overall uncertainty of the two results. By extension, a $Z_{DUP}$ score of 1.96 (the warning level) indicates that the two results are statistically equivalent, at the 95 percent confidence interval. A $Z_{DUP}$ score of 2.58 (the exceedance level) indicates that the two results are statistically equivalent, at the 99 percent confidence interval.

A $Z_{DUP}$ evaluation is performed on each paired set of analytes for which parent and duplicate data are reported. This quality assurance/quality control assessment is performed on the validated laboratory results approved and accepted by the project, and recorded in the project database as of August 13, 2012. Subsequent modifications to the approved data or the project database may not be reflected in this assessment.

Round 2 field duplicate sample data includes 70 individual radionuclide results from 35 sample/duplicate paired results. Those results included several analytes which were subsequently removed from consideration, and thus were not evaluated. In addition, any individual radionuclide results that were rejected by data validation were removed from consideration. Finally, analytes that are simply inferred from previously reported results, such as yttrium-90, which is inferred from the reported strontium-90 results, are considered redundant and have also been removed from consideration.

The $Z_{DUP}$ evaluation of the remaining 29 qualified data pairs follows:

- 27 $Z_{DUP}$ evaluation results (93.1 percent) were within the expected 95 percent confidence interval for this evaluation, with $Z_{DUP}$ less than 1.96;
- 1 $Z_{DUP}$ evaluation result (3.4 percent) was between the 95 percent and 99 percent confidence interval with a $Z_{DUP}$ at or above 1.96, but below 2.58;
- 1 $Z_{DUP}$ evaluation result (3.4 percent) exceeded the 99 percent confidence interval, with a $Z_{DUP}$ value at or above 2.58.

The $Z_{DUP}$ statistical test predicts that, in a homogeneous sample/duplicate pairing, 4 percent of reported $Z_{DUP}$ scores (approximately one $Z_{DUP}$ evaluation result in this $Z_{DUP}$ set) will be in the "warning" range between 1.96 and 2.58. In addition, 1 percent (less than one $Z_{DUP}$ evaluation result in this $Z_{DUP}$ set) are expected to exceed a $Z_{DUP}$ score of 2.58. In an exceptionally small dataset such as this, the single exceedance is not considered to be statistically unexpected.

A review of the $Z_{DUP}$ "warnings" and "exceedances", and the associated laboratory data, has been conducted and the following observations are made regarding the collection and analysis of field duplicate samples:

- The single "exceedance", i.e. $Z_{DUP}$ score at or above 2.58, is related to the sample/duplicate pair 10252/10271, in which the Cs-137 $Z_{DUP}$ score is 2.69. While the $Z_{DUP}$ score may be consistent with previous observations of both additional heterogeneity in the co-located but non-homogenized field samples and the laboratory's small underestimate of the analytical uncertainty, the exceedance is not believed to be significant and the data is acceptable for its intended use.
- The single $Z_{DUP}$ score in the "warning" range, between 1.96 and 2.58, is within the expected frequency and does not appear to represent a data quality excursion.

A summary of the parent and associated duplicate sample results is provided Table A.3.

## 4.2 Equipment Rinsate and Source Water Blanks

Equipment rinsate blanks were collected at a frequency of one per day for each type of sampling equipment used per field team. Equipment rinsate blanks were collected in accordance with the FSP for Soil Sampling (HGL, 2012a) and the QAPP (HGL, 2012c). A total of seven rinsate samples and one source water sample were collected during the Round 2

sampling event. Each sample was tested for isotopic uranium, as a surrogate indicator of cross-contamination. Any results that were rejected for laboratory quality reasons would have been removed from consideration, as in the evaluation of field duplicate samples. In this dataset, however, no sample results were rejected.

This equipment rinsate assessment was performed on the validated laboratory results, approved and accepted by the project data manager, and recorded in the project database as of July 16, 2012. Subsequent modifications to the approved data or the project database may not be reflected in this assessment.

In all cases, the samples were analyzed by the laboratory as received and the Total activity is reported.

Round 2 rinsate and source water samples include 42 Total activity results, from which 21 data pairs were evaluated by Z-score duplicate comparison. The $Z_{DUP}$ scores are summarized below.

- 20 $Z_{DUP}$ evaluation results (95.2 percent) were within the expected 95 percent confidence interval for this evaluation, with $Z_{DUP}$ less than 1.96;
- 1 $Z_{DUP}$ evaluation result (4.8 percent) was between the 95 percent and 99 percent confidence interval with $Z_{DUP}$ at or above 1.96, but below 2.58;
- Zero $Z_{DUP}$ evaluation results (0.0 percent) exceeded the 99 percent confidence interval, with $Z_{DUP}$ values at or above 2.58.

As with the field duplicates, the $Z_{DUP}$ statistical test predicts that approximately 4 percent of reported $Z_{DUP}$ scores (approximately 1 $Z_{DUP}$ evaluation result in this $Z_{DUP}$ set) will be in the range between 1.96 and 2.58. The single result in the "warning" range is within the expected frequency.

The evaluation of equipment blank results indicates that the decontamination of the field sampling equipment is acceptable and that there is no evidence of sample cross-contamination from the sampling equipment that would adversely affect the quality or usability of the reported field sample data. A summary of the rinsate and source water blank analytical results are provided in Table A.4.

## 5.0 CONCLUSIONS

The Round 2 analytical results are documented in this technical memorandum; however, the analytical results have not been screened using the RTLs. Radiological trigger levels were reference soil concentrations designed to be used as a decision making tool to guide the placement of Round 2 step-out sampling locations. No additional step-out sampling will be conducted as part of the EPA's SSFL Area IV Study; therefore, there is no technical reason to compare the data to RTLs.

The Subarea 5C Round 1 and Round 2 analytical results will be evaluated using Field Action Levels (FAL) established specifically for the SSFL Area IV Radiological Study. The results of the evaluation will be presented Radiological Characterization of Soils in Area IV and NBZ report.

## 6.0 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., 2012a. Final Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California. March.

HydroGeoLogic, Inc., 2012b. Subarea 5C Round 2 Addendum to the Final Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California. March.

HydroGeoLogic, Inc., 2012c. Final Quality Assurance Project Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California. March.

