

Northern Agency Tronox Mines

FINAL Appendix F Geochemical Evaluation Report

Response, Assessment, and Evaluation Services (RAES)

Contract No. EP-S9-17-03

Task Order 0001

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U.S. Environmental Protection Agency**

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
ACRONYMS AND ABBREVIATIONS	III
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
2.0 DATA QUALITY OBJECTIVES	6
2.1 IDENTIFIED GEOCHEMICAL DATA GAPS	6
2.2 GEOCHEMICAL ANALYTICAL APPROACH	6
2.3 DATA USES.....	6
3.0 SAMPLE COLLECTION AND ANALYSIS	8
3.1 SOIL SAMPLE LOCATIONS AND DEPTHS	8
3.2 ANALYTICAL METHODS	8
3.3 DATA VALIDATION.....	8
4.0 INVESTIGATION RESULTS	10
4.1 PASTE PH AND ACID-BASE ACCOUNTING.....	10
4.1.1 Paste pH.....	10
4.1.2 Acid-Base Accounting	11
4.2 METALS AND RADIONUCLIDE SPLP EXTRACTIONS.....	12
4.2.1 SPLP Results	12
4.2.2 SPLP Percent Recovery.....	16
4.3 TCLP WASTE-CLASSIFICATION FOR DISPOSAL	18
5.0 CONCLUSIONS.....	20
6.0 REFERENCES	21

LIST OF TABLES

Table F-1. Analytical Methods	9
Table F-2. Paste pH Results Summary	10
Table F-3. Acid-Base Accounting Results Summary	11
Table F-4. SPLP Analytical Results Summary	13
Table F-5. Primary Analyte SPLP Concentrations and Maximum Background Concentrations. 15	
Table F-6. SPLP Percent Recovery Data Summary	17
Table F-7. TCLP Results Summary	19

LIST OF FIGURES

Figure F-1. Regional Overview	2
Figure F-2. Tse Tah Region and Subarea Map	3
Figure F-3. Cove and Cove/Round Rock Region and Subarea Map	4

ATTACHMENTS

Attachment F1. Paste pH and Acid-Base Accounting Results	
Attachment F2. SPLP Results and Percent Recoveries	
Attachment F3. TCLP Results	

ACRONYMS AND ABBREVIATIONS

ABA	Acid-base accounting
ASTM	ASTM International
AUM	Abandoned uranium mine
bgs	Below ground surface
BSA	Background study area
CFR	Code of Federal Regulations
COPC	Contaminant of potential concern
DQO	Data quality objective
g	Gram
Kerr-McGee	Kerr-McGee Oil Industries, Inc.
kg	Kilogram
L	Liter
mg/L	Milligram per liter
mg/kg	Milligram per kilogram
Neptune	Neptune and Company, Inc.
pCi/L	Picocuries per liter
QA/QC	Quality assurance/quality control
RAES	Response, assessment, and evaluation services
RCRA	Resource Conservation and Recovery Act
RSE	Removal site evaluation
RSE Report	Northern Agency Tronox Mines Removal Site Evaluation Report
RSE Work Plan	Northern Agency Tronox Mines Removal Site Evaluation Work Plan
SAP/QAPP	Sampling and Analysis Plan/Quality Assurance Project Plan
SPLP	Synthetic precipitation leaching procedure
tCaCO ₃ /1,000t	Tons calcium carbonate per 1,000 tons soil
TCLP	Toxicity characteristic leaching procedure
TENORM	Technologically enhanced naturally occurring radioactive material
Tetra Tech	Tetra Tech, Inc.
TSG	TerraSpectra Geomatics

ACRONYMS AND ABBREVIATIONS (CONTINUED)

USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency

EXECUTIVE SUMMARY

This appendix is a summary of findings from the geochemical investigation undertaken at the Northern Agency Tronox Mines as part of the 2018 removal site evaluation (RSE) investigation within the Navajo Nation. Samples were collected at 38 abandoned uranium mine (AUM) sites and 5 non-AUM target areas within the Northern Agency of the Navajo Nation located in Apache County, Arizona. The samples were analyzed for paste pH, acid-base accounting (ABA), total metals, synthetic precipitation leaching procedure (SPLP), and toxicity characteristic leaching procedure (TCLP). The sample locations and complete laboratory results are presented in the site-specific RSE reports in Appendix H and the target site evaluation report in Appendix I.

The paste pH and ABA results from 100 samples indicate that there is no acid rock drainage occurring at any of the mine sites and non-AUM target areas. The lack of acid generation potential indicates there is little chance that acid rock drainage will develop in the future. The alkaline pH values indicate that most metals will be limited in mobility and toxicity. Vanadium is the exception, which will be soluble and mobile.

The SPLP results were examined to assess the geographic distribution and leaching potential for contamination. Vanadium and uranium were both detected at greater than 90 percent of the locations, with mean percent recoveries of 3.5 and 0.9 percent, respectively. Antimony and zinc had high recovery percentages (57.9 and 47.8 percent, respectively), but low rates of detection (6.9 and 9.9 percent, respectively). Comparison of SPLP results to background levels for the seven primary analytes for which background data is available, reveals that the mean SPLP concentrations are greater than the maximum background concentration for molybdenum, vanadium, and radium-226.

A total of 95 samples were analyzed for TCLP. No TCLP sample contained an analyte within an order of magnitude of the regulatory standard. None of the samples exhibited the toxicity characteristic.

1.0 INTRODUCTION

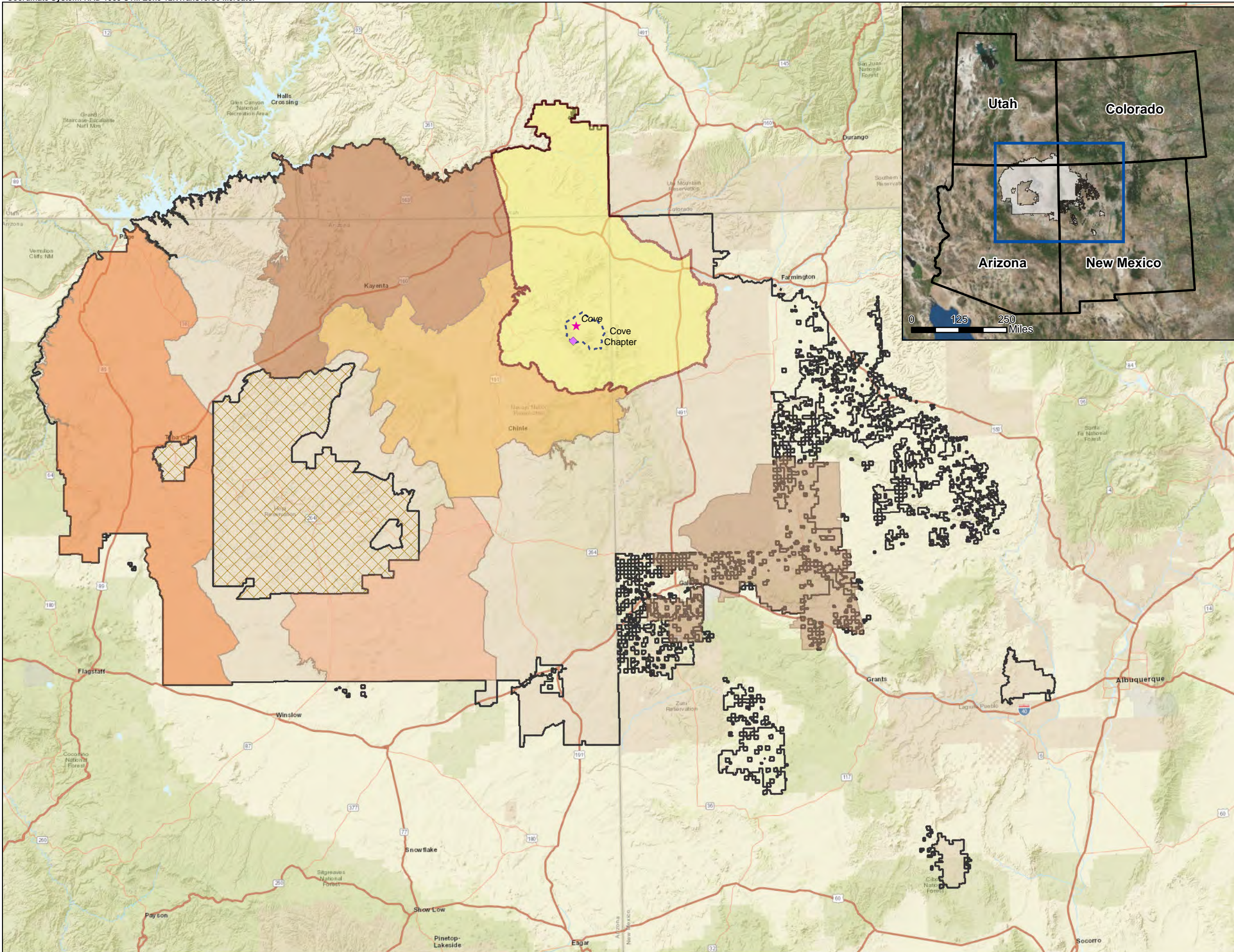
This Geochemical Evaluation Report is included as Appendix F of the Northern Agency Tronox Mines Removal Site Evaluation Report (RSE Report). This Geochemical Report presents the methods and results of the geochemical investigation performed by Tetra Tech, Inc. (Tetra Tech) within the Northern Agency Tronox Mines, in support of the U.S. Environmental Protection Agency (USEPA) under Task Order 001 of the Response, Assessment, and Evaluation Services (RAES) contract (EP-S9-17-03). Under Task Order 001, Tetra Tech conducted removal site evaluation (RSE) field investigations at 39 abandoned uranium mine (AUM) sites and 37 Target sites previously operated by, or likely associated with, Kerr-McGee Oil Industries, Inc. (Kerr-McGee), or its successor, Tronox (both Kerr-McGee and Tronox referred to herein as “Tronox”). Target sites are classified as either AUM-related sites or non-AUM targets (see Section 1.6.1 of the Northern Agency Tronox Mines Removal Site Evaluation Work Plan [RSE Work Plan] [Tetra Tech 2018]). [Figure F-1](#) shows the location of the mines in Arizona. [Figure F-2](#) shows the locations of the mines and target sites in the Tse Tah area, and [Figure F-3](#) shows the location of mines in the Cove and Cove/Round Rock areas.

The AUM sites and Target sites within the Northern Agency have the potential for containing mine-related contamination. The mine-related contamination may consist of radionuclide and heavy metal soil and sediment concentrations above human health and ecological risk-based screening levels. These mine-related contaminants have the potential to be carried offsite via surface water or groundwater pathways. Assessing the geochemistry is necessary to determine if the waste material has the capacity to become acidic and has the potential to leach contaminants of potential concern (COPC). At each site, samples were collected for analysis of paste pH and acid-base accounting (ABA) to assess the potential for the development of acidic soils and leachate through the oxidation of sulfide minerals. The samples were also analyzed using the synthetic precipitation leaching procedure (SPLP) and toxicity characteristic leaching procedure (TCLP). SPLP uses a solution that mimics the chemical composition of precipitation to assess the potential leaching of metals and radionuclides under natural conditions. TCLP uses a buffered acetic acid solution to extract metals to assess whether the soil displays the toxicity characteristic for hazardous waste.

The following sections discuss the data quality objectives (DQO), sampling methodology, soil acid producing potential, and soil leaching potential.

This report examines the combined data set for all 38 AUM sites and 5 Target sites. The main text of the RSE Report discusses the DQOs in further detail. Appendix H presents the individual RSE reports for each site, which detail the site-specific sampling methodology, location, and results for each sample. In Appendix H, the sites are organized by mine site designation. Sections 4.7.2 and 4.7.3 of the site-specific RSE reports contain figures that show all the soil sample and soil boring locations, and the first attachment to each site-specific RSE report provides the sample identification for each sample submitted for geochemical analysis. The locations where geochemical samples were collected are included on the figures.

Coordinate System: NAD 1983 UTM Zone 12N Transverse Mercator



- ◆ Abandoned Uranium Mine Site
- ★ Populated Place
- ⋯ Affected Chapter Boundary
- Navajo Nation Abandoned Uranium Mine Regions**
- Northern Region
- Central Region
- Eastern Region
- North Central Region
- Southern Region
- Western Region
- ▭ Navajo Nation
- ▨ Hopi Reservation