## TABLE LIST



## FIGURE LIST



## LIST OF ATTACHMENTS

**FIGURE**

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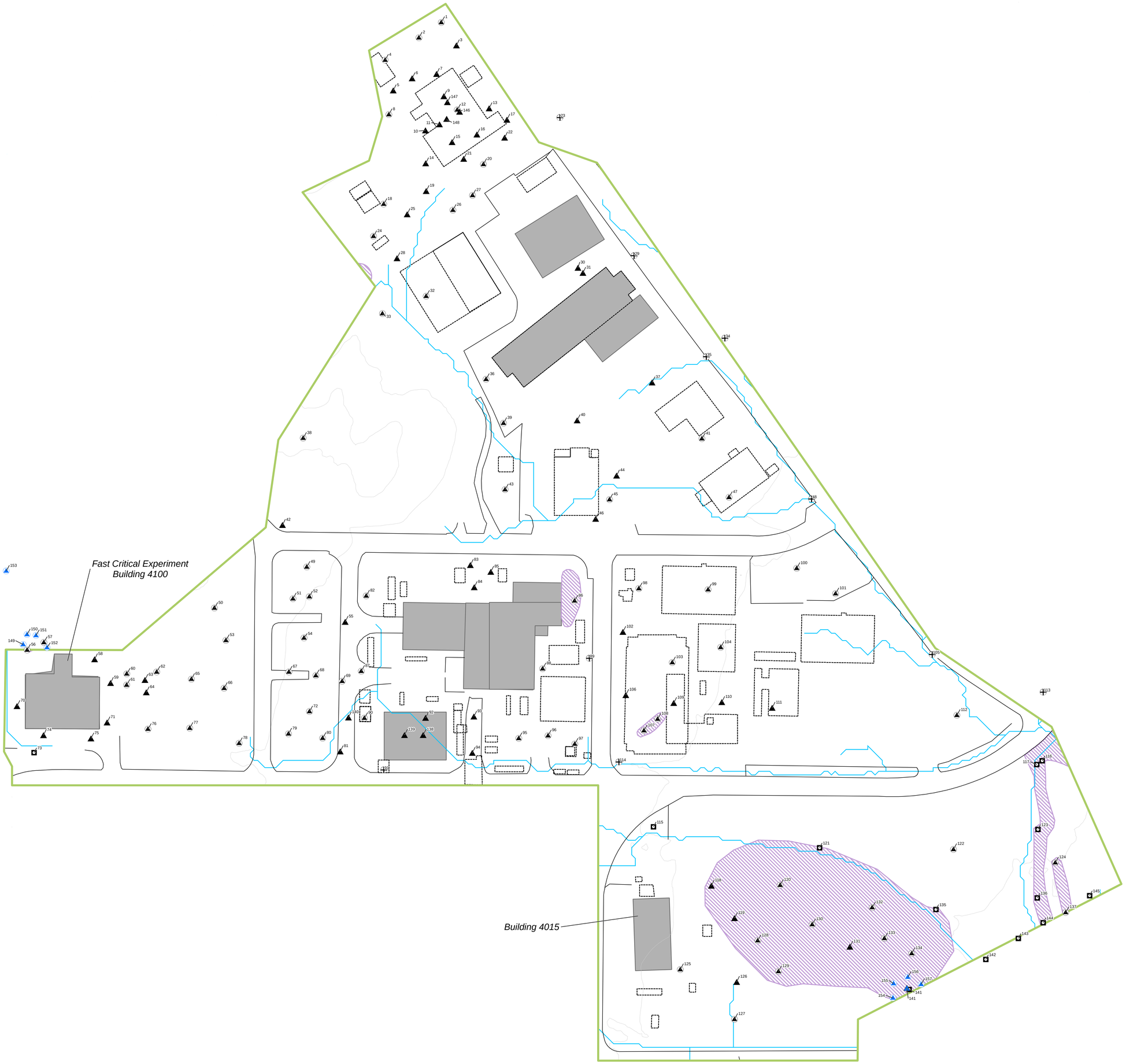
# Figure 1
# Subarea 5C Sample Locations
# Round 1 and Round 2
# Santa Susana Field Laboratory

**U.S. EPA Region 9**




Legend

**Soil Sample Locations**

- Round 1 - Drainage
- Round 1 - StormSewer
- Round 1 - Surface Subsurface
- Round 1 - Subsurface
- Round 2 - Surface Subsurface
- Round 2 - Subsurface

**Likely Remediation Zones**

- Chemical (as of 5/2012)
- Subareas

**Structures**

- Existing
- Removed

- Roads
- Approximate Drainage Pathways
- 20-foot elevation contours

N

0 50 100 200
Feet



HGL HydroGeoLogic, Inc

# ATTACHMENT 1

Tables

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## LIST OF ATTACHMENT TABLES

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## Table A.1
## Soil Sample and Boring Log Summary
## Subarea 5C, Round 2

| Location | Surface Collection Interval (ft bgs) | Subsurface Collection Interval (ft bgs) | Soil Description | Total Depth (ft bgs) | Refusal Depth (ft bgs) | Northing[1] | Easting[1] |
|---|---|---|---|---|---|---|---|
| 5C-00141 | NA | 1-5 | ML/CL/SM | 6.83 | 6.83 | 1,906,499.24 | 6,346,613.80 |
| 5C-00149 | 0-0.5 | 1-4.33 | SM/ML | 4.33 | 4.33 | 1,906,974.17 | 6,345,393.94 |
| 5C-00150 | 0.25-0.75 | 1-5 | GP/SM/CL/ML | 9 | 9 | 1,906,987.72 | 6,345,399.23 |
| 5C-00151 | 0-0.5 | 1-5 | SM/ML/CL/SP | 10 | NA | 1,906,986.48 | 6,345,411.66 |
| 5C-00152 | 0-0.5 | 1-5 | SM/ML/CL | 10 | NA | 1,906,969.93 | 6,345,426.81 |
| 5C-00153 | 0.0.5 | 1-4.9 | ML | 4.9 | 4.9 | 1,907,075.20 | 6,345,370.53 |
| 5C-00154 | 0-0.5 | 1-5 | ML/CL/SM/SP | 9.83 | 9.83 | 1,906,487.65 | 6,346,591.34 |
| 5C-00155 | 0-0.5 | 1-5 | ML/CL/SM/SP | 7 | 7 | 1,906,507.36 | 6,346,592.33 |
| 5C-00156 | 0-0.5 | 1-5 | ML/CL/SP | 6.5 | 6.5 | 1,906,516.13 | 6,346,611.94 |
| 5C-00157 | 0-0.5 | 1-5 | ML/CL | 10 | NA | 1,906,506.24 | 6,346,630.31 |