1 in = 26 mi
 1:1,647,360

REGIONAL OVERVIEW

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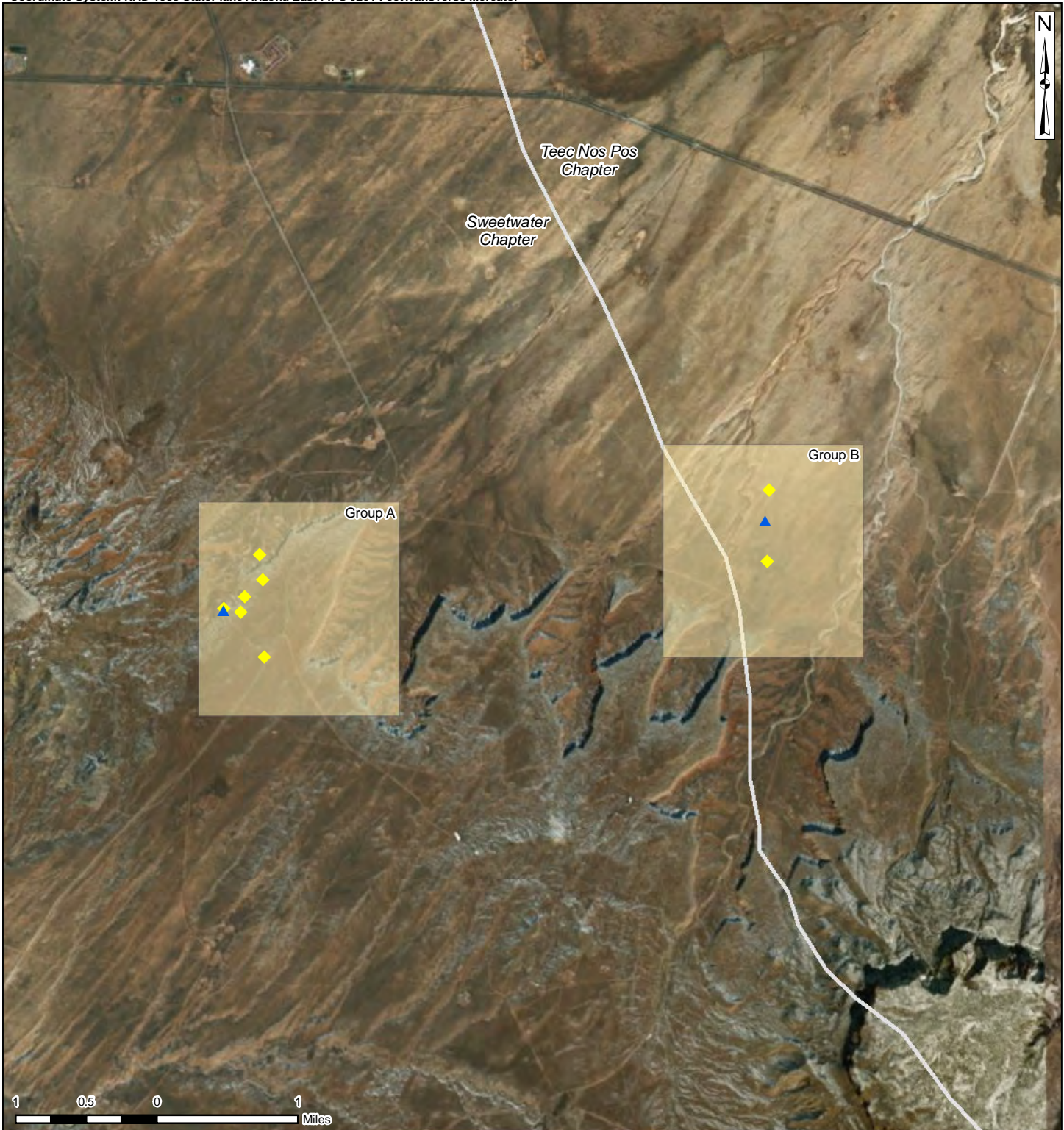
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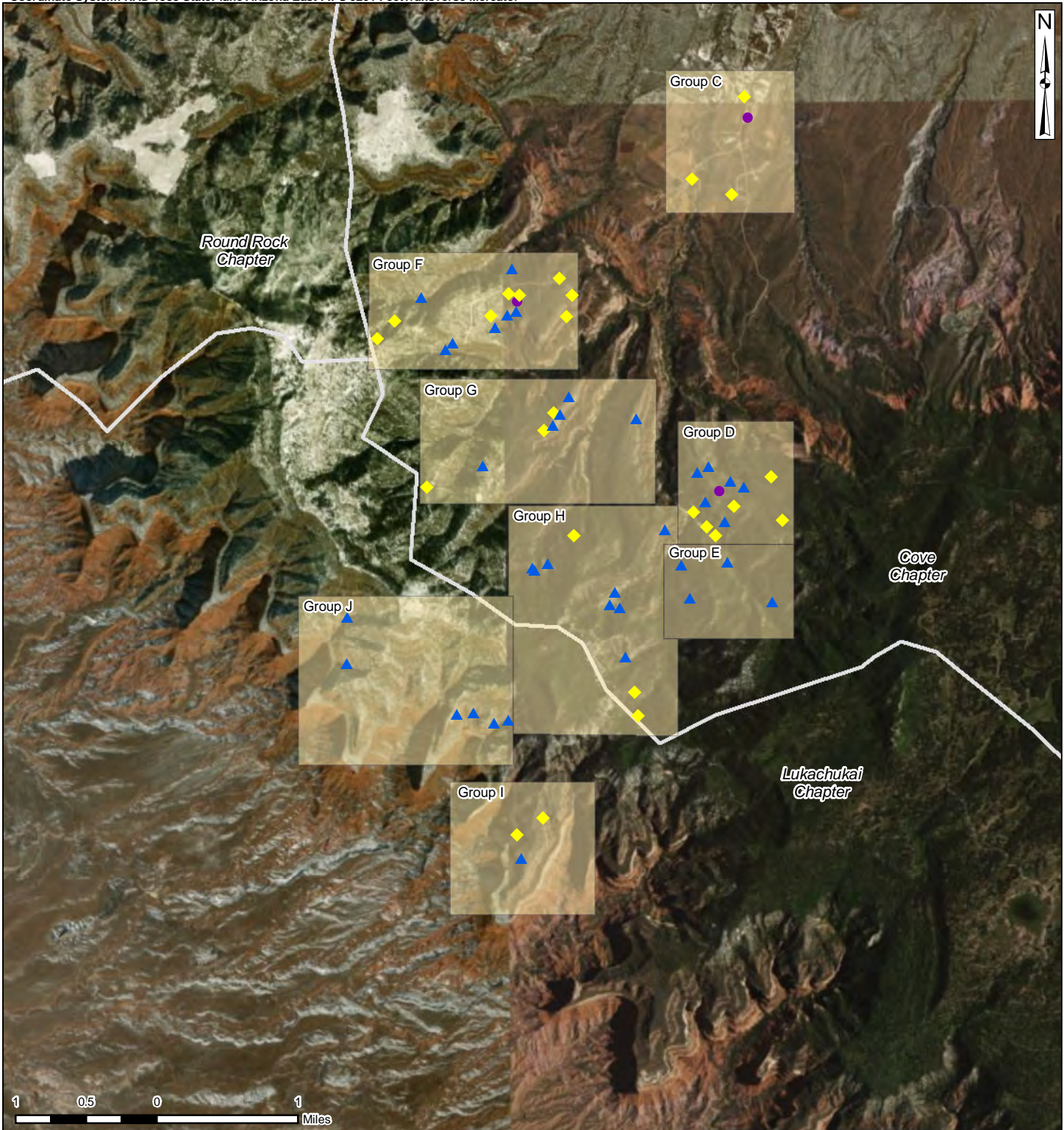
Task Order No.:	Contract No.:
T00001	EP-S9-17-03

Location:	Date:
NAVAJO NATION	6/18/2019

Notes:	Figure No.:
	F-1



<ul style="list-style-type: none"> Abandoned Uranium Mine Site Non-AUM Target Navajo Nation Chapter Boundary Field Sampling Group 	Prepared for: U.S. EPA Region 9 	<h2>TSE TAH REGION AND SUBAREA MAP</h2>		
	Prepared By: TETRA TECH 1999 Harrison Street, Suite 500 Oakland, CA 94612	Task Order No.: TO 001	Contract No.: EP-S9-17-03	<h1>F-2</h1>
Location: NAVAJO NATION	Date: 6/27/2019			



<ul style="list-style-type: none"> ▲ Abandoned Uranium Mine Site ◆ Non-AUM Target ● AUM-Related Site Navajo Nation Chapter Boundary Field Sampling Group 	Prepared for: U.S. EPA Region 9 	COVE AND COVE/ROUND ROCK REGION AND SUBAREA MAP		
	Prepared By: TETRA TECH 1999 Harrison Street, Suite 500 Oakland, CA 94612	Task Order No.: TO 001	Contract No.: EP-S9-17-03	F-3
	Location: NAVAJO NATION	Date: 6/27/2019		

The sample numbers presented in [Attachments F1](#), [F2](#), and [F3](#) are structured for surface samples as:

- XX-SS000-01-Date where:
 - XX = Mine site designation; for example, M6 or M34
 - SS000 = Surface soil followed by sequential number
 - Date = Six-digit date; for example, September 16, 2018 = 091618

For subsurface soil samples, the sample numbers are structured as:

- XX-SB000-0618-01-Date where:
 - XX = Mine site designation; for example, M6 or M34
 - SB000 = Soil boring followed by sequential number
 - 0618 = The top (06) and bottom (18) of the sample interval in inches
 - Date = Six-digit date; for example, September 16, 2018 = 091618

The COPCs for the AUM and Target sites are metals and radionuclides. Primary analytes were identified as being typically associated with uranium-vanadium mining activities and generally more hazardous to the environment and human health than secondary analytes. The primary analytes include the following:

- Arsenic
- Lead
- Molybdenum
- Ra-226
- Selenium
- Thorium
- Uranium
- Vanadium

Aluminum, antimony, barium, beryllium, cadmium, calcium, chromium, cobalt, iron, lithium, magnesium, mercury, nickel, manganese, potassium-40, radium-228, silver, sodium, strontium, thallium, and zinc are considered secondary analytes. In addition, geochemical results for additional radionuclides not listed above are included in this report.

2.0 DATA QUALITY OBJECTIVES

The USEPA has developed a systematic planning process called the DQO process for data collection. The DQO process focuses on a decision that is supported by data, so that only those data required for evaluating a decision would be collected, ensuring that the right quality and quantity of data are collected to make a specific decision (USEPA 2000). The results of the Data Gap Analysis and background study area (BSA) determination were used to develop DQOs for the Baseline and Site Characterization studies. Complete analysis of DQOs is presented in the Sampling Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) in Appendix C of the RSE Work Plan (Tetra Tech 2018).

2.1 IDENTIFIED GEOCHEMICAL DATA GAPS

Data gaps that may be partially addressed through paste pH, ABA, SPLP, and TCLP analysis include:

1. Are mine-related radionuclides and metals in surface soils, waste, and drainage sediments potentially leaching to surface water or groundwater?
2. Have the physical characteristics of mine waste been adequately evaluated to support modeling, remedy evaluation, and evaluation of the Tronox Navajo Area Uranium Mines risk prioritization factors?

2.2 GEOCHEMICAL ANALYTICAL APPROACH

The paste pH, ABA, SPLP, and TCLP analytical results will be used to address the data gaps. The approaches are:

1. Paste pH and ABA results will be used to evaluate whether the mine waste has the potential to become acidic and increase the leachability of metals and radionuclides.
2. SPLP leachable radionuclides and metals results for soil, waste, and sediment samples from the surface investigation will be used to evaluate the possibility of releases or migration of COPCs to surface water and groundwater.
3. TCLP leachable metals results for soil and waste samples will be used during the evaluation of disposal alternatives.

2.3 DATA USES

The paste pH, ABA, SPLP, and TCLP analytical results will be evaluated against standard and regulatory criteria. The criteria are:

1. Paste pH will be compared to the neutral value of 7. Values less than 7 will be classified as potentially acidic while values greater than 7 will be classified as not acidic.
2. ABA will be evaluated to assess acid generation potential. Soils with a measured acid generation potential of zero will be classified as not acid generating. Soils with acid generating potential will be compared to the neutralization potential. If the neutralization

potential is greater than the acid generation potential by 20 tons calcium carbonate per 1,000 tons soil (tCaCO₃/1,000t), the soils will be classified as not acid generating.

3. The SPLP results will be compared to background values to assess whether precipitation-induced leachate may contribute to surface or groundwater contamination.
4. The TCLP results will be compared to the toxicity characteristic maximum concentration (40 Code of Federal Regulations [CFR] § 261.24, Table 1). Analytes that exceed the maximum concentration indicate that the waste may leach concentrations at hazardous levels.

3.0 SAMPLE COLLECTION AND ANALYSIS

Soil and mine waste samples were collected from areas known to be contaminated with waste rock or impacted soil. The samples were analyzed for paste pH and ABA to assess whether the soil will produce acid when exposed to oxygen and water. SPLP results will be used to assess whether precipitation will leach COPCs from mine waste at a rate that will result in exceedances of water quality standards. TCLP results may be used in the evaluation of mine waste treatment or stabilization requirements, or to address disposal facility requirements.

3.1 SOIL SAMPLE LOCATIONS AND DEPTHS

Surface and subsurface soil samples were collected for geochemical analysis during the site-specific RSE investigations (Appendix H). A total of 49 surface soil samples were collected from 0 to 6 inches below ground surface (bgs). Fifty-one subsurface soil samples were collected at depths ranging from 6 to 108 inches bgs using shovels, hand augers, or core samplers driven by a geoprobe. Shovels were used on remote and mechanical drilling equipment-inaccessible sites and reached depths up to 18 inches bgs. The geoprobe was used at sampling locations with road access. One sediment sample was collected from a contaminated drainage (high gamma readings) located below mine M21 (Mesa IV Mine No. 2). The sample locations and depths at each mine site are presented in the mine-specific RSE report in Appendix H.

3.2 ANALYTICAL METHODS

Soil samples were analyzed for paste pH, ABA, total metals, SPLP metals and radionuclides, and TCLP metals using standard methods. The methods are listed in [Table F-1](#).

3.3 DATA VALIDATION

The metals and radionuclide data were validated to assess accuracy and precision using USEPA methods. Data validation reports are in Appendix L, and all laboratory reports are in Appendix M. All laboratory analytical reports underwent 100 percent third-party data validation. USEPA's Remedial Project Manager and Radiation Response Team performed numerous random field audits of Tetra Tech's work during the RSE investigation. All quality assurance/quality control (QA/QC) results, both field and laboratory, met the performance criteria defined in the SAP/QAPP of the RSE Work Plan (Tetra Tech 2018).

Table F-1. Analytical Methods

Analysis	Extraction Method	Analytes	Analytical Method
Paste pH	None	pH	USDA 60
ABA	None	Acid Potential	Modified Sobek Method
		Total Sulfur	
		Neutralization Potential	
		ABA	
Radionuclides	None	Radionuclides	ASTM 3972 Modified USEPA 901.1 Eichrom method
Total Metals	None	Metals	USEPA SW-846 6020B
SPLP	USEPA SW-846 1312	Radionuclides	ASTM 3972 Modified USEPA 901.1 Eichrom method
		Metals	USEPA SW-846 6020B
TCLP	USEPA SW-846 1311	Metals	USEPA SW-846 6020B

Notes:

ABA Acid-Base Accounting
 ASTM ASTM International
 SPLP Synthetic Precipitation Leaching Procedure
 TCLP Toxicity Characteristic Leaching Procedure
 USDA U.S. Department of Agriculture
 USEPA U.S. Environmental Protection Agency

4.0 INVESTIGATION RESULTS

The following sections present assessments of whether the onsite soil may generate acid or harmful leachate, based on the geochemical investigation results. The paste pH and ABA results are in [Attachment F1](#); the SPLP, total metals, and percent recoveries are in [Attachment F2](#); and the TCLP results are in [Attachment F3](#).

4.1 PASTE PH AND ACID-BASE ACCOUNTING

All soil samples were collected from an oxygenating environment above the water table. The area in northeast Arizona where the samples were collected is arid to semi-arid, limiting the amount of water that may create acid drainage. The following sections discuss the paste pH and ABA results.

4.1.1 Paste pH

Paste pH is a measure of the soil pH, measured by mixing a known amount of soil with a known amount of distilled/deionized water. A pH value greater than 7 indicates that the soil is not acidic. The results are in [Table F-2](#).

Table F-2. Paste pH Results Summary

Analysis	Number	Minimum	Maximum	Mean	Standard Deviation
Paste pH	100	7.2	9.3	7.8	0.3

All soil samples had alkaline paste pH values (greater than 7). The results indicate that none of the soil samples were acidic. The pH values above 7 show that acid rock drainage has not developed in any of the sampled soils. There are no apparent trends associated with sample depth or by area.

Soil pH also affects the mobility and toxicity of metals in soils. Metals with increased mobility in acidic environments include aluminum, arsenic, cadmium, copper, iron, lead, manganese, nickel, silver, thallium, and zinc. Circumneutral pH values in site soils indicate that these metals will have lower mobility and toxicity. Vanadium is more mobile in alkaline oxidizing environments due to the formation of oxyanions. The alkaline pH values and position of the AUM waste in an oxidizing environment above the water table suggests that vanadium will be more mobile than other metals. Uranium is also more soluble in the pH range of 6 to 8 in oxidizing environments with carbonate. The soils at the AUM sites contain carbonate minerals that buffer the pH of the soil water. Radium is more soluble in reducing environments and will be less soluble in the oxidizing conditions found at the AUM sites. Radium also adsorbs to iron oxides present in oxidizing environments.

4.1.2 Acid-Base Accounting

ABA analysis of soil samples measures the neutralization potential, acid potential, and percentage of total sulfur. The results are then used to calculate the ABA for the soil where positive values indicate net neutralization potential and negative values indicate net acid producing potential. Neutralization potential measures the acid neutralizing capacity of the soil and is primarily dependent on the amount of calcium carbonate in the soil. Acid potential is the amount of acid generating minerals in the soil and is based on the amount of reactive sulfide minerals in the soil. The total sulfur analysis also measures sulfur bound as sulfate. In arid climates, gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is a commonly found mineral and may increase the total sulfur concentrations. The presence of gypsum may inflate the calculated acid potential in the samples. The results for ABA analysis are in [Table F-3](#).

Table F-3. Acid-Base Accounting Results Summary

Analysis	Number	Minimum	Maximum	Mean	Standard Deviation	Units
Acid-Base Accounting	98	0	135	57.8	29.1	tCaCO ₃ /1000t
Acid Potential	98	0	4	0.306	0.913	tCaCO ₃ /1000t
Neutralization Potential	98	0	135	57.8	29.1	tCaCO ₃ /1000t
Sulfur, Total	98	0	0.13	0.009	0.028	Percent
Moisture Total	98	0.27	9.37	2.35	1.49	Percent

Notes:

tCaCO₃/1000t Tons calcium carbonate per 1,000 tons soil

The acid potential analysis produced detected results (which ranged from 2 to 4 tCaCO₃/1000t) in 11 samples (of 98 total samples) from five mine sites (M17 – 3 samples, M23 – 3 samples, M34 – 1 sample, M37 – 1 sample, and M38 – 3 samples). Samples that do not contain reactive sulfide minerals will have an acid generation potential of zero. The neutralization potential and ABA for these samples ranged from 21 to 135 tCaCO₃/1000t, indicating that every sample with the capacity to generate acid has surplus neutralization potential and little probability of generating acidic soil or leachate. Seven samples from 6 mines (M2 – 1 sample, M5 – 2 samples, M8 – 1 sample, M12 – 1 sample, M15 – 1 sample, T17 – 1 sample) had detected neutralization potential less than 20 tCaCO₃/1000t. None of these samples contained detectable acid potential or total sulfur, indicating that none of the samples will generate acidic soil or leachate. One sample from one mine (M9) did not contain detectable neutralization potential or detectable acid generation potential. The sample is likely nearly pure silica with insignificant amounts of sulfide or carbonate minerals.

4.2 METALS AND RADIONUCLIDE SPLP EXTRACTIONS

SPLP is an extraction procedure intended to assist in assessing potential leaching from precipitation. SPLP results cannot be quantitatively compared to background concentrations or regulatory standards. There are many variables that can have significant effects on COPC leachate concentrations including the amount and timing of precipitation, evapotranspiration rate, size of drainage basin, areal extent and thickness of the waste pile, and permeability of the waste.

Broad valleys within the Cove and Tse Tah regions are characterized as a mid-latitude steppe dry semi-arid climate, whereas the surrounding mountainous regions are humid continental, dry, with a short summer and wet winter (Neptune and Company, Inc. [Neptune] and TerraSpectra Geomatics [TSG] 2017). Days are typically clear or partly cloudy with monsoonal precipitation patterns in the summer and variable snowfall in the winter. The highest reported annual precipitation occurs in July and August, originating from monsoon storms that often create short-term flash flood conditions and “gully washers” that erode canyons and roadways. The spring months are normally dry and subject to high, gusty winds.

At the Tronox sites, the waste piles are generally permeable, relatively thin (less than 10 feet), and cover a small percentage of the drainage basin where they are found. Runoff is primarily ephemeral and intermittent, and is controlled by interception, transmission losses, and storm type and pattern. Unconsolidated surficial deposits intercept and absorb much of the precipitation, overland, and channel flow. Much of the water intercepted is retained near the surface, evaporated, or transpired. Ephemeral streams flow down undefined channels during and following heavy rainfall events that are mostly localized, short-duration, high-intensity thunderstorms.

SPLP is intended to provide data for assessing the leaching of COPCs by precipitation. For sites west of the Mississippi River, reagent water is spiked with 60/40 weight percent mixture of sulfuric and nitric acids until the pH is 5.00 ± 0.05 . This results in a dilute acidic solution where during extraction, the pH is buffered by the soil. The solid to liquid ratio is 1:20 resulting in a 20-fold dilution. The soil-extraction solution is mixed continuously for 18 hours. The mixture is then filtered to obtain the SPLP extract for analysis. The SPLP extract is then digested and analyzed as a total metals or radionuclides.

4.2.1 SPLP Results

SPLP results cannot be compared directly to surface or groundwater standards because the dilution attenuation factor is unknown. The raw SPLP results assume a dilution of 20 parts water to 1 part soil. In natural systems, the dilution and attenuation within surface water will likely be much greater than 20:1. The depth to groundwater is not known at the Tronox sites and there is limited information on the existence of perched groundwater. Using SPLP data to assess whether COPCs will leach to groundwater at an unacceptable rate is not possible with the available data.

Furthermore, the process for extracting SPLP leachate does not simulate the infiltration and runoff of precipitation. Mixing the soil/extraction solution for 18 hours breaks down all soil textures and ensures nearly complete contact between the soil and extraction solution. The effects of naturally developed soil textures like preferential flow pathways are removed from the

soil. The dynamics of runoff and erosion are also not simulated. The results of the SPLP analysis are in [Table F-4](#). To generate an adverse impact to surface water, an analyte needs to be present at a significant number of locations or be very leachable when it does occur.

Table F-4. SPLP Analytical Results Summary

Analyte	Detected Concentration ^{1,2}					
	Number Detected	Percent (%) Detected	Minimum	Maximum	Mean	Standard Deviation
Aluminum	46	46	0.27	3.7	1.4	0.87
Antimony	8	8	0.0017	0.02	0.0043	0.0064
Arsenic	60	59	0.0014	0.024	0.0066	0.0040
Barium	94	93	0.014	1.8	0.13	0.29
Beryllium	9	9	0.0003	0.0008	0.00041	0.00016
Cadmium	0	NA	NA	NA	NA	NA
Calcium	52	51	3.4	38	13.9	7.2
Chromium	13	13	0.0032	0.0049	0.0042	0.0005
Cobalt	3	3	0.0016	0.0021	0.0019	0.0003
Copper	0	NA	NA	NA	NA	NA
Iron	15	15	1	3	1.6	0.6
Lead	50	50	0.0009	0.0079	0.0022	0.0016
Lithium	0	NA	NA	NA	NA	NA
Magnesium	75	74	0.33	5.7	1.2	0.9
Manganese	17	17	0.0016	0.16	0.069	0.051
Molybdenum	28	28	0.0006	0.03	0.0045	0.0069
Nickel	2	2	0.03	0.035	0.033	0.0035
Selenium	2	2	0.0091	0.016	0.013	0.0049
Silver	1	1	0.0006	0.0006	0.0006	NA
Sodium	4	4	10	78	28.5	33.1
Strontium	5	5	0.019	0.19	0.085	0.064
Thallium	17	17	0.0001	0.0002	0.00011	0.00003
Thorium	45	45	0.0001	0.0022	0.00033	0.00044
Uranium	91	90	0.0003	1	0.043	0.1
Vanadium	101	100	0.0029	2.1	0.32	0.43
Zinc	12	12	0.066	1.9	0.60	0.63
Uranium-238	94	93	0.12	102	4.6	12.1
Uranium-234	96	95	0.087	88	4.0	10.4
Thorium-230	85	84	0.107	72	3.8	9.3
Radium-226	88	87	0.47	84	6.4	10.8
Lead-210	38	38	0.71	31.4	4.1	5.8
Polonium-210	88	87	0.09	83	5.4	11.3
Uranium-235	48	48	0.04	4.59	0.43	0.74
Thallium-232	33	33	0.012	0.158	0.048	0.037
Radium-228	1	1	1.24	1.24	1.2	NA
Thorium-228	9	9	0.067	0.178	0.12	0.038

Notes:

1 Uranium-238 and thallium-232 were measured via alpha spectroscopy. Only results from alpha spectroscopy are presented in this appendix. No gamma spectroscopy analysis was completed on the SPLP extracts.

2 Concentrations are in milligrams per liter (mg/L) for all metals and picocuries per liter (pCi/L) for all radionuclides

NA Not applicable

SPLP Synthetic precipitation leaching procedure

The SPLP data ranked by percentages of detected values is detailed below.

- 100 percent: Vanadium was detected in every SPLP sample indicating that it is present throughout the study area and has the potential to adversely affect surface water quality. SPLP concentrations ranged from 0.0029 milligram per liter (mg/L) to 2.1 mg/L with a mean of 0.32 mg/L.
- 90 percent to 100 percent:
 - Barium (0.014 mg/L to 1.8 mg/L, mean 0.13 mg/L)
 - Uranium (0.0003 mg/L to 1 mg/L, mean 0.043 mg/L)
 - Uranium-238 (0.12 picocuries per liter [pCi/L] to 102 pCi/L, mean 4.6 pCi/L)
 - Uranium-234 (0.087 pCi/L to 88 pCi/L, mean 4 pCi/L)
- 70 percent to 90 percent:
 - Magnesium (0.33 mg/L to 5.7 mg/L, mean 1.2 mg/L)
 - Thorium-230 (0.107 pCi/L to 72 pCi/L, mean 3.8 pCi/L)
 - Radium-226 (0.47 pCi/L to 84 pCi/L, mean 6.4 pCi/L)
 - Polonium-210 (0.09 pCi/L to 83 pCi/L, mean 5.4 pCi/L)
- 40 percent to 60 percent:
 - Aluminum (0.27 mg/L to 3.7 mg/L, mean 1.4 mg/L)
 - Arsenic (0.0014 mg/L to 0.024 mg/L, mean 0.0066 mg/L)
 - Calcium (3.4 mg/L to 38 mg/L, mean 13.9 mg/L)
 - Lead (0.0009 mg/L to 0.0079 mg/L, mean 0.0022 mg/L)
 - Thorium (0.0001 mg/L to 0.0022 mg/L, mean 0.00033 mg/L)
 - Uranium-235 (0.04 pCi/L to 4.59 pCi/L, mean 0.43 pCi/L)
- 10 percent to 40 percent:
 - Chromium (0.0032 mg/L to 0.0049 mg/L, mean 0.0042 mg/L)
 - Iron (1 mg/L to 3 mg/L, mean 1.6 mg/L)
 - Manganese (0.0016 mg/L to 0.16 mg/L, mean 0.069 mg/L)
 - Molybdenum (0.0006 mg/L to 0.03 mg/L, mean 0.0045 mg/L)
 - Thallium (0.0001 mg/L to 0.0002 mg/L, mean 0.00011 mg/L)
 - Zinc (0.066 mg/L to 1.9 mg/L, mean 0.6 mg/L),
 - Lead-210 (0.71 pCi/L to 31.4 pCi/L, mean 4.1 pCi/L)
 - Thallium-232 (0.012 pCi/L to 0.158 pCi/L, mean 0.048 pCi/L)
- Less than 10 percent: antimony, beryllium, cobalt, nickel, selenium, silver, sodium, strontium, radium-228, and thorium-228
- Not Detected: cadmium, copper, and lithium

Analytes detected at frequencies between 10 and 40 percent are likely to have less impacts on surface water quality. Analytes detected in less than 10 percent of the samples are unlikely to impact surface water quality.

The eight primary analytes are arsenic, lead, molybdenum, selenium, thorium, uranium, vanadium, and radium-226. Background concentrations were measured for all the primary analytes except thorium during the Cover Wash Watershed Assessment (Weston Solutions, Inc. 2018). The maximum SPLP concentration is greater than the maximum background concentration for all seven analytes. The mean SPLP concentration is greater than the maximum background concentration for molybdenum, vanadium, and radium-226. Depending on other factors like dilution, presence of other sources, intensity of rainfall, and slope, the leachability of molybdenum, vanadium, and radium-226 may result in adverse impacts to surface water quality. [Table F-5](#) presents the summary of SPLP concentrations and the range of background concentrations for primary analytes.