**Notes:**

[1]Northing and easting measured using NAD83 SPZ5 US Feet

bgs - below ground surface

CL - clay

ft - feet

GP - poorly graded gravel

ML - silt

NA - not applicable

SM - silty sand

SP - poorly graded sand

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00141 | 10270 | Np-237 | -0.0029 U | 0.0271 | 0.0064 | 1.00 - 5.00 |
| 5C-00141 | 10270 | Pu-236 | 0.0018 U | 0.0175 | 0.0046 | 1.00 - 5.00 |
| 5C-00141 | 10270 | Pu-238 | -0.0002 U | 0.0155 | 0.0038 | 1.00 - 5.00 |
| 5C-00141 | 10270 | Pu-239/240 | -0.0014 U | 0.0126 | 0.0027 | 1.00 - 5.00 |
| 5C-00141 | 10270 | Pu-241 | -0.791 U | 2.24 | 0.635 | 1.00 - 5.00 |
| 5C-00141 | 10270 | Pu-244 | 0.0017 U | 0.0085 | 0.0022 | 1.00 - 5.00 |
| 5C-00149 | 10252 | Ac-227 | 0.183 J | 0.242 | 0.0821 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Ac-228 | 1.01 | 0.0992 | 0.0562 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Ag-108m | 0.0069 R | 0.0163 | 0.0058 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Ba-133 | 0.009 R | 0.0235 | 0.0082 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Bi-212 | 0.689 J | 0.142 | 0.0782 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Bi-214 | 1.95 | 0.0317 | 0.094 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Cd-113m | -51.9 U | 156 | 54.8 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Cf-249 | 0.0007 R | 0.102 | 0.0441 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Co-60 | 0.0005 U | 0.0177 | 0.0053 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Cs-134 | 0.0395 JS | 0.0197 | 0.0112 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Cs-137 | 0.316 | 0.0175 | 0.0201 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Eu-152 | -0.0282 U | 0.0563 | 0.026 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Eu-154 | -0.002 U | 0.0991 | 0.034 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Eu-155 | 0.0597 JS | 0.0865 | 0.0295 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Ho-166m | 0.0164 JS | 0.0286 | 0.0089 | 0.00 - 0.50 |
| 5C-00149 | 10252 | K-40 | 16.2 | 0.147 | 0.891 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Na-22 | -0.0047 U | 0.0205 | 0.0074 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Nb-94 | 0.0243 Z | 0.0178 | 0.0075 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Np-236 | 0.0256 JS | 0.0468 | 0.0153 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Np-239 | 0.0276 U | 0.156 | 0.0459 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Pa-231 | 0.129 U | 0.985 | 0.298 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Pb-212 | 1.01 | 0.039 | 0.06 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Pb-214 | 2.23 | 0.0403 | 0.0993 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Sb-125 | 0.0187 U | 0.0535 | 0.0164 | 0.00 - 0.50 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00149 | 10252 | Sn-126 | -0.0049 U | 0.0181 | 0.0054 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Th-234 | 2.06 | 0.382 | 0.192 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Tl-208 | 0.315 | 0.0176 | 0.0198 | 0.00 - 0.50 |
| 5C-00149 | 10252 | Tm-171 | -19.4 UJ | 19 | 8.1 | 0.00 - 0.50 |
| 5C-00149 | 10253 | Ac-227 | 0.0057 U | 0.21 | 0.0637 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Ac-228 | 1.45 | 0.103 | 0.0713 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Ag-108m | -0.0044 R | 0.0165 | 0.0059 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Ba-133 | 0.0105 R | 0.0212 | 0.0077 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Bi-212 | 0.99 | 0.138 | 0.0812 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Bi-214 | 1.21 | 0.0322 | 0.0559 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Cd-113m | -189 R | 133 | 61.7 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Cf-249 | 0.048 R | 0.09 | 0.0383 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Co-60 | 0.0005 U | 0.0191 | 0.0057 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Cs-134 | -0.0007 U | 0.0154 | 0.0053 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Cs-137 | 0.0732 | 0.0166 | 0.0099 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Eu-152 | -0.005 U | 0.0504 | 0.0179 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Eu-154 | -0.175 R | 0.0968 | 0.0522 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Eu-155 | 0.118 JS | 0.07 | 0.0308 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Ho-166m | 0.0067 U | 0.0291 | 0.0088 | 1.00 - 4.33 |
| 5C-00149 | 10253 | K-40 | 26 | 0.14 | 1.55 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Na-22 | 0.005 U | 0.0221 | 0.0076 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Nb-94 | 0.0001 U | 0.0165 | 0.0049 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Np-236 | -0.0087 U | 0.0388 | 0.012 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Np-239 | 0.0477 U | 0.143 | 0.0443 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Pa-231 | 0.258 U | 0.868 | 0.268 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Pb-212 | 1.58 | 0.0348 | 0.0966 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Pb-214 | 1.35 | 0.0364 | 0.0656 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Sb-125 | -0.0016 U | 0.0477 | 0.014 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Sn-126 | -0.0034 U | 0.0184 | 0.0056 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Th-234 | 1.76 | 0.299 | 0.159 | 1.00 - 4.33 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00149 | 10253 | Tl-208 | 0.469 | 0.017 | 0.0272 | 1.00 - 4.33 |
| 5C-00149 | 10253 | Tm-171 | 0.347 R | 12.2 | 4.25 | 1.00 - 4.33 |
| 5C-00150 | 10254 | Ac-227 | -0.0562 U | 0.173 | 0.0556 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Ac-228 | 0.924 | 0.107 | 0.0469 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Ag-108m | 0.0077 R | 0.0166 | 0.0058 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Ba-133 | -0.0031 R | 0.0196 | 0.0066 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Bi-212 | 0.695 J | 0.139 | 0.0898 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Bi-214 | 1.11 | 0.0308 | 0.0533 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Cd-113m | 29.9 U | 119 | 36.9 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Cf-249 | 0.0306 R | 0.0803 | 0.0313 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Co-60 | -0.0019 U | 0.0201 | 0.0058 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Cs-134 | -0.0044 U | 0.0149 | 0.0054 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Cs-137 | 0.143 | 0.0185 | 0.0114 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Eu-152 | -0.0151 U | 0.0457 | 0.014 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Eu-154 | -0.0059 U | 0.113 | 0.0335 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Eu-155 | 0.0896 JS | 0.0485 | 0.0222 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Ho-166m | 0.0056 U | 0.029 | 0.0083 | 0.25 - 0.75 |
| 5C-00150 | 10254 | K-40 | 20.5 | 0.152 | 1.13 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Na-22 | -0.0016 U | 0.0237 | 0.0068 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Nb-94 | 0.0057 U | 0.0167 | 0.0049 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Np-236 | -0.0132 U | 0.0279 | 0.0089 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Np-239 | -0.0293 U | 0.111 | 0.0349 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Pa-231 | 0.22 U | 0.757 | 0.237 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Pb-212 | 0.893 | 0.0283 | 0.0512 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Pb-214 | 1.11 | 0.0334 | 0.0515 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Sb-125 | -0.0183 U | 0.0449 | 0.0142 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Sn-126 | 0.0035 U | 0.0194 | 0.0056 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Th-234 | 1.18 | 0.209 | 0.111 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Tl-208 | 0.292 | 0.0172 | 0.0189 | 0.25 - 0.75 |
| 5C-00150 | 10254 | Tm-171 | 0.818 U | 6.17 | 1.97 | 0.25 - 0.75 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00150 | 10255 | Ac-227 | -0.0899 U | 0.179 | 0.0584 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Ac-228 | 1.21 | 0.0919 | 0.059 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Ag-108m | -0.0038 R | 0.0146 | 0.0051 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Ba-133 | 0.0055 R | 0.018 | 0.0062 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Bi-212 | 0.793 | 0.122 | 0.0688 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Bi-214 | 0.911 | 0.0286 | 0.0434 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Cd-113m | 13.3 U | 123 | 38.1 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Cf-249 | 0.0497 R | 0.0802 | 0.0386 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Co-60 | 0.0014 U | 0.0168 | 0.0048 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Cs-134 | -0.0068 U | 0.0133 | 0.0049 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Cs-137 | -0.0113 U | 0.0168 | 0.0058 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Eu-152 | -0.0087 U | 0.0448 | 0.0157 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Eu-154 | 0.0118 U | 0.0919 | 0.0314 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Eu-155 | 0.111 JS | 0.0625 | 0.0308 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Ho-166m | 0.0029 U | 0.0263 | 0.0077 | 1.00 - 5.00 |