Table F-5. Primary Analyte SPLP Concentrations and Maximum Background Concentrations

Primary Analyte	SPLP ¹				Background ¹	
	Number	Minimum	Maximum	Mean	Minimum	Maximum
Arsenic	60	0.0014	0.0240	0.0066	<0.003	0.018
Lead	50	0.0009	0.0079	0.0022	<0.0009	0.0074
Molybdenum	28	0.0006	0.0300	0.0045	<0.0003	0.0033
Selenium	2	0.0091	0.0160	0.0126	0.0015	0.015
Uranium	91	0.0003	1.0000	0.0434	0.0015	0.18
Vanadium	101	0.0029	2.1000	0.3230	0.0027	0.13
Radium-226	88	0.47	84	6.4	0.21	2.1

Notes:

No background was established for thorium.

¹ Concentrations are in milligrams per liter (mg/L) for all metals and picocuries per liter (pCi/L) for all radionuclides

mg/L Milligram per liter

SPLP Synthetic precipitation leaching procedure

4.2.2 SPLP Percent Recovery

The percent recovery is used to identify the metals and radionuclides that are widespread and most soluble. More soluble analytes with wide geographic distribution have a greater chance to adversely impact water quality. To calculate the mass to mass percent recovery for metals, the following equation is used:

$$\text{Percent Recovery} = \frac{2L * [A \frac{mg}{L}]}{0.1 kg * [A \frac{mg}{kg}]} \times 100$$

Notes: A = analyte concentration, L = Liter, mg = milligram, kg = kilogram

To calculate the mass to mass percent recovery for radionuclides the following equation is used:

$$\text{Percent Recovery} = \frac{2L * [A \frac{pCi}{L}]}{0.1 kg * [A \frac{pCi}{g} * \frac{1000 g}{kg}]} \times 100$$

Notes: A = analyte concentration, pCi = picocuries, L = Liter, g = gram, kg = kilogram

For many samples, there was not 0.1 kilograms (kg) of soil available. In these instances, the amount of extracting solution was reduced such that the solid to liquid ratio of 1:20 was maintained. The following sections present a summary of the SPLP results and an assessment of whether the metals or radionuclides will leach to surface water or groundwater.

Recovery greater than 100 percent is not possible. High recovery values can be caused by sample homogeneity or analytical error. Three analytes had recoveries greater than 100 percent: antimony in sample M27-SS51-01-092618 (408 percent), sodium in sample M2-SB51-090108-01-091718 (110 percent), and zinc in sample M38-SS2-01-092718 (115 percent). Values greater than 100 percent were excluded from the calculation of summary statistics.

Boron, cadmium, copper lithium, nickel, and radium-228 had no samples where there were both detectable SPLP and total metals results. Polonium-210 was not analyzed in the soil samples while potassium-40 was not analyzed in the SPLP extract. The analytes with calculatable percent recoveries, number of values, and percent of total samples and the minimum, maximum, arithmetic mean, and standard deviation of the percent recovery are presented in [Table F-6](#).

Table F-6. SPLP Percent Recovery Data Summary

Analyte	Number	Percent Detected	Minimum (%)	Maximum (%)	Mean (%)	Standard Deviation (%)
Aluminum	46	45.5	0.1	1.4	0.6	0.3
Antimony	7	6.9	21.3	87.1	57.9	26.5
Arsenic	60	59.4	0.6	5.8	2.6	1.3
Barium	94	93.1	0.3	40.9	3.3	6.7
Beryllium	9	8.9	0.9	3.9	2.4	1.1
Calcium	52	51.5	0.5	9.6	1.8	1.6
Chromium	12	11.9	1.9	5.2	3.0	0.9
Cobalt	3	3.0	0.4	1.7	1.2	0.7
Iron	15	14.9	0.01	1.0	0.5	0.3
Lead	50	49.5	0.1	2.0	0.6	0.4
Magnesium	75	74.3	0.2	2.1	0.7	0.4
Manganese	16	15.8	0.1	1.9	1.0	0.7
Molybdenum	27	26.7	0.7	27.3	6.8	7.2
Selenium	2	2.0	4.1	12.8	8.5	6.1
Silver	1	1.0	4.3	4.3	4.3	NA
Sodium	1	1.0	10.0	10.0	10.0	NA
Strontium	5	5.0	0.7	13.1	4.2	5.2
Thallium	17	16.8	0.3	2.8	1.1	0.7
Thorium	45	44.6	0.1	1.6	0.3	0.3
Uranium	91	90.1	0.02	8.4	0.9	1.6
Vanadium	101	100.0	0.3	33.8	3.5	4.8
Zinc	10	9.9	9.4	82.2	47.8	27.1
Uranium-238a	94	93.1	0.004	2.3	0.3	0.4
Uranium-234	96	95.0	0.003	1.7	0.3	0.3
Thorium-230	85	84.2	0.00	1.8	0.2	0.3
Radium-226	88	87.1	0.01	2.0	0.3	0.3
Lead-210	38	37.6	0.02	1.5	0.2	0.3
Uranium-235	47	46.5	0.03	2.7	0.6	0.6
Thorium-232a	33	32.7	0.03	0.9	0.2	0.2
Thorium-228	9	8.9	0.2	1.4	0.5	0.4

Notes:

NA Not applicable

SPLP Synthetic precipitation leaching procedure

The areas covered by mine waste compose a small portion of the drainage basins where the mines are found. To have the potential for leachate to adversely affect surface or groundwater, the analyte must be widely detected in the soil and leach at a rate that compensates for natural dilution and attenuation. Barium, uranium, and vanadium were detected in both the total metals analysis and SPLP extract analysis in more than 90 percent of the samples, with mean percent recoveries of 3.3, 0.9, and 3.5 percent, respectively. Uranium-238a and uranium-235 were also detected at a rate greater than 90 percent. The mean percent recovery for uranium-238a and uranium-235 were both 0.3 percent. Thorium-230 and radium-226 were detected in greater than 80 percent of the samples with average percent recoveries of 0.2 and 0.3 percent, respectively. Aluminum, arsenic, calcium, lead, magnesium, thorium, and uranium-235 were all detected at rates ranging from 40 to 80 percent with average percent recoveries ranging from 0.3 to 2.6 percent. Chromium, iron, manganese, molybdenum, thallium, lead-210, and thorium-232a were detected at rates between 10 and 40 percent. The mean percent recoveries ranged from 0.2 to 6.8

percent. Antimony, beryllium, cobalt, selenium, silver, sodium, strontium, zinc, and thorium-228 were all detected at rates less than 10 percent.

Antimony and zinc were found to have mean percent recoveries of 57.9 percent and 47.8 percent with detection rates of 6.9 percent and 9.9 percent, respectively. Three of seven detected antimony results were from mine site M5 (Mesa I Mine 15). The remaining samples were scattered across multiple mine sites (M9 – Mesa I 1/4 Mine; M11 – Henry Phillips Mine; M27 – Mesa II, Mine No. 1 & 2; P-21, M29 – Mesa II, Mine 4; M32 – Mesa III Mine). Zinc was detected in all three samples from Mine M23 (Mesa IV West) and in the five sampled Group J mines (Black No 1, Black No. 2, Black No. 2 West, Flag No.1, and Step Mesa mines). The limited geographic distribution of the detected values suggests zinc is present in a soluble form within the mine waste from these areas.

Vanadium was detected in every sample, with percent recoveries ranging from 0.3 to 33.8 percent. The mean percent recovery was 3.5 percent, suggesting that soluble forms of vanadium are present. Uranium was detected in over 90 percent of samples ranging from 0.02 to 8.4 percent. The mean percent recovery was 0.9 percent, suggesting that uranium is less soluble than vanadium. Calcium, arsenic, barium, and molybdenum were all detected at a rate greater than 25 percent, with mean recovery percentages ranging from 1.8 to 6.8 percent. The remaining analytes with detection rates greater than 25 percent had mean recovery percentages ranging from 0.2 to 0.7 percent, suggesting that they will not readily leach. The remaining analytes were detected infrequently.

4.3 TCLP WASTE-CLASSIFICATION FOR DISPOSAL

The waste rock and technologically enhanced naturally occurring radioactive material (TENORM) remaining at the AUM and Target sites is exempt from hazardous waste disposal regulations through the Bevill amendment (40 CFR § 261.4 [b][7]). Waste disposal facilities will frequently require TCLP analytical results before deciding whether to accept the waste. Disposal of waste rock and soil in onsite repositories does not require TCLP analysis.

A total of 95 samples were extracted and analyzed for seven of the eight Resource Conservation and Recovery Act (RCRA) metals. Mercury was excluded from the analyte list because it has not been reliably detected in onsite soil samples. [Table F-7](#) presents a summary of the TCLP analytical results.

Table F-7. TCLP Results Summary

	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
TCLP Standard (mg/L)	5	100	1	5	5	1	5
Number of Samples	95	95	95	95	95	95	95
Number of Detects	16	82	7	0	16	9	2
Maximum Concentration (mg/L)	0.1	2.4	0.011	ND	0.019	0.064	0.0064

Notes:

mg/L Milligram per liter

TCLP Toxicity characteristic leaching procedure

ND Nondetect

No TCLP result exceeded the regulatory standard (40 CFR § 261.24, Table 1). The maximum analyte concentrations in the TCLP samples were at least an order of magnitude less than the regulatory standard. Barium was detected the most frequently, in 86 percent of the samples, followed by arsenic and lead at 17 percent of the samples. The remaining analytes were detected in less than 10 percent of the samples.

5.0 CONCLUSIONS

The following conclusions can be made:

- The geochemical investigation addressed the data gaps and DQOs.
- The paste-pH and ABA data demonstrate that there is little potential for acid-rock drainage.
- The SPLP concentration data suggest that vanadium is the most widespread primary analyte. Vanadium is more mobile in the alkaline oxidizing environments found at the AUM and Target sites due to the formation of oxyanions.
- The SPLP concentration data suggest that the primary analytes uranium, molybdenum, arsenic, and radium-226 have potential to leach at unacceptable rates.
- The TCLP data demonstrate that the mine waste samples do not exhibit the toxicity characteristic.

6.0 REFERENCES

- Neptune and Company, Inc. (Neptune) and TerraSpectra Geomatics (TSG). 2018. Cove Chapter Abandoned Uranium Mines Conceptual Site Model Development. Final Preliminary Conceptual Site Model. Prepared for U.S. Army Corps of Engineers (USACE) in support of USEPA Region 9. July.
- Tetra Tech, Inc. (Tetra Tech). 2018. “Northern Agency Tronox Mines Removal Site Evaluation Work Plan.” Response, Assessment, and Evaluation Services. Contract No. EP-S9-17-02. Task Order 0001. May 14.
- U.S. Environmental Protection Agency. 2000. “Guidance for the Data Quality Objectives Process EPA QA/G-4,” EPA/600/R-96/055, August.
- Weston Solutions, Inc. 2018. “Final Assessment Report, Cove Wash Watershed Assessment Site, Navajo Nation, Cove Chapter, Arizona.” April.

ATTACHMENT F1

PASTE PH AND ACID-BASE ACCOUNTING RESULTS



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M1	Brodie 1	M1-36	0	6	inch	3.1	Moisture, Total (105 C)	0.55		%
M1	Brodie 1	M1-36	0	6	inch	USDA60	PASTE pH	7.6		PH
M1	Brodie 1	M1-36	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M1	Brodie 1	M1-36	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M1	Brodie 1	M1-36	0	6	inch	3.2.3	Neutralization Potential	26		CaCO3/1000t
M1	Brodie 1	M1-36	0	6	inch	1.3.1	Acid - Base Accounting	26		CaCO3/1000t
M1	Brodie 1	M1-36	6	12	inch	3.1	Moisture, Total (105 C)	0.27		%
M1	Brodie 1	M1-36	6	12	inch	USDA60	PASTE pH	8		PH
M1	Brodie 1	M1-36	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M1	Brodie 1	M1-36	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M1	Brodie 1	M1-36	6	12	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
M1	Brodie 1	M1-36	6	12	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t
M1	Brodie 1	M1-36	12	18	inch	3.1	Moisture, Total (105 C)	0.47		%
M1	Brodie 1	M1-36	12	18	inch	USDA60	PASTE pH	7.9		PH
M1	Brodie 1	M1-36	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M1	Brodie 1	M1-36	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M1	Brodie 1	M1-36	12	18	inch	3.2.3	Neutralization Potential	36		CaCO3/1000t
M1	Brodie 1	M1-36	12	18	inch	1.3.1	Acid - Base Accounting	36		CaCO3/1000t
M1	Brodie 1	M1-36	18	24	inch	3.1	Moisture, Total (105 C)	0.48		%
M1	Brodie 1	M1-36	18	24	inch	USDA60	PASTE pH	8		PH
M1	Brodie 1	M1-36	18	24	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M1	Brodie 1	M1-36	18	24	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M1	Brodie 1	M1-36	18	24	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
M1	Brodie 1	M1-36	18	24	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t
M1	Brodie 1	M1-36	24	36	inch	3.1	Moisture, Total (105 C)	0.53		%
M1	Brodie 1	M1-36	24	36	inch	USDA60	PASTE pH	7.6		PH
M1	Brodie 1	M1-36	24	36	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M1	Brodie 1	M1-36	24	36	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M1	Brodie 1	M1-36	24	36	inch	3.2.3	Neutralization Potential	38		CaCO3/1000t
M1	Brodie 1	M1-36	24	36	inch	1.3.1	Acid - Base Accounting	38		CaCO3/1000t
M2	Block K	M2-51	90	108	inch	3.1	Moisture, Total (105 C)	1.24		%
M2	Block K	M2-51	90	108	inch	USDA60	PASTE pH	7.8		PH
M2	Block K	M2-51	90	108	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M2	Block K	M2-51	90	108	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M2	Block K	M2-51	90	108	inch	3.2.3	Neutralization Potential	13		CaCO3/1000t
M2	Block K	M2-51	90	108	inch	1.3.1	Acid - Base Accounting	13		CaCO3/1000t
M2	Block K	M2-55	72	90	inch	3.1	Moisture, Total (105 C)	1.28		%
M2	Block K	M2-55	72	90	inch	USDA60	PASTE pH	8.1		PH
M2	Block K	M2-55	72	90	inch	3.2.4/E1915	Sulfur, Total	0	U	%



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M2	Block K	M2-55	72	90	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M2	Block K	M2-55	72	90	inch	3.2.3	Neutralization Potential	38		CaCO3/1000t
M2	Block K	M2-55	72	90	inch	1.3.1	Acid - Base Accounting	38		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	3.1	Moisture, Total (105 C)	1.67		%
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	USDA60	PASTE pH	7.8		PH
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	3.2.3	Neutralization Potential	45		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	0	6	inch	1.3.1	Acid - Base Accounting	45		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	3.1	Moisture, Total (105 C)	1.61		%
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	USDA60	PASTE pH	7.6		PH
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	3.2.3	Neutralization Potential	42		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	6	12	inch	1.3.1	Acid - Base Accounting	42		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	3.1	Moisture, Total (105 C)	1.66		%
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	USDA60	PASTE pH	7.7		PH
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	3.2.3	Neutralization Potential	41		CaCO3/1000t
M3	Mesa I, Mine No. 10	M3-51	12	18	inch	1.3.1	Acid - Base Accounting	41		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	3.1	Moisture, Total (105 C)	1.8		%
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	USDA60	PASTE pH	8		PH
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	3.2.3	Neutralization Potential	59		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	0	6	inch	1.3.1	Acid - Base Accounting	59		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	3.1	Moisture, Total (105 C)	1.74		%
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	USDA60	PASTE pH	7.9		PH
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	3.2.3	Neutralization Potential	51		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	6	12	inch	1.3.1	Acid - Base Accounting	51		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	3.1	Moisture, Total (105 C)	1.78		%
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	USDA60	PASTE pH	7.9		PH
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	3.2.3	Neutralization Potential	56		CaCO3/1000t
M4	Mesa I, Mine No. 11	M4-81	12	18	inch	1.3.1	Acid - Base Accounting	56		CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	3.1	Moisture, Total (105 C)	4.62		%
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	USDA60	PASTE pH	7.6		PH
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	3.2.3	Neutralization Potential	61		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-149	0	6	inch	1.3.1	Acid - Base Accounting	61		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	3.1	Moisture, Total (105 C)	4.51		%
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	USDA60	PASTE pH	7.9		PH
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	3.2.3	Neutralization Potential	59		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-149	6	12	inch	1.3.1	Acid - Base Accounting	59		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	3.1	Moisture, Total (105 C)	4.65		%
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	USDA60	PASTE pH	7.2		PH
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	3.2.3	Neutralization Potential	19		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	0	6	inch	1.3.1	Acid - Base Accounting	19		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	3.1	Moisture, Total (105 C)	4.64		%
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	USDA60	PASTE pH	7.4		PH
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	3.2.3	Neutralization Potential	12		CaCO3/1000t
M5	Mesa I, Mine No. 12	M5-479	6	12	inch	1.3.1	Acid - Base Accounting	12		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	3.1	Moisture, Total (105 C)	4.7		%
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	USDA60	PASTE pH	7.2		PH
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	3.2.3	Neutralization Potential	70		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-174	0	6	inch	1.3.1	Acid - Base Accounting	70		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	3.1	Moisture, Total (105 C)	1.87		%
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	USDA60	PASTE pH	7.8		PH
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	0	6	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	3.1	Moisture, Total (105 C)	1.8		%
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	USDA60	PASTE pH	7.9		PH
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	6	12	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	3.1	Moisture, Total (105 C)	1.86		%
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	USDA60	PASTE pH	7.8		PH
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	3.2.3	Neutralization Potential	27		CaCO3/1000t
M6	Mesa I, Mine No. 13	M6-285	12	18	inch	1.3.1	Acid - Base Accounting	27		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	3.1	Moisture, Total (105 C)	2.01		%
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	USDA60	PASTE pH	7.8		PH
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	3.2.3	Neutralization Potential	66		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	0	6	inch	1.3.1	Acid - Base Accounting	66		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	3.1	Moisture, Total (105 C)	1.88		%
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	USDA60	PASTE pH	7.7		PH
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	3.2.3	Neutralization Potential	52		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	6	12	inch	1.3.1	Acid - Base Accounting	52		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	12	18	inch	USDA60	PASTE pH	7.9		PH
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	3.1	Moisture, Total (105 C)	1.89		%
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	USDA60	PASTE pH	7.9		PH
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	3.2.3	Neutralization Potential	88		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	18	24	inch	1.3.1	Acid - Base Accounting	88		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	3.1	Moisture, Total (105 C)	2.01		%
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	USDA60	PASTE pH	7.9		PH
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	3.2.3	Neutralization Potential	78		CaCO3/1000t
M7	Mesa I, Mine No. 14	M7-161	24	30	inch	1.3.1	Acid - Base Accounting	78		CaCO3/1000t
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	3.1	Moisture, Total (105 C)	5.94		%
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	USDA60	PASTE pH	7.3		PH
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	3.2.3	Neutralization Potential	10		CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M8	Mesa I, Mine No. 15	M8-120	0	6	inch	1.3.1	Acid - Base Accounting	10		CaCO3/1000t
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	3.1	Moisture, Total (105 C)	2.05		%
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	USDA60	PASTE pH	7.9		PH
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	3.2.3	Neutralization Potential	44		CaCO3/1000t
M8	Mesa I, Mine No. 15	M8-52	0	6	inch	1.3.1	Acid - Base Accounting	44		CaCO3/1000t
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	3.1	Moisture, Total (105 C)	7		%
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	USDA60	PASTE pH	7.6		PH
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	3.2.3	Neutralization Potential	0	U	CaCO3/1000t
M9	Mesa I 1/4 Mine	M9-19	0	6	inch	1.3.1	Acid - Base Accounting	0	U	CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	3.1	Moisture, Total (105 C)	2.34		%
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	USDA60	PASTE pH	8.1		PH
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	3.2.3	Neutralization Potential	39		CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	0	6	inch	1.3.1	Acid - Base Accounting	39		CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	3.1	Moisture, Total (105 C)	2.32		%
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	USDA60	PASTE pH	8.2		PH
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	3.2.3	Neutralization Potential	46		CaCO3/1000t
M10	Mesa I 1/2 Mine	M10-10	6	12	inch	1.3.1	Acid - Base Accounting	46		CaCO3/1000t
M11	Henry Phillips Mine	M11-35	0	6	inch	3.1	Moisture, Total (105 C)	2.35		%
M11	Henry Phillips Mine	M11-35	0	6	inch	USDA60	PASTE pH	8.1		PH
M11	Henry Phillips Mine	M11-35	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M11	Henry Phillips Mine	M11-35	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M11	Henry Phillips Mine	M11-35	0	6	inch	3.2.3	Neutralization Potential	87		CaCO3/1000t
M11	Henry Phillips Mine	M11-35	0	6	inch	1.3.1	Acid - Base Accounting	87		CaCO3/1000t
M11	Henry Phillips Mine	M11-35	6	12	inch	3.1	Moisture, Total (105 C)	2.34		%
M11	Henry Phillips Mine	M11-35	6	12	inch	USDA60	PASTE pH	8.1		PH
M11	Henry Phillips Mine	M11-35	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M11	Henry Phillips Mine	M11-35	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M11	Henry Phillips Mine	M11-35	6	12	inch	3.2.3	Neutralization Potential	86		CaCO3/1000t
M11	Henry Phillips Mine	M11-35	6	12	inch	1.3.1	Acid - Base Accounting	86		CaCO3/1000t
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	3.1	Moisture, Total (105 C)	2.45		%
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	USDA60	PASTE pH	8		PH



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	3.2.3	Neutralization Potential	19		CaCO3/1000t
M12	Mesa I 1/2, West Mine	M12-33	0	6	inch	1.3.1	Acid - Base Accounting	19		CaCO3/1000t
M13	Mesa VI Mine	M13-114	0	6	inch	3.1	Moisture, Total (105 C)	0.68		%
M13	Mesa VI Mine	M13-114	0	6	inch	USDA60	PASTE pH	7.8		PH
M13	Mesa VI Mine	M13-114	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M13	Mesa VI Mine	M13-114	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M13	Mesa VI Mine	M13-114	0	6	inch	3.2.3	Neutralization Potential	72		CaCO3/1000t
M13	Mesa VI Mine	M13-114	0	6	inch	1.3.1	Acid - Base Accounting	72		CaCO3/1000t
M13	Mesa VI Mine	M13-114	12	30	inch	3.1	Moisture, Total (105 C)	0.65		%
M13	Mesa VI Mine	M13-114	12	30	inch	USDA60	PASTE pH	7.8		PH
M13	Mesa VI Mine	M13-114	12	30	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M13	Mesa VI Mine	M13-114	12	30	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M13	Mesa VI Mine	M13-114	12	30	inch	3.2.3	Neutralization Potential	56		CaCO3/1000t
M13	Mesa VI Mine	M13-114	12	30	inch	1.3.1	Acid - Base Accounting	56		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	0	6	inch	3.1	Moisture, Total (105 C)	0.74		%
M14	Frank Jr. Mine	M14-37	0	6	inch	USDA60	PASTE pH	7.8		PH
M14	Frank Jr. Mine	M14-37	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M14	Frank Jr. Mine	M14-37	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M14	Frank Jr. Mine	M14-37	0	6	inch	3.2.3	Neutralization Potential	37		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	0	6	inch	1.3.1	Acid - Base Accounting	37		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	6	12	inch	3.1	Moisture, Total (105 C)	0.69		%
M14	Frank Jr. Mine	M14-37	6	12	inch	USDA60	PASTE pH	7.9		PH
M14	Frank Jr. Mine	M14-37	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M14	Frank Jr. Mine	M14-37	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M14	Frank Jr. Mine	M14-37	6	12	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	6	12	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	12	18	inch	3.1	Moisture, Total (105 C)	0.71		%
M14	Frank Jr. Mine	M14-37	12	18	inch	USDA60	PASTE pH	7.8		PH
M14	Frank Jr. Mine	M14-37	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M14	Frank Jr. Mine	M14-37	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M14	Frank Jr. Mine	M14-37	12	18	inch	3.2.3	Neutralization Potential	40		CaCO3/1000t
M14	Frank Jr. Mine	M14-37	12	18	inch	1.3.1	Acid - Base Accounting	40		CaCO3/1000t
M15	Mesa V Incline	M15-14	0	6	inch	3.1	Moisture, Total (105 C)	0.76		%
M15	Mesa V Incline	M15-14	0	6	inch	USDA60	PASTE pH	7.8		PH
M15	Mesa V Incline	M15-14	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M15	Mesa V Incline	M15-14	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M15	Mesa V Incline	M15-14	0	6	inch	3.2.3	Neutralization Potential	8		CaCO3/1000t



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M15	Mesa V Incline	M15-14	0	6	inch	1.3.1	Acid - Base Accounting	8		CaCO3/1000t
M15	Mesa V Incline	M15-84	0	6	inch	3.1	Moisture, Total (105 C)	0.86		%
M15	Mesa V Incline	M15-84	0	6	inch	USDA60	PASTE pH	7.6		PH
M15	Mesa V Incline	M15-84	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M15	Mesa V Incline	M15-84	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M15	Mesa V Incline	M15-84	0	6	inch	3.2.3	Neutralization Potential	116		CaCO3/1000t
M15	Mesa V Incline	M15-84	0	6	inch	1.3.1	Acid - Base Accounting	116		CaCO3/1000t
M15	Mesa V Incline	M15-84	6	12	inch	3.1	Moisture, Total (105 C)	0.77		%
M15	Mesa V Incline	M15-84	6	12	inch	USDA60	PASTE pH	7.8		PH
M15	Mesa V Incline	M15-84	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M15	Mesa V Incline	M15-84	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M15	Mesa V Incline	M15-84	6	12	inch	3.2.3	Neutralization Potential	109		CaCO3/1000t
M15	Mesa V Incline	M15-84	6	12	inch	1.3.1	Acid - Base Accounting	109		CaCO3/1000t
M16	Mesa V Adit	M16-193	0	6	inch	3.1	Moisture, Total (105 C)	0.92		%
M16	Mesa V Adit	M16-193	0	6	inch	USDA60	PASTE pH	7.8		PH
M16	Mesa V Adit	M16-193	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M16	Mesa V Adit	M16-193	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M16	Mesa V Adit	M16-193	0	6	inch	3.2.3	Neutralization Potential	52		CaCO3/1000t
M16	Mesa V Adit	M16-193	0	6	inch	1.3.1	Acid - Base Accounting	52		CaCO3/1000t
M16	Mesa V Adit	M16-193	6	12	inch	3.1	Moisture, Total (105 C)	0.88		%
M16	Mesa V Adit	M16-193	6	12	inch	USDA60	PASTE pH	8.1		PH
M16	Mesa V Adit	M16-193	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M16	Mesa V Adit	M16-193	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M16	Mesa V Adit	M16-193	6	12	inch	3.2.3	Neutralization Potential	42		CaCO3/1000t
M16	Mesa V Adit	M16-193	6	12	inch	1.3.1	Acid - Base Accounting	42		CaCO3/1000t
M16	Mesa V Adit	M16-193	12	18	inch	3.1	Moisture, Total (105 C)	0.88		%
M16	Mesa V Adit	M16-193	12	18	inch	USDA60	PASTE pH	7.9		PH
M16	Mesa V Adit	M16-193	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M16	Mesa V Adit	M16-193	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M16	Mesa V Adit	M16-193	12	18	inch	3.2.3	Neutralization Potential	37		CaCO3/1000t
M16	Mesa V Adit	M16-193	12	18	inch	1.3.1	Acid - Base Accounting	37		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	0	6	inch	3.1	Moisture, Total (105 C)	1.04		%
M17	Mesa V Mine - 103	M17-64	0	6	inch	USDA60	PASTE pH	7.2		PH
M17	Mesa V Mine - 103	M17-64	0	6	inch	3.2.4/E1915	Sulfur, Total	0.05		%
M17	Mesa V Mine - 103	M17-64	0	6	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	0	6	inch	3.2.3	Neutralization Potential	48		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	0	6	inch	1.3.1	Acid - Base Accounting	48		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	6	12	inch	3.1	Moisture, Total (105 C)	1.02		%
M17	Mesa V Mine - 103	M17-64	6	12	inch	USDA60	PASTE pH	7.6		PH