| 5C-00150 | 10255 | K-40 | 20.4 | 0.118 | 1.17 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Na-22 | -0.0017 U | 0.0188 | 0.0055 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Nb-94 | 0.0029 U | 0.0149 | 0.0044 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Np-236 | -0.0034 U | 0.0352 | 0.0111 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Np-239 | 0.0185 U | 0.125 | 0.0372 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Pa-231 | -0.214 U | 0.757 | 0.243 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Pb-212 | 1.33 | 0.0296 | 0.0844 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Pb-214 | 0.987 | 0.0322 | 0.0502 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Sb-125 | 0.0095 U | 0.042 | 0.0128 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Sn-126 | -0.0008 U | 0.0167 | 0.0049 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Th-234 | 1.5 | 0.271 | 0.149 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Tl-208 | 0.426 | 0.0154 | 0.0246 | 1.00 - 5.00 |
| 5C-00150 | 10255 | Tm-171 | -7.27 U | 11 | 4.26 | 1.00 - 5.00 |
| 5C-00151 | 10256 | Ac-227 | -0.11 U | 0.216 | 0.0705 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Ac-228 | 1.15 | 0.102 | 0.0592 | 0.00 - 0.50 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00151 | 10256 | Ag-108m | 0.0041 R | 0.0166 | 0.0056 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Ba-133 | -0.0022 R | 0.0223 | 0.0078 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Bi-212 | 0.735 J | 0.144 | 0.0876 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Bi-214 | 0.979 | 0.0342 | 0.0477 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Cd-113m | -21.5 U | 144 | 43.3 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Cf-249 | -0.0213 R | 0.0948 | 0.0464 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Co-60 | 0.0073 U | 0.0207 | 0.0061 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Cs-134 | 0.0081 JS | 0.0167 | 0.0058 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Cs-137 | 0.0583 J | 0.0217 | 0.0102 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Eu-152 | 0.0048 U | 0.0534 | 0.0174 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Eu-154 | -0.0185 U | 0.114 | 0.034 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Eu-155 | 0.0671 JS | 0.0779 | 0.0283 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Ho-166m | -0.006 U | 0.0288 | 0.0088 | 0.00 - 0.50 |
| 5C-00151 | 10256 | K-40 | 21.6 | 0.142 | 1.34 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Na-22 | -0.0076 U | 0.0221 | 0.0069 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Nb-94 | 0.0002 U | 0.0172 | 0.0051 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Np-236 | -0.0258 U | 0.0408 | 0.0142 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Np-239 | -0.0588 U | 0.142 | 0.0447 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Pa-231 | -0.38 U | 0.917 | 0.302 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Pb-212 | 1.28 | 0.0357 | 0.0829 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Pb-214 | 1.05 | 0.0378 | 0.0523 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Sb-125 | 0.0267 JS | 0.0505 | 0.0162 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Sn-126 | -0.0025 U | 0.0188 | 0.0057 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Th-234 | 1.22 J | 0.333 | 0.17 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Tl-208 | 0.376 | 0.0176 | 0.023 | 0.00 - 0.50 |
| 5C-00151 | 10256 | Tm-171 | -2.35 U | 17.3 | 5.88 | 0.00 - 0.50 |
| 5C-00151 | 10257 | Ac-227 | -0.0335 U | 0.163 | 0.0509 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Ac-228 | 1.09 | 0.0807 | 0.0534 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Ag-108m | 0.0119 R | 0.0137 | 0.0052 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Ba-133 | -0.001 R | 0.0171 | 0.0056 | 1.00 - 5.00 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00151 | 10257 | Bi-212 | 0.767 | 0.114 | 0.068 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Bi-214 | 0.834 | 0.0262 | 0.0403 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Cd-113m | 9.62 U | 109 | 33.3 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Cf-249 | 0.0897 R | 0.0715 | 0.036 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Co-60 | 0.0055 U | 0.0169 | 0.0051 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Cs-134 | 0.0008 U | 0.0127 | 0.0043 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Cs-137 | -0.0052 U | 0.0143 | 0.0052 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Eu-152 | -0.0094 U | 0.0404 | 0.0124 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Eu-154 | -0.0129 U | 0.0838 | 0.0289 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Eu-155 | 0.0754 JS | 0.0557 | 0.0253 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Ho-166m | -0.0032 U | 0.0238 | 0.0073 | 1.00 - 5.00 |
| 5C-00151 | 10257 | K-40 | 19.9 | 0.113 | 1.13 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Na-22 | -0.0076 U | 0.0183 | 0.0059 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Nb-94 | 0.0068 JS | 0.014 | 0.0044 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Np-236 | -0.0084 U | 0.0315 | 0.0095 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Np-239 | -0.0225 U | 0.113 | 0.0349 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Pa-231 | -0.598 UJ | 0.655 | 0.253 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Pb-212 | 1.26 | 0.0278 | 0.0754 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Pb-214 | 0.919 | 0.0292 | 0.0453 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Sb-125 | 0.0113 U | 0.0388 | 0.0115 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Sn-126 | -0.0104 U | 0.0151 | 0.0054 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Th-234 | 1.44 | 0.251 | 0.139 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Tl-208 | 0.394 | 0.014 | 0.0229 | 1.00 - 5.00 |
| 5C-00151 | 10257 | Tm-171 | -0.81 U | 11.2 | 3.89 | 1.00 - 5.00 |
| 5C-00152 | 10258 | Ac-227 | 0.0374 U | 0.163 | 0.0482 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Ac-228 | 1.09 | 0.079 | 0.0559 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Ag-108m | 0.0043 R | 0.0127 | 0.0044 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Ba-133 | -0.0026 R | 0.0167 | 0.0057 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Bi-212 | 0.728 | 0.11 | 0.066 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Bi-214 | 0.946 | 0.0256 | 0.0448 | 0.00 - 0.50 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00152 | 10258 | Cd-113m | -23.9 U | 109 | 32.6 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Cf-249 | 0.0465 R | 0.0736 | 0.0304 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Co-60 | -0.0042 U | 0.0145 | 0.0043 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Cs-134 | 0.0005 U | 0.0127 | 0.0044 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Cs-137 | 0.0421 | 0.0148 | 0.0068 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Eu-152 | -0.0123 U | 0.0399 | 0.0127 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Eu-154 | -0.0544 U | 0.0791 | 0.0278 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Eu-155 | 0.0105 U | 0.0568 | 0.0174 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Ho-166m | -0.0074 U | 0.022 | 0.0067 | 0.00 - 0.50 |
| 5C-00152 | 10258 | K-40 | 20.6 | 0.112 | 1.12 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Na-22 | 0.007 U | 0.0174 | 0.0053 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Nb-94 | 0.0017 U | 0.0132 | 0.0038 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Np-236 | -0.0113 U | 0.0304 | 0.0097 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Np-239 | -0.0264 U | 0.109 | 0.0326 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Pa-231 | -0.353 U | 0.664 | 0.222 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Pb-212 | 1.28 | 0.0281 | 0.069 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Pb-214 | 1.06 | 0.0289 | 0.0483 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Sb-125 | -0.0005 U | 0.0373 | 0.0111 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Sn-126 | 0.0042 U | 0.0147 | 0.0043 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Th-234 | 1.28 | 0.234 | 0.122 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Tl-208 | 0.396 | 0.0137 | 0.0228 | 0.00 - 0.50 |