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M17	Mesa V Mine - 103	M17-64	6	12	inch	3.2.4/E1915	Sulfur, Total	0.05		%
M17	Mesa V Mine - 103	M17-64	6	12	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	6	12	inch	3.2.3	Neutralization Potential	55		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	6	12	inch	1.3.1	Acid - Base Accounting	55		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	12	18	inch	3.1	Moisture, Total (105 C)	1.02		%
M17	Mesa V Mine - 103	M17-64	12	18	inch	USDA60	PASTE pH	7.6		PH
M17	Mesa V Mine - 103	M17-64	12	18	inch	3.2.4/E1915	Sulfur, Total	0.06		%
M17	Mesa V Mine - 103	M17-64	12	18	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	12	18	inch	3.2.3	Neutralization Potential	55		CaCO3/1000t
M17	Mesa V Mine - 103	M17-64	12	18	inch	1.3.1	Acid - Base Accounting	55		CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	0	6	inch	3.1	Moisture, Total (105 C)	1.13		%
M18	Mesa V Mine - 508	M18-145	0	6	inch	USDA60	PASTE pH	7.5		PH
M18	Mesa V Mine - 508	M18-145	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M18	Mesa V Mine - 508	M18-145	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	0	6	inch	3.2.3	Neutralization Potential	52		CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	0	6	inch	1.3.1	Acid - Base Accounting	52		CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	6	12	inch	3.1	Moisture, Total (105 C)	1.1		%
M18	Mesa V Mine - 508	M18-145	6	12	inch	USDA60	PASTE pH	7.6		PH
M18	Mesa V Mine - 508	M18-145	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M18	Mesa V Mine - 508	M18-145	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	6	12	inch	3.2.3	Neutralization Potential	57		CaCO3/1000t
M18	Mesa V Mine - 508	M18-145	6	12	inch	1.3.1	Acid - Base Accounting	57		CaCO3/1000t
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	0	6	inch	USDA60	PASTE pH	7.6		PH
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	3.1	Moisture, Total (105 C)	1.15		%
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	USDA60	PASTE pH	7.8		PH
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	3.2.3	Neutralization Potential	49		CaCO3/1000t
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	6	12	inch	1.3.1	Acid - Base Accounting	49		CaCO3/1000t
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	3.1	Moisture, Total (105 C)	1.18		%
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	USDA60	PASTE pH	8		PH
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	3.2.3	Neutralization Potential	33		CaCO3/1000t
M19	Mesa IV 1/2 Mine and Simpson 181	M19-36	12	18	inch	1.3.1	Acid - Base Accounting	33		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	0	6	inch	3.1	Moisture, Total (105 C)	1.42		%
M20	Mesa IV, Mine 1	M20-59	0	6	inch	USDA60	PASTE pH	7.7		PH
M20	Mesa IV, Mine 1	M20-59	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M20	Mesa IV, Mine 1	M20-59	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	0	6	inch	3.2.3	Neutralization Potential	65		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	0	6	inch	1.3.1	Acid - Base Accounting	65		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	6	12	inch	3.1	Moisture, Total (105 C)	1.35		%
M20	Mesa IV, Mine 1	M20-59	6	12	inch	USDA60	PASTE pH	7.9		PH
M20	Mesa IV, Mine 1	M20-59	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M20	Mesa IV, Mine 1	M20-59	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	6	12	inch	3.2.3	Neutralization Potential	77		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	6	12	inch	1.3.1	Acid - Base Accounting	77		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	12	18	inch	3.1	Moisture, Total (105 C)	1.38		%
M20	Mesa IV, Mine 1	M20-59	12	18	inch	USDA60	PASTE pH	8		PH
M20	Mesa IV, Mine 1	M20-59	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M20	Mesa IV, Mine 1	M20-59	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	12	18	inch	3.2.3	Neutralization Potential	104		CaCO3/1000t
M20	Mesa IV, Mine 1	M20-59	12	18	inch	1.3.1	Acid - Base Accounting	104		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-46	0	6	inch	3.1	Moisture, Total (105 C)	1.43		%
M21	Mesa IV, Mine 2	M21-46	0	6	inch	USDA60	PASTE pH	7.7		PH
M21	Mesa IV, Mine 2	M21-46	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M21	Mesa IV, Mine 2	M21-46	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M21	Mesa IV, Mine 2	M21-46	0	6	inch	3.2.3	Neutralization Potential	120		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-46	0	6	inch	1.3.1	Acid - Base Accounting	120		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	0	6	inch	3.1	Moisture, Total (105 C)	1.49		%
M21	Mesa IV, Mine 2	M21-528	0	6	inch	USDA60	PASTE pH	8.1		PH
M21	Mesa IV, Mine 2	M21-528	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M21	Mesa IV, Mine 2	M21-528	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	0	6	inch	3.2.3	Neutralization Potential	72		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	0	6	inch	1.3.1	Acid - Base Accounting	72		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	6	12	inch	3.1	Moisture, Total (105 C)	1.48		%
M21	Mesa IV, Mine 2	M21-528	6	12	inch	USDA60	PASTE pH	7.8		PH
M21	Mesa IV, Mine 2	M21-528	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M21	Mesa IV, Mine 2	M21-528	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	6	12	inch	3.2.3	Neutralization Potential	67		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	6	12	inch	1.3.1	Acid - Base Accounting	67		CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M21	Mesa IV, Mine 2	M21-528	12	18	inch	3.1	Moisture, Total (105 C)	1.49		%
M21	Mesa IV, Mine 2	M21-528	12	18	inch	USDA60	PASTE pH	8.2		PH
M21	Mesa IV, Mine 2	M21-528	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M21	Mesa IV, Mine 2	M21-528	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	12	18	inch	3.2.3	Neutralization Potential	68		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-528	12	18	inch	1.3.1	Acid - Base Accounting	68		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-SD2	0	6	inch	3.1	Moisture, Total (105 C)	1.53		%
M21	Mesa IV, Mine 2	M21-SD2	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M21	Mesa IV, Mine 2	M21-SD2	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M21	Mesa IV, Mine 2	M21-SD2	0	6	inch	3.2.3	Neutralization Potential	74		CaCO3/1000t
M21	Mesa IV, Mine 2	M21-SD2	0	6	inch	1.3.1	Acid - Base Accounting	74		CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	0	6	inch	3.2.3	Neutralization Potential	78		CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M22	Mesa IV, Mine 3	M22-104	0	6	inch	1.3.1	Acid - Base Accounting	78		CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	0	6	inch	3.1	Moisture, Total (105 C)	1.58		%
M22	Mesa IV, Mine 3	M22-104	0	6	inch	USDA60	PASTE pH	7.5		PH
M22	Mesa IV, Mine 3	M22-104	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	6	12	inch	3.2.3	Neutralization Potential	79		CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M22	Mesa IV, Mine 3	M22-104	6	12	inch	1.3.1	Acid - Base Accounting	79		CaCO3/1000t
M22	Mesa IV, Mine 3	M22-104	6	12	inch	3.1	Moisture, Total (105 C)	1.55		%
M22	Mesa IV, Mine 3	M22-104	6	12	inch	USDA60	PASTE pH	7.8		PH
M22	Mesa IV, Mine 3	M22-104	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	0	6	inch	3.2.3	Neutralization Potential	69		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	0	6	inch	3.2.4/E1915	Sulfur, Total	0.12		%
M23	Mesa IV, West Mine	M23-54	0	6	inch	1.3.1	Acid - Base Accounting	69		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	0	6	inch	3.1	Moisture, Total (105 C)	2.55		%
M23	Mesa IV, West Mine	M23-54	0	6	inch	USDA60	PASTE pH	7.6		PH
M23	Mesa IV, West Mine	M23-54	0	6	inch	1.3.1	Acid Potential	4		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	6	12	inch	3.2.3	Neutralization Potential	44		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	6	12	inch	3.2.4/E1915	Sulfur, Total	0.08		%
M23	Mesa IV, West Mine	M23-54	6	12	inch	1.3.1	Acid - Base Accounting	44		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	6	12	inch	3.1	Moisture, Total (105 C)	2.46		%
M23	Mesa IV, West Mine	M23-54	6	12	inch	USDA60	PASTE pH	7.4		PH
M23	Mesa IV, West Mine	M23-54	6	12	inch	1.3.1	Acid Potential	3		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	12	18	inch	3.2.3	Neutralization Potential	21		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	12	18	inch	3.2.4/E1915	Sulfur, Total	0.11		%
M23	Mesa IV, West Mine	M23-54	12	18	inch	1.3.1	Acid - Base Accounting	21		CaCO3/1000t
M23	Mesa IV, West Mine	M23-54	12	18	inch	3.1	Moisture, Total (105 C)	2.48		%

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M23	Mesa IV, West Mine	M23-54	12	18	inch	USDA60	PASTE pH	7.6		PH
M23	Mesa IV, West Mine	M23-54	12	18	inch	1.3.1	Acid Potential	4		CaCO3/1000t
M24	Mesa II Pit	M24-76	0	6	inch	3.2.3	Neutralization Potential	84		CaCO3/1000t
M24	Mesa II Pit	M24-76	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M24	Mesa II Pit	M24-76	0	6	inch	1.3.1	Acid - Base Accounting	84		CaCO3/1000t
M24	Mesa II Pit	M24-76	0	6	inch	3.1	Moisture, Total (105 C)	2.75		%
M24	Mesa II Pit	M24-76	0	6	inch	USDA60	PASTE pH	7.8		PH
M24	Mesa II Pit	M24-76	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M24	Mesa II Pit	M24-76	6	12	inch	3.2.3	Neutralization Potential	82		CaCO3/1000t
M24	Mesa II Pit	M24-76	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M24	Mesa II Pit	M24-76	6	12	inch	1.3.1	Acid - Base Accounting	82		CaCO3/1000t
M24	Mesa II Pit	M24-76	6	12	inch	3.1	Moisture, Total (105 C)	2.58		%
M24	Mesa II Pit	M24-76	6	12	inch	USDA60	PASTE pH	7.9		PH
M24	Mesa II Pit	M24-76	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M24	Mesa II Pit	M24-76	12	18	inch	3.2.3	Neutralization Potential	67		CaCO3/1000t
M24	Mesa II Pit	M24-76	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M24	Mesa II Pit	M24-76	12	18	inch	1.3.1	Acid - Base Accounting	67		CaCO3/1000t
M24	Mesa II Pit	M24-76	12	18	inch	3.1	Moisture, Total (105 C)	2.65		%
M24	Mesa II Pit	M24-76	12	18	inch	USDA60	PASTE pH	7.8		PH
M24	Mesa II Pit	M24-76	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	3.2.3	Neutralization Potential	30		CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	1.3.1	Acid - Base Accounting	30		CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	3.1	Moisture, Total (105 C)	2.83		%
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	USDA60	PASTE pH	7.6		PH
M25	Mesa I 3/4 Incline	M25-50	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	6	12	inch	USDA60	PASTE pH	8.1		PH
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	3.1	Moisture, Total (105 C)	2.76		%
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	USDA60	PASTE pH	8.1		PH
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	3.2.3	Neutralization Potential	29		CaCO3/1000t
M25	Mesa I 3/4 Incline	M25-50	12	18	inch	1.3.1	Acid - Base Accounting	29		CaCO3/1000t
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	3.1	Moisture, Total (105 C)	2.88		%
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	USDA60	PASTE pH	7.2		PH
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	3.2.3	Neutralization Potential	80		CaCO3/1000t
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	0	6	inch	1.3.1	Acid - Base Accounting	80		CaCO3/1000t
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	3.1	Moisture, Total (105 C)	2.84		%
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	USDA60	PASTE pH	7.5		PH
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	3.2.3	Neutralization Potential	53		CaCO3/1000t
M26	Mesa I 3/4, Mine No. 2, P-150	M26-28	6	12	inch	1.3.1	Acid - Base Accounting	53		CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	3.1	Moisture, Total (105 C)	2.9		%
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	USDA60	PASTE pH	7.9		PH
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	3.2.3	Neutralization Potential	38		CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	0	6	inch	1.3.1	Acid - Base Accounting	38		CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	3.1	Moisture, Total (105 C)	2.89		%
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	USDA60	PASTE pH	8		PH
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	3.2.3	Neutralization Potential	44		CaCO3/1000t
M27	Mesa II, Mine No. 1 & 2, P-21	M27-51	6	12	inch	1.3.1	Acid - Base Accounting	44		CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	3.1	Moisture, Total (105 C)	3		%
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	USDA60	PASTE pH	7.7		PH
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	3.2.3	Neutralization Potential	39		CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M28	Mesa II, Mine No. 1, P-150	M28-30	0	6	inch	1.3.1	Acid - Base Accounting	39		CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	3.1	Moisture, Total (105 C)	2.92		%
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	USDA60	PASTE pH	8		PH
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	3.2.3	Neutralization Potential	30		CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-30	6	12	inch	1.3.1	Acid - Base Accounting	30		CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	3.1	Moisture, Total (105 C)	3.09		%
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	USDA60	PASTE pH	7.9		PH
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	3.2.3	Neutralization Potential	36		CaCO3/1000t
M28	Mesa II, Mine No. 1, P-150	M28-G7	0	6	inch	1.3.1	Acid - Base Accounting	36		CaCO3/1000t
M29	Mesa II, Mine 4	M29-48	0	6	inch	3.1	Moisture, Total (105 C)	3.16		%
M29	Mesa II, Mine 4	M29-48	0	6	inch	USDA60	PASTE pH	7.6		PH
M29	Mesa II, Mine 4	M29-48	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M29	Mesa II, Mine 4	M29-48	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M29	Mesa II, Mine 4	M29-48	0	6	inch	3.2.3	Neutralization Potential	69		CaCO3/1000t
M29	Mesa II, Mine 4	M29-48	0	6	inch	1.3.1	Acid - Base Accounting	69		CaCO3/1000t
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	3.1	Moisture, Total (105 C)	3.27		%
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	USDA60	PASTE pH	7.3		PH
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	3.2.3	Neutralization Potential	80		CaCO3/1000t
M30	Mesa II 1/2 Mine	M30-180	0	6	inch	1.3.1	Acid - Base Accounting	80		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	3.1	Moisture, Total (105 C)	3.53		%
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	USDA60	PASTE pH	7.5		PH
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	3.2.3	Neutralization Potential	51		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-37	0	6	inch	1.3.1	Acid - Base Accounting	51		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	3.1	Moisture, Total (105 C)	3.35		%
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	USDA60	PASTE pH	8.1		PH
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	3.2.3	Neutralization Potential	43		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-37	6	12	inch	1.3.1	Acid - Base Accounting	43		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	3.1	Moisture, Total (105 C)	3.54		%
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	USDA60	PASTE pH	7.8		PH
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	3.2.3	Neutralization Potential	94		CaCO3/1000t
M31	Mesa II 1/2 Mine, Mine 4	M31-9	0	6	inch	1.3.1	Acid - Base Accounting	94		CaCO3/1000t
M32	Mesa III Mine	M32-56	0	6	inch	3.1	Moisture, Total (105 C)	3.58		%
M32	Mesa III Mine	M32-56	0	6	inch	USDA60	PASTE pH	7.7		PH
M32	Mesa III Mine	M32-56	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M32	Mesa III Mine	M32-56	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M32	Mesa III Mine	M32-56	0	6	inch	3.2.3	Neutralization Potential	76		CaCO3/1000t
M32	Mesa III Mine	M32-56	0	6	inch	1.3.1	Acid - Base Accounting	76		CaCO3/1000t
M32	Mesa III Mine	M32-89	0	6	inch	3.1	Moisture, Total (105 C)	3.62		%
M32	Mesa III Mine	M32-89	0	6	inch	USDA60	PASTE pH	8		PH
M32	Mesa III Mine	M32-89	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M32	Mesa III Mine	M32-89	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M32	Mesa III Mine	M32-89	0	6	inch	3.2.3	Neutralization Potential	86		CaCO3/1000t
M32	Mesa III Mine	M32-89	0	6	inch	1.3.1	Acid - Base Accounting	86		CaCO3/1000t
M32	Mesa III Mine	M32-89	6	12	inch	3.1	Moisture, Total (105 C)	3.61		%
M32	Mesa III Mine	M32-89	6	12	inch	USDA60	PASTE pH	7.9		PH
M32	Mesa III Mine	M32-89	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M32	Mesa III Mine	M32-89	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M32	Mesa III Mine	M32-89	6	12	inch	3.2.3	Neutralization Potential	83		CaCO3/1000t