| 5C-00152 | 10258 | Tm-171 | 1.18 R | 9.4 | 3.15 | 0.00 - 0.50 |
| 5C-00152 | 10259 | Ac-227 | 0.0285 U | 0.202 | 0.0618 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Ac-228 | 1.17 | 0.0859 | 0.0627 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Ag-108m | 0.0008 R | 0.0149 | 0.0051 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Ba-133 | 0.0018 R | 0.0203 | 0.0068 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Bi-212 | 0.875 | 0.123 | 0.0781 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Bi-214 | 0.981 | 0.0299 | 0.0467 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Cd-113m | -8.64 U | 133 | 46.7 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Cf-249 | 0.0855 R | 0.0849 | 0.0443 | 1.00 - 5.00 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00152 | 10259 | Co-60 | -0.0033 U | 0.0162 | 0.0049 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Cs-134 | 0.0044 U | 0.0144 | 0.005 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Cs-137 | 0.0144 J | 0.0176 | 0.0067 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Eu-152 | -0.0345 U | 0.0467 | 0.019 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Eu-154 | 0.0014 U | 0.0931 | 0.0272 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Eu-155 | 0.0645 JS | 0.0767 | 0.0271 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Ho-166m | -0.0124 U | 0.0246 | 0.0082 | 1.00 - 5.00 |
| 5C-00152 | 10259 | K-40 | 21.4 | 0.137 | 1.2 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Na-22 | -0.0128 U | 0.0179 | 0.0072 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Nb-94 | -0.0013 U | 0.0148 | 0.0045 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Np-236 | -0.011 U | 0.0399 | 0.0122 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Np-239 | -0.0253 U | 0.135 | 0.0417 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Pa-231 | -0.356 U | 0.837 | 0.273 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Pb-212 | 1.33 | 0.0344 | 0.0797 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Pb-214 | 1.17 | 0.0344 | 0.0552 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Sb-125 | 0.0036 U | 0.0428 | 0.0125 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Sn-126 | -0.0041 U | 0.0164 | 0.0051 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Th-234 | 1.63 J | 0.329 | 0.185 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Tl-208 | 0.411 | 0.0159 | 0.0244 | 1.00 - 5.00 |
| 5C-00152 | 10259 | Tm-171 | 2.19 R | 15.6 | 5.16 | 1.00 - 5.00 |
| 5C-00153 | 10260 | Ac-227 | 0.0706 U | 0.181 | 0.0567 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Ac-228 | 0.999 | 0.0977 | 0.0506 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Ag-108m | 0.0005 R | 0.0156 | 0.0053 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Ba-133 | 0.0093 R | 0.0195 | 0.0067 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Bi-212 | 0.711 J | 0.2 | 0.184 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Bi-214 | 0.831 | 0.0326 | 0.0425 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Cd-113m | -27.2 U | 118 | 39.8 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Cf-249 | 0.0097 R | 0.0804 | 0.0395 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Co-60 | -0.0066 U | 0.0171 | 0.0054 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Cs-134 | 0.0125 JS | 0.0162 | 0.006 | 0.00 - 0.50 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00153 | 10260 | Cs-137 | 0.0737 J | 0.0176 | 0.0134 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Eu-152 | 0.0003 U | 0.045 | 0.0171 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Eu-154 | -0.0038 U | 0.106 | 0.031 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Eu-155 | 0.0418 JS | 0.0571 | 0.0193 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Ho-166m | -0.0009 U | 0.0276 | 0.0083 | 0.00 - 0.50 |
| 5C-00153 | 10260 | K-40 | 21.4 | 0.132 | 1.15 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Na-22 | 0.0031 U | 0.0239 | 0.007 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Nb-94 | -0.0022 U | 0.0159 | 0.0048 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Np-236 | -0.0256 UJ | 0.0305 | 0.011 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Np-239 | -0.0245 U | 0.116 | 0.0357 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Pa-231 | -0.116 U | 0.753 | 0.233 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Pb-212 | 0.98 | 0.0289 | 0.0554 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Pb-214 | 0.853 | 0.0329 | 0.0424 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Sb-125 | -0.005 U | 0.0423 | 0.0125 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Sn-126 | -0.011 U | 0.0168 | 0.0059 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Th-234 | 1.27 | 0.228 | 0.124 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Tl-208 | 0.353 | 0.0161 | 0.0221 | 0.00 - 0.50 |
| 5C-00153 | 10260 | Tm-171 | 1.17 R | 6.9 | 2.45 | 0.00 - 0.50 |
| 5C-00153 | 10261 | Ac-227 | -0.141 U | 0.199 | 0.0714 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Ac-228 | 1.22 | 0.103 | 0.0594 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Ag-108m | 0.0014 R | 0.0154 | 0.0052 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Ba-133 | 0.0048 R | 0.0211 | 0.0072 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Bi-212 | 0.759 | 0.131 | 0.0759 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Bi-214 | 0.789 | 0.0301 | 0.0391 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Cd-113m | -45.6 U | 137 | 44 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Cf-249 | 0.0399 R | 0.0902 | 0.0454 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Co-60 | -0.0106 U | 0.0177 | 0.006 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Cs-134 | 0.0026 U | 0.015 | 0.005 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Cs-137 | 0.0039 U | 0.0181 | 0.0053 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Eu-152 | 0.0167 U | 0.0499 | 0.0181 | 1.00 - 4.90 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00153 | 10261 | Eu-154 | -0.0449 U | 0.106 | 0.0344 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Eu-155 | 0.0894 SK | 0.0772 | 0.0264 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Ho-166m | -0.0051 U | 0.0278 | 0.0083 | 1.00 - 4.90 |
| 5C-00153 | 10261 | K-40 | 19.2 | 0.13 | 1.2 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Na-22 | -0.0026 U | 0.0217 | 0.0064 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Nb-94 | 0.0043 U | 0.0161 | 0.0048 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Np-236 | -0.0213 U | 0.0419 | 0.014 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Np-239 | 0.0373 U | 0.141 | 0.0437 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Pa-231 | 0.441 J | 0.861 | 0.282 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Pb-212 | 1.39 | 0.0341 | 0.0923 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Pb-214 | 0.956 | 0.0335 | 0.0495 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Sb-125 | -0.0116 U | 0.0456 | 0.014 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Sn-126 | -0.0014 U | 0.018 | 0.0053 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Th-234 | 1.69 | 0.347 | 0.184 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Tl-208 | 0.402 | 0.0165 | 0.0231 | 1.00 - 4.90 |
| 5C-00153 | 10261 | Tm-171 | -16 U J | 19.3 | 7.58 | 1.00 - 4.90 |
| 5C-00154 | 10262 | Np-237 | -0.0073 U | 0.0286 | 0.0058 | 0.00 - 0.50 |
| 5C-00154 | 10262 | Pu-236 | -0.0055 UJ | 0.0255 | 0.006 | 0.00 - 0.50 |
| 5C-00154 | 10262 | Pu-238 | 0.0029 UJ | 0.0139 | 0.0037 | 0.00 - 0.50 |
| 5C-00154 | 10262 | Pu-239/240 | 0.0023 UJ | 0.0162 | 0.0042 | 0.00 - 0.50 |
| 5C-00154 | 10262 | Pu-241 | -0.625 UJ | 3.26 | 0.937 | 0.00 - 0.50 |
| 5C-00154 | 10262 | Pu-244 | 0.0032 J | 0.0088 | 0.0026 | 0.00 - 0.50 |
| 5C-00154 | 10263 | Np-237 | -0.0023 U | 0.0334 | 0.0084 | 1.00 - 5.00 |
| 5C-00154 | 10263 | Pu-236 | -0.0037 UJ | 0.0437 | 0.0118 | 1.00 - 5.00 |
| 5C-00154 | 10263 | Pu-238 | -0.0007 UJ | 0.0204 | 0.0049 | 1.00 - 5.00 |
| 5C-00154 | 10263 | Pu-239/240 | 0.0013 UJ | 0.0135 | 0.0032 | 1.00 - 5.00 |
| 5C-00154 | 10263 | Pu-241 | -1.06 UJ | 3.02 | 0.855 | 1.00 - 5.00 |
| 5C-00154 | 10263 | Pu-244 | -0.0017 UJ | 0.0135 | 0.0024 | 1.00 - 5.00 |
| 5C-00155 | 10264 | Np-237 | -0.0017 U | 0.0278 | 0.0067 | 0.00 - 0.50 |
| 5C-00155 | 10264 | Pu-236 | -0.0064 U | 0.0272 | 0.007 | 0.00 - 0.50 |

**Table A.2**
**Analytical Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00155 | 10264 | Pu-238 | -0.0037 U | 0.0157 | 0.0034 | 0.00 - 0.50 |
| 5C-00155 | 10264 | Pu-239/240 | 0.0077 | 0.008 | 0.0033 | 0.00 - 0.50 |
| 5C-00155 | 10264 | Pu-241 | 0.44 U | 2.4 | 0.712 | 0.00 - 0.50 |
| 5C-00155 | 10264 | Pu-244 | 0.0077 | 0.008 | 0.0033 | 0.00 - 0.50 |
| 5C-00155 | 10265 | Np-237 | 0.0053 U | 0.0556 | 0.0156 | 1.00 - 5.00 |
| 5C-00155 | 10265 | Pu-236 | -0.0017 UJ | 0.0153 | 0.0032 | 1.00 - 5.00 |
| 5C-00155 | 10265 | Pu-238 | 0.0059 | 0.0102 | 0.0035 | 1.00 - 5.00 |
| 5C-00155 | 10265 | Pu-239/240 | 0.0037 UJ | 0.0117 | 0.0033 | 1.00 - 5.00 |
| 5C-00155 | 10265 | Pu-241 | -0.94 UJ | 3.25 | 0.925 | 1.00 - 5.00 |
| 5C-00155 | 10265 | Pu-244 | 0.0065 | 0.0035 | 0.0029 | 1.00 - 5.00 |
| 5C-00156 | 10266 | Np-237 | -0.0139 U | 0.0345 | 0.007 | 0.00 - 0.50 |
| 5C-00156 | 10266 | Pu-236 | -0.0019 U | 0.014 | 0.0031 | 0.00 - 0.50 |
| 5C-00156 | 10266 | Pu-238 | 0.0059 | 0.0084 | 0.003 | 0.00 - 0.50 |
| 5C-00156 | 10266 | Pu-239/240 | -0.0002 U | 0.0096 | 0.002 | 0.00 - 0.50 |
| 5C-00156 | 10266 | Pu-241 | 0.116 U | 2.75 | 0.805 | 0.00 - 0.50 |
| 5C-00156 | 10266 | Pu-244 | 0.0083 J | 0.0096 | 0.0036 | 0.00 - 0.50 |
| 5C-00156 | 10267 | Np-237 | -0.0042 U | 0.0175 | 0.0031 | 1.00 - 5.00 |
| 5C-00156 | 10267 | Pu-236 | 0.0002 U | 0.0127 | 0.0031 | 1.00 - 5.00 |
| 5C-00156 | 10267 | Pu-238 | 0.0014 U | 0.0105 | 0.0027 | 1.00 - 5.00 |
| 5C-00156 | 10267 | Pu-239/240 | -0.0002 U | 0.0087 | 0.0018 | 1.00 - 5.00 |
| 5C-00156 | 10267 | Pu-241 | -0.894 U | 2.41 | 0.68 | 1.00 - 5.00 |
| 5C-00156 | 10267 | Pu-244 | 0.0048 | 0.0026 | 0.0022 | 1.00 - 5.00 |
| 5C-00157 | 10268 | Np-237 | -0.0157 U | 0.0381 | 0.0081 | 0.00 - 0.50 |
| 5C-00157 | 10268 | Pu-236 | -0.0015 U | 0.0133 | 0.0028 | 0.00 - 0.50 |
| 5C-00157 | 10268 | Pu-238 | 0.0113 | 0.014 | 0.0049 | 0.00 - 0.50 |
| 5C-00157 | 10268 | Pu-239/240 | 0.006 | 0.0072 | 0.0029 | 0.00 - 0.50 |
| 5C-00157 | 10268 | Pu-241 | -0.459 U | 2.57 | 0.74 | 0.00 - 0.50 |
| 5C-00157 | 10268 | Pu-244 | 0.0079 | 0.0031 | 0.003 | 0.00 - 0.50 |
| 5C-00157 | 10269 | Np-237 | -0.0067 U | 0.0316 | 0.0071 | 1.00 - 5.00 |
| 5C-00157 | 10269 | Pu-236 | -0.0024 U | 0.0145 | 0.003 | 1.00 - 5.00 |