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M32	Mesa III Mine	M32-89	6	12	inch	1.3.1	Acid - Base Accounting	83		CaCO3/1000t
M33	Knife Edge Mesa	M33-86	0	6	inch	3.1	Moisture, Total (105 C)	1.68		%
M33	Knife Edge Mesa	M33-86	0	6	inch	USDA60	PASTE pH	8		PH
M33	Knife Edge Mesa	M33-86	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M33	Knife Edge Mesa	M33-86	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M33	Knife Edge Mesa	M33-86	0	6	inch	3.2.3	Neutralization Potential	126		CaCO3/1000t
M33	Knife Edge Mesa	M33-86	0	6	inch	1.3.1	Acid - Base Accounting	126		CaCO3/1000t
M34	Black No. 1 Mine	M34-97	0	6	inch	3.1	Moisture, Total (105 C)	3.82		%
M34	Black No. 1 Mine	M34-97	0	6	inch	USDA60	PASTE pH	8.1		PH
M34	Black No. 1 Mine	M34-97	0	6	inch	3.2.4/E1915	Sulfur, Total	0.13		%
M34	Black No. 1 Mine	M34-97	0	6	inch	1.3.1	Acid Potential	4		CaCO3/1000t
M34	Black No. 1 Mine	M34-97	0	6	inch	3.2.3	Neutralization Potential	135		CaCO3/1000t
M34	Black No. 1 Mine	M34-97	0	6	inch	1.3.1	Acid - Base Accounting	135		CaCO3/1000t
M35	Black No. 2 Mine	M35-22	0	6	inch	3.1	Moisture, Total (105 C)	3.85		%
M35	Black No. 2 Mine	M35-22	0	6	inch	USDA60	PASTE pH	7.7		PH
M35	Black No. 2 Mine	M35-22	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M35	Black No. 2 Mine	M35-22	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M35	Black No. 2 Mine	M35-22	0	6	inch	3.2.3	Neutralization Potential	125		CaCO3/1000t
M35	Black No. 2 Mine	M35-22	0	6	inch	1.3.1	Acid - Base Accounting	125		CaCO3/1000t
M35	Black No. 2 Mine	M35-22	6	12	inch	3.1	Moisture, Total (105 C)	3.83		%
M35	Black No. 2 Mine	M35-22	6	12	inch	USDA60	PASTE pH	7.8		PH
M35	Black No. 2 Mine	M35-22	6	12	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M35	Black No. 2 Mine	M35-22	6	12	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M35	Black No. 2 Mine	M35-22	6	12	inch	3.2.3	Neutralization Potential	66		CaCO3/1000t
M35	Black No. 2 Mine	M35-22	6	12	inch	1.3.1	Acid - Base Accounting	66		CaCO3/1000t
M36	Black No. 2 West Mine	M36-24	0	6	inch	3.1	Moisture, Total (105 C)	3.85		%
M36	Black No. 2 West Mine	M36-24	0	6	inch	USDA60	PASTE pH	7.6		PH
M36	Black No. 2 West Mine	M36-24	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
M36	Black No. 2 West Mine	M36-24	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
M36	Black No. 2 West Mine	M36-24	0	6	inch	3.2.3	Neutralization Potential	81		CaCO3/1000t
M36	Black No. 2 West Mine	M36-24	0	6	inch	1.3.1	Acid - Base Accounting	81		CaCO3/1000t
M37	Flag No. 1 Mine	M37-44	0	6	inch	3.1	Moisture, Total (105 C)	3.96		%
M37	Flag No. 1 Mine	M37-44	0	6	inch	USDA60	PASTE pH	8		PH
M37	Flag No. 1 Mine	M37-44	0	6	inch	3.2.4/E1915	Sulfur, Total	0.09		%
M37	Flag No. 1 Mine	M37-44	0	6	inch	1.3.1	Acid Potential	3		CaCO3/1000t
M37	Flag No. 1 Mine	M37-44	0	6	inch	3.2.3	Neutralization Potential	93		CaCO3/1000t
M37	Flag No. 1 Mine	M37-44	0	6	inch	1.3.1	Acid - Base Accounting	93		CaCO3/1000t
M38	Step Mesa Mine	M38-2	0	6	inch	3.1	Moisture, Total (105 C)	4.37		%
M38	Step Mesa Mine	M38-2	0	6	inch	USDA60	PASTE pH	7.7		PH

Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
M38	Step Mesa Mine	M38-2	0	6	inch	3.2.4/E1915	Sulfur, Total	0.07		%
M38	Step Mesa Mine	M38-2	0	6	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M38	Step Mesa Mine	M38-2	0	6	inch	3.2.3	Neutralization Potential	96		CaCO3/1000t
M38	Step Mesa Mine	M38-2	0	6	inch	1.3.1	Acid - Base Accounting	96		CaCO3/1000t
M38	Step Mesa Mine	M38-2	6	12	inch	3.1	Moisture, Total (105 C)	3.96		%
M38	Step Mesa Mine	M38-2	6	12	inch	USDA60	PASTE pH	7.6		PH
M38	Step Mesa Mine	M38-2	6	12	inch	3.2.4/E1915	Sulfur, Total	0.08		%
M38	Step Mesa Mine	M38-2	6	12	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M38	Step Mesa Mine	M38-2	6	12	inch	3.2.3	Neutralization Potential	60		CaCO3/1000t
M38	Step Mesa Mine	M38-2	6	12	inch	1.3.1	Acid - Base Accounting	60		CaCO3/1000t
M38	Step Mesa Mine	M38-2	12	18	inch	3.1	Moisture, Total (105 C)	4.11		%
M38	Step Mesa Mine	M38-2	12	18	inch	USDA60	PASTE pH	7.4		PH
M38	Step Mesa Mine	M38-2	12	18	inch	3.2.4/E1915	Sulfur, Total	0.07		%
M38	Step Mesa Mine	M38-2	12	18	inch	1.3.1	Acid Potential	2		CaCO3/1000t
M38	Step Mesa Mine	M38-2	12	18	inch	3.2.3	Neutralization Potential	92		CaCO3/1000t
M38	Step Mesa Mine	M38-2	12	18	inch	1.3.1	Acid - Base Accounting	92		CaCO3/1000t
T1	BR-01	T1-14	0	6	inch	3.1	Moisture, Total (105 C)	2.08		%
T1	BR-01	T1-14	0	6	inch	USDA60	PASTE pH	7.8		PH
T1	BR-01	T1-14	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
T1	BR-01	T1-14	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
T1	BR-01	T1-14	0	6	inch	3.2.3	Neutralization Potential	102		CaCO3/1000t
T1	BR-01	T1-14	0	6	inch	1.3.1	Acid - Base Accounting	102		CaCO3/1000t
T17	Mesa I Camp	T17-258	18	90	inch	3.1	Moisture, Total (105 C)	9.37		%
T17	Mesa I Camp	T17-258	18	90	inch	USDA60	PASTE pH	7.6		PH
T17	Mesa I Camp	T17-258	18	90	inch	3.2.4/E1915	Sulfur, Total	0	U	%
T17	Mesa I Camp	T17-258	18	90	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
T17	Mesa I Camp	T17-258	18	90	inch	3.2.3	Neutralization Potential	2		CaCO3/1000t
T17	Mesa I Camp	T17-258	18	90	inch	1.3.1	Acid - Base Accounting	2		CaCO3/1000t
T23	NA-0344B	T23-32	0	6	inch	3.1	Moisture, Total (105 C)	2.17		%
T23	NA-0344B	T23-32	0	6	inch	USDA60	PASTE pH	7.6		PH
T23	NA-0344B	T23-32	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
T23	NA-0344B	T23-32	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
T23	NA-0344B	T23-32	0	6	inch	3.2.3	Neutralization Potential	22		CaCO3/1000t
T23	NA-0344B	T23-32	0	6	inch	1.3.1	Acid - Base Accounting	22		CaCO3/1000t
T37	Cove Transfer Station South	T37-94	0	6	inch	3.1	Moisture, Total (105 C)	2.22		%
T37	Cove Transfer Station South	T37-94	0	6	inch	USDA60	PASTE pH	9.3		PH
T37	Cove Transfer Station South	T37-94	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%



Table F1-1. Paste pH and Acid-Base Accounting Results

Property ID	Property Name	Location	Top	Bottom	Unit	Method	Analyte	Result	Qualifier	Units
T37	Cove Transfer Station South	T37-94	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
T37	Cove Transfer Station South	T37-94	0	6	inch	3.2.3	Neutralization Potential	104		CaCO3/1000t
T37	Cove Transfer Station South	T37-94	0	6	inch	1.3.1	Acid - Base Accounting	104		CaCO3/1000t
T9	Cove Transfer Station	T9-67	0	6	inch	3.1	Moisture, Total (105 C)	2.28		%
T9	Cove Transfer Station	T9-67	0	6	inch	USDA60	PASTE pH	8.3		PH
T9	Cove Transfer Station	T9-67	0	6	inch	3.2.4/E1915	Sulfur, Total	0	U	%
T9	Cove Transfer Station	T9-67	0	6	inch	1.3.1	Acid Potential	0	U	CaCO3/1000t
T9	Cove Transfer Station	T9-67	0	6	inch	3.2.3	Neutralization Potential	34		CaCO3/1000t
T9	Cove Transfer Station	T9-67	0	6	inch	1.3.1	Acid - Base Accounting	34		CaCO3/1000t

Notes:
CaCO3/1000t Calcium carbonate per 1,000 tons soil
USDA U.S. Department of Agriculture