# Table A.2
# Analytical Results Summary
# Subarea 5C, Round 2

| Sample Location | Sample ID | Analyte Name | Activity | MDC | TPU | Sample Depth (feet bgs) |
|---|---|---|---|---|---|---|
| 5C-00157 | 10269 | Pu-238 | 0.0099 | 0.0091 | 0.0039 | 1.00 - 5.00 |
| 5C-00157 | 10269 | Pu-239/240 | 0.001 U | 0.0105 | 0.0025 | 1.00 - 5.00 |
| 5C-00157 | 10269 | Pu-241 | -1.32 U | 2.72 | 0.761 | 1.00 - 5.00 |
| 5C-00157 | 10269 | Pu-244 | 0.0046 | 0.0031 | 0.0023 | 1.00 - 5.00 |

**Notes:**

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

Reporting units in picocuries per gram.

-- Indicates an RTL has not been developed for the analyte.

bgs - below ground surface

ID - identification

MDC - minimum detectable concentration

RTL - radiological trigger level

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

K - Analyte present. Reported value may be biased high. Actual value is expected to be lower.

R - The result is rejected due to serious deficiences in the ability to analyze the sample and meet the Quality Control criteria.

S - Analyte result is subject to spectral interference. Unless otherwise qualified, the data is believed to be consistent with the background study results and may be used for its intended purpose.

U - Not considered detected. The associated number is the reported concentration.

UJ - Not considered detected. The associated number is the reported concentration, which may be inaccurate.

Z - The initial laboratory result was reported above its respective RTL (or Lookup Table value). The gamma spectrometry data has been inspected to determine whether the exceeding analyte is present at a quantity greater than the RTL. In the analyst's judgment, the result is unsupported by the analytical data and is therefore not considered an RTL exceedance.

**Table A.3**
**Parent and Field Duplicate Sample Results Summary**
**Subarea 5C, Round 2**

| Sample Location | Parent Sample | | | | | Field Duplicate Sample | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sample ID | Analyte Name | Activity | MDC | TPU | Sample ID | Analyte Name | Activity | MDC | TPU |
| 5C-00149 | 10252 | Ac-227 | 0.183 J | 0.242 | 0.0821 | 10271 | Ac-227 | 0.0228 U | 0.245 | 0.0725 |
| 5C-00149 | 10252 | Ac-228 | 1.01 | 0.0992 | 0.0562 | 10271 | Ac-228 | 1.04 | 0.104 | 0.0554 |
| 5C-00149 | 10252 | Bi-212 | 0.689 J | 0.142 | 0.0782 | 10271 | Bi-212 | 0.669 J | 0.148 | 0.0743 |
| 5C-00149 | 10252 | Bi-214 | 1.95 | 0.0317 | 0.094 | 10271 | Bi-214 | 1.95 | 0.0371 | 0.0852 |
| 5C-00149 | 10252 | Cd-113m | -51.9 U | 156 | 54.8 | 10271 | Cd-113m | -14.2 U | 160 | 51.4 |
| 5C-00149 | 10252 | Co-60 | 0.000457 U | 0.0177 | 0.00526 | 10271 | Co-60 | 0.00418 U | 0.02 | 0.00578 |
| 5C-00149 | 10252 | Cs-134 | 0.0395 JS | 0.0197 | 0.0112 | 10271 | Cs-134 | 0.0118 JS | 0.0179 | 0.00639 |
| 5C-00149 | 10252 | Cs-137 | 0.316 | 0.0175 | 0.0201 | 10271 | Cs-137 | 0.409 | 0.0187 | 0.0241 |
| 5C-00149 | 10252 | Eu-152 | -0.0282 U | 0.0563 | 0.026 | 10271 | Eu-152 | -0.0097 U | 0.0586 | 0.0193 |
| 5C-00149 | 10252 | Eu-154 | -0.00195 U | 0.0991 | 0.034 | 10271 | Eu-154 | -0.0934 UJ | 0.108 | 0.041 |
| 5C-00149 | 10252 | Eu-155 | 0.0597 JS | 0.0865 | 0.0295 | 10271 | Eu-155 | 0.0221 U | 0.0847 | 0.0263 |
| 5C-00149 | 10252 | Ho-166m | 0.0164 JS | 0.0286 | 0.00894 | 10271 | Ho-166m | -0.0176 U | 0.0288 | 0.00971 |
| 5C-00149 | 10252 | K-40 | 16.2 | 0.147 | 0.891 | 10271 | K-40 | 18.8 | 0.174 | 1.11 |
| 5C-00149 | 10252 | Na-22 | -0.0047 U | 0.0205 | 0.00737 | 10271 | Na-22 | -0.0041 U | 0.0224 | 0.00778 |
| 5C-00149 | 10252 | Nb-94 | 0.0243 Z | 0.0178 | 0.00752 | 10271 | Nb-94 | 0.0104 JS | 0.0176 | 0.00557 |
| 5C-00149 | 10252 | Np-236 | 0.0256 JS | 0.0468 | 0.0153 | 10271 | Np-236 | -0.0143 U | 0.0458 | 0.0146 |
| 5C-00149 | 10252 | Np-239 | 0.0276 U | 0.156 | 0.0459 | 10271 | Np-239 | 0.00984 U | 0.161 | 0.0474 |
| 5C-00149 | 10252 | Pa-231 | 0.129 U | 0.985 | 0.298 | 10271 | Pa-231 | 0.03 U | 1.03 | 0.305 |
| 5C-00149 | 10252 | Pb-212 | 1.01 | 0.039 | 0.06 | 10271 | Pb-212 | 1.15 | 0.0413 | 0.0777 |
| 5C-00149 | 10252 | Pb-214 | 2.23 | 0.0403 | 0.0993 | 10271 | Pb-214 | 2.23 | 0.0422 | 0.106 |
| 5C-00149 | 10252 | Sb-125 | 0.0187 U | 0.0535 | 0.0164 | 10271 | Sb-125 | 0.0039 U | 0.0538 | 0.0162 |
| 5C-00149 | 10252 | Sn-126 | -0.00492 U | 0.0181 | 0.00544 | 10271 | Sn-126 | 0.00377 U | 0.0185 | 0.00541 |
| 5C-00149 | 10252 | Tl-208 | 0.315 | 0.0176 | 0.0198 | 10271 | Tl-208 | 0.34 | 0.0193 | 0.0213 |
| 5C-00157 | 10268 | Np-237 | -0.0157 U | 0.0381 | 0.00812 | 10272 | Np-237 | 0.0031 U | 0.0157 | 0.00399 |

## Table A.3
## Parent and Field Duplicate Sample Results Summary
## Subarea 5C, Round 2

| Sample Location | Parent Sample | | | | | Field Duplicate Sample | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sample ID | Analyte Name | Activity | MDC | TPU | Sample ID | Analyte Name | Activity | MDC | TPU |
| 5C-00157 | 10268 | Pu-236 | -0.00151 U | 0.0133 | 0.00282 | 10272 | Pu-236 | -0.00303 UJ | 0.0239 | 0.00569 |
| 5C-00157 | 10268 | Pu-238 | 0.0113 | 0.014 | 0.00492 | 10272 | Pu-238 | 0.00139 UJ | 0.0179 | 0.00448 |
| 5C-00157 | 10268 | Pu-239/240 | 0.00598 | 0.00721 | 0.00291 | 10272 | Pu-239/240 | 0.00329 | 0.00919 | 0.00271 |
| 5C-00157 | 10268 | Pu-241 | -0.459 U | 2.57 | 0.74 | 10272 | Pu-241 | -0.723 UJ | 3.25 | 0.931 |
| 5C-00157 | 10268 | Pu-244 | 0.00792 | 0.00307 | 0.00302 | 10272 | Pu-244 | 0.00121 UJ | 0.0131 | 0.00308 |

**Notes:**

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

Reporting units in picocuries per gram.

ID - identification

MDC - minimum detectable concentration

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

S -Analyte result is subject to spectral interference. Unless otherwise qualified the data may be used for its intended purpose (see note below), provided that on-site analyses use the same gamma spectrometry library and follow the same analytical protocols.

U - Not considered detected. The associated number is the reported concentration.

UJ - Not considered detected. The associated number is the reported concentration, which may be inaccurate.

Z - The initial lab result was reported above its respective Radiological Trigger Level (RTL) (or Look Up Table value). The gamma spectrometry data has been inspected to determine whether the exceeding analyte is present at a quantity greater than the RTL. In the reviewer's judgment, the result is unsupported by the analytical data and is therefore not considered an RTL exceedance.

## Table A.4
## Rinsate and Source Water Comparison Summary
## Subarea 5C, Round 2

| Sample Type | Sample ID | U-233/U-234 | | | U-235/U-236 | | | U-238 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Activity | MDC | TPU | Activity | MDC | TPU | Activity | MDC | TPU |
| Rinsate | R0373 | -0.018 U | 0.115 | 0.0269 | 0.0135 U | 0.0682 | 0.0174 | 0.0199 U | 0.0633 | 0.0179 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0375 | -0.00683 U | 0.107 | 0.0268 | -0.0107 U | 0.0586 | 0.0106 | 0.00601 J | 0.0163 | 0.00603 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0377 | -0.0477 U | 0.122 | 0.0246 | 0.0184 J | 0.0249 | 0.0131 | -0.0107 U | 0.0586 | 0.0106 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0379 | -0.0309 U | 0.124 | 0.0292 | 0.01 U | 0.05 | 0.0125 | 0.00356 U | 0.0501 | 0.0111 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0507 | -0.0471 U | 0.134 | 0.0283 | 0.0126 U | 0.0625 | 0.0156 | 0.0159 | 0.0215 | 0.0113 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0508 | -0.0184 U | 0.109 | 0.024 | -0.00677 U | 0.0599 | 0.0116 | 0.038 | 0.0206 | 0.0172 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |
| Rinsate | R0509 | 0.0043 U | 0.1 | 0.0232 | 0.0124 | 0.0335 | 0.0124 | 0.0428 | 0.0637 | 0.0237 |
| Source | S0280 | -0.0214 U | 0.0718 | 0.0125 | 0 J | 0.0221 | 0.00816 | -0.00475 U | 0.042 | 0.00813 |

**Notes:**

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

Reporting units in picocuries per liter.

ID - identification

MDC - minimum detectable concentration

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

U - Not considered detected. The associated number is the reported concentration.

**ATTACHMENT 2**

Boring Logs

*The boring logs are provided in a separate pdf due to size restrictions.*

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