ATTACHMENT F2

SPLP RESULTS AND PERCENT RECOVERIES

Table F2-1. SPLP Analytical Results

Table F2-2. Soil Analytical Results

Table F2-3. SPLP Percent Recoveries

Table F2-1. SPLP Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M10-SB10-0612-01-092818	SPLP	<1	<0.01	0.0059	0.061	<0.005		<0.02	10	<0.1	<0.05	<0.2	<1	0.002	<0.2
M10-SS10-01-092818	SPLP	<1	<0.01	0.0014	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0014	<0.2
M11-SB35-0612-01-092818	SPLP	<1	<0.01	0.003	0.042	<0.005		<0.02	12	<0.1	<0.05	<0.2	<1	0.0022	<0.2
M11-SS35-01-092818	SPLP	2.7	0.0017	0.0038	0.048	<0.005		<0.02	11	0.0049	<0.05	<0.2	1.8	0.0038	<0.2
M12-SS33-01-092818	SPLP	<1	<0.01	<0.02	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0027	<0.2
M13-SB114-1230-01-091518	SPLP	<1	<0.01	<0.02	0.017	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.001	<0.2
M13-SS114-01-091518	SPLP	<1	<0.01	0.0029	0.04	<0.005		<0.02	11	<0.1	<0.05	<0.2	<1	0.001	<0.2
M14-SB37-0612-01-091818	SPLP	0.32	<0.01	<0.02	0.03	<0.005		<0.02	<10	0.0046	<0.05	<0.2	<1	0.0009	<0.2
M14-SB37-1218-01-091818	SPLP	0.43	<0.01	<0.02	0.037	<0.005		<0.02	<10	0.0041	<0.05	<0.2	<1	0.0012	<0.2
M14-SS37-01-091818	SPLP	0.27	<0.01	<0.02	0.036	<0.005		<0.02	6.2	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M15-SB84-0612-01-091418	SPLP	<1	<0.01	<0.02	0.04	<0.005		<0.02	12	<0.1	<0.05	<0.2	1.8	0.0011	<0.2
M15-SS14-01-091518	SPLP	1.1	<0.01	<0.02	0.042	<0.005		<0.02	8.9	<0.1	<0.05	<0.2	<1	0.0009	<0.2
M15-SS84-01-091418	SPLP	<1	<0.01	0.0024	0.048	<0.005		<0.02	10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M16-SB193-0612-01-091318	SPLP	1.2	<0.01	<0.02	0.12	<0.005		<0.02	23	<0.1	0.0021	<0.2	<1	<0.02	<0.2
M16-SB193-1218-01-091318	SPLP	<1	<0.01	<0.02	0.014	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M16-SS193-01-091318	SPLP	1	<0.01	0.01	0.088	<0.005		<0.02	25	<0.1	0.0019	<0.2	<1	<0.02	<0.2
M17-SB64-0612-01-091318	SPLP	<1	<0.01	<0.02	0.087	<0.005		<0.02	13	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M17-SB64-1218-01-091318	SPLP	<1	<0.01	<0.02	0.015	<0.005		<0.02	12	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M17-SS64-01-091318	SPLP	<1	<0.01	0.0039	0.055	<0.005		<0.02	15	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M18-SB145-0612-01-091418	SPLP	<1	<0.01	<0.02	0.03	<0.005		<0.02	14	<0.1	<0.05	<0.2	<1	0.0039	<0.2
M18-SS145-01-091418	SPLP	<1	<0.01	0.0041	0.022	<0.005		<0.02	11	<0.1	<0.05	<0.2	<1	0.002	<0.2
M19-SB36-0612-01-091818	SPLP	0.31	<0.01	<0.02	0.033	<0.005		<0.02	<10	0.0047	<0.05	<0.2	<1	0.006	<0.2
M19-SB36-1218-01-091818	SPLP	0.43	<0.01	<0.02	0.026	<0.005		<0.02	<10	0.0038	<0.05	<0.2	<1	0.0061	<0.2
M19-SS36-01-091818	SPLP	0.47	<0.01	0.0047	0.03	<0.005		<0.02	9.4	<0.1	<0.05	<0.2	<1	0.0079	<0.2
M1-SB36-0612-01-091618	SPLP	1.2	<0.01	<0.02	0.038	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0014	<0.2
M1-SB36-1218-01-091618	SPLP	<1	<0.01	<0.02	0.038	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0017	<0.2
M1-SB36-1824-01-091618	SPLP	<1	<0.01	<0.02	0.035	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0012	<0.2
M1-SB36-2436-01-091618	SPLP	1.3	<0.01	<0.02	0.039	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0036	<0.2
M1-SS36-01-091618	SPLP	<1	<0.01	<0.02	0.033	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M20-SB59-0612-01-091718	SPLP	<1	<0.01	<0.02	0.053	<0.005		<0.02	11	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M20-SB59-1218-01-091718	SPLP	<1	<0.01	<0.02	0.028	<0.005		<0.02	10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M20-SS59-01-091718	SPLP	<1	<0.01	0.0033	0.047	<0.005		<0.02	10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M21-SB528-0612-01-091218	SPLP	2.5	<0.01	0.0073	0.17	0.0005		<0.02	38	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M21-SB528-1218-01-091218	SPLP	2.3	<0.01	0.0064	0.14	0.0003		<0.02	36	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M21-SS46-01-091718	SPLP	0.52	<0.01	0.0066	0.042	<0.005		<0.02	16	<0.1	<0.05	<0.2	<1	0.0036	<0.2
M21-SS528-01-091218	SPLP	1.4	<0.01	0.002	0.093	<0.005		<0.02	17	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M22-SB104-0612-01-091718	SPLP	0.87	<0.01	<0.02	0.014	<0.005		<0.02	<10	0.0044	<0.05	<0.2	<1	<0.02	<0.2



Table F2-1. SPLP Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M22-SS104-01-091718	SPLP	1	<0.01	0.0048	0.03	<0.005		<0.02	13	<0.1	<0.05	<0.2	2.2	<0.02	<0.2
M23-SB54-0612-01-092718	SPLP	<1	<0.01	0.012	0.5	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.001	<0.2
M23-SB54-1218-01-092718	SPLP	<1	<0.01	0.0098	0.54	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M23-SS54-01-092718	SPLP	<1	<0.01	0.011	0.49	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M24-SB76-0612-01-092518	SPLP	1.8	<0.01	0.0082	0.1	<0.005		<0.02	14	<0.1	0.0016	<0.2	1.3	<0.02	<0.2
M24-SB76-1218-01-092518	SPLP	1.7	<0.01	0.0067	0.075	0.0003		<0.02	12	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M24-SS76-01-092518	SPLP	1.9	<0.01	0.009	0.11	0.0003		<0.02	14	<0.1	<0.05	<0.2	1.3	<0.02	<0.2
M25-SB50-0612-01-092818	SPLP	<1	<0.01	0.011	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0026	<0.2
M25-SB50-1218-01-092818	SPLP	<1	<0.01	0.0076	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0013	<0.2
M25-SS50-01-092818	SPLP	<1	<0.01	0.0089	<0.05	<0.005		<0.02	18	<0.1	<0.05	<0.2	<1	0.0011	<0.2
M26-SB28-0612-01-092618	SPLP	1.6	<0.01	0.01	0.024	<0.005		<0.02	12	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M26-SS28-01-092618	SPLP	1.4	<0.01	0.0092	0.025	<0.005		<0.02	11	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M27-SB51-0612-01-092618	SPLP	1.5	<0.01	0.0084	0.044	0.0004		<0.02	12	<0.1	<0.05	<0.2	1	<0.02	<0.2
M27-SS51-01-092618	SPLP	3.5	0.02	0.011	0.025	<0.005		<0.02	10	<0.1	<0.05	<0.2	1.1	<0.02	<0.2
M28-SB30-0612-01-092618	SPLP	1.6	<0.01	0.024	0.027	<0.005		<0.02	<10	<0.1	<0.05	<0.2	1.8	<0.02	<0.2
M28-SS30-01-092618	SPLP	1.5	<0.01	0.018	0.044	<0.005		<0.02	<10	<0.1	<0.05	<0.2	1.1	<0.02	<0.2
M28-SSG7-01-092618	SPLP	1.5	<0.01	0.0048	0.021	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M29-SS48-01-092518	SPLP	1.8	0.0037	0.0034	0.025	<0.005		<0.02	<10	<0.1	<0.05	<0.2	1.5	<0.02	<0.2
M2-SB51-090108-01-091718	SPLP	1.2	<0.01	0.0023	0.048	0.0004		<0.02	12	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M2-SB55-072090-01-091618	SPLP	0.48	<0.01	0.0035	0.053	<0.005		<0.02	11	0.0044	<0.05	<0.2	<1	0.0027	<0.2
M30-SS180-01-092918	SPLP	<1	<0.01	0.0059	0.058	<0.005		<0.02	15	<0.1	<0.05	<0.2	<1	0.0015	<0.2
M31-SB37-0612-01-092918	SPLP	<1	<0.01	0.0099	0.039	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0023	<0.2
M31-SS37-01-092918	SPLP	<1	<0.01	<0.02	0.048	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0016	<0.2
M31-SS9-01-092918	SPLP	<1	<0.01	0.0061	0.048	<0.005		<0.02	<10	0.0047	<0.05	<0.2	<1	0.0018	<0.2
M32-SB89-0612-01-092918	SPLP	<1	<0.01	0.011	0.046	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0054	<0.2
M32-SS56-01-092918	SPLP	<1	<0.01	0.0065	0.038	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0016	<0.2
M32-SS89-01-092918	SPLP	<1	0.0018	0.0081	0.046	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.006	<0.2
M33-SS86-01-091818	SPLP	1.4	<0.01	0.0066	0.047	<0.005		<0.02	9.4	<0.1	<0.05	<0.2	<1	0.0029	<0.2
M34-SS97-01-092718	SPLP	<1	<0.01	0.0081	1.8	<0.005		<0.02	10	<0.1	<0.05	<0.2	<1	0.0016	<0.2
M35-SB22-0612-01-092718	SPLP	<1	<0.01	0.0041	0.19	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.001	<0.2
M35-SS22-01-092718	SPLP	<1	<0.01	0.0048	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0011	<0.2
M36-SS24-01-092718	SPLP	<1	<0.01	0.0029	0.38	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0009	<0.2
M37-SS44-01-092718	SPLP	<1	<0.01	0.007	0.52	<0.005		<0.02	12	<0.1	<0.05	<0.2	<1	0.002	<0.2
M38-SB2-0612-01-092718	SPLP	<1	<0.01	0.0091	0.62	<0.005		<0.02	19	<0.1	<0.05	<0.2	<1	0.0014	<0.2
M38-SB2-1218-01-092718	SPLP	<1	<0.01	0.0059	1	<0.005		<0.02	36	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M38-SS2-01-092718	SPLP	<1	<0.01	0.0094	1.8	<0.005		<0.02	27	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M3-SB51-0612-01-091618	SPLP	<1	<0.01	<0.02	0.073	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M3-SB51-1218-01-091618	SPLP	<1	<0.01	<0.02	0.058	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2



Table F2-1. SPLP Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M3-SS51-01-091618	SPLP	<1	<0.01	0.0044	0.051	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M4-SB81-0612-01-091818	SPLP	1.2	<0.01	<0.02	0.041	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0031	<0.2
M4-SB81-1218-01-091818	SPLP	1.3	<0.01	<0.02	0.059	<0.005		<0.02	11	0.0048	<0.05	<0.2	<1	0.0014	<0.2
M4-SS81-01-091818	SPLP	1.4	<0.01	0.0018	0.048	<0.005		<0.02	8.2	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M5-SB149-0612-01-093018	SPLP	1.2	0.0017	0.0031	0.041	<0.005		<0.02	<10	0.0032	<0.05	<0.2	<1	<0.02	<0.2
M5-SB479-0612-01-093018	SPLP	2.1	0.0018	<0.02	0.056	<0.005		<0.02	<10	<0.1	<0.05	<0.2	1.4	<0.02	<0.2
M5-SS149-01-093018	SPLP	2.4	<0.01	0.0015	0.043	<0.005		<0.02	<10	0.0035	<0.05	<0.2	1.4	<0.02	<0.2
M5-SS479-01-093018	SPLP	2.4	0.0019	<0.02	0.048	<0.005		<0.02	<10	<0.1	<0.05	<0.2	1.1	<0.02	<0.2
M6-SB285-0612-01-091618	SPLP	<1	<0.01	<0.02	0.02	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M6-SB285-1218-01-091618	SPLP	<1	<0.01	<0.02	0.025	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M6-SS174-01-092718	SPLP	<1	<0.01	<0.02	<0.05	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	0.0016	<0.2
M6-SS285-01-091618	SPLP	<1	<0.01	0.006	0.021	<0.005		<0.02	8	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M7-SB161-0612-01-091618	SPLP	<1	<0.01	<0.02	0.042	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M7-SB161-1218-01-091618	SPLP	<1	<0.01	<0.02	0.049	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M7-SB161-1824-01-091618	SPLP	0.32	<0.01	<0.02	0.037	<0.005		<0.02	<10	0.004	<0.05	<0.2	<1	0.001	<0.2
M7-SB161-2430-01-091618	SPLP	0.45	<0.01	<0.02	0.025	<0.005		<0.02	<10	0.0041	<0.05	<0.2	<1	0.0016	<0.2
M7-SS161-01-091618	SPLP	0.31	<0.01	0.002	0.034	<0.005		<0.02	6.5	<0.1	<0.05	<0.2	<1	0.0017	<0.2
M8-SS120-01-092718	SPLP	<1	<0.01	<0.02	0.36	<0.005		<0.02	<10	<0.1	<0.05	<0.2	2.5	0.0012	<0.2
M8-SS52-01-091818	SPLP	3.5	<0.01	0.0069	0.048	0.0004		<0.02	15	<0.1	<0.05	<0.2	3	<0.02	<0.2
M9-SS19-01-093018	SPLP	<1	0.0017	<0.02	0.027	<0.005		<0.02	<10	<0.1	<0.05	<0.2	<1	<0.02	<0.2
T1-SS14-01-091618	SPLP	0.56	<0.01	0.002	0.044	<0.005	<1.5	<0.02	12	<0.1	<0.05	<0.2	<1	0.0009	<0.2
T17-SB258-018090-01-092518	SPLP	<1	<0.01	<0.02	0.068	0.0003	<1.5	<0.02	3.4	<0.1	<0.05	<0.2	<1	0.001	<0.2
T23-SS32-01-091418	SPLP	<1	<0.01	<0.02	0.031	<0.005	<1.5	<0.02	11	<0.1	<0.05	<0.2	<1	<0.02	<0.2
T37-SS94-01-091318	SPLP	3.7	<0.01	<0.02	0.42	0.0008	<1.5	<0.02	19	<0.1	<0.05	<0.2	<1	0.0028	<0.2
T9-SS67-01-091118	SPLP	1.2	<0.01	0.0067	0.032	<0.005	<1.5	<0.02	12	<0.1	<0.05	<0.2	<1	<0.02	<0.2
M21-SD2-01-091218	SPLP	<1	<0.01	0.0041	0.037	<0.005	<1.5	<0.02	7.8	<0.1	<0.05	<0.2	<1	<0.02	<0.2

Notes:
mg/L Milligram per liter
SPLP Synthetic precipitation leaching procedure



Table F2-1. SPLP Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M10-SB10-0612-01-092818	SPLP	0.56	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.012	0.2	<1
M10-SS10-01-092818	SPLP	0.39	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.016	0.18	<1
M11-SB35-0612-01-092818	SPLP	0.62	<0.05	<0.02	0.035	<0.1	<0.005	<10		<0.001	<0.002	0.013	0.52	<1
M11-SS35-01-092818	SPLP	1.9	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	<0.002	0.007	0.79	<1
M12-SS33-01-092818	SPLP	0.38	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0013	0.042	<1
M13-SB114-1230-01-091518	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.22	<1
M13-SS114-01-091518	SPLP	0.36	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0024	0.1	<1
M14-SB37-0612-01-091818	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0048	0.26	<1
M14-SB37-1218-01-091818	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0003	0.0052	0.3	<1
M14-SS37-01-091818	SPLP	0.34	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0042	0.23	<1
M15-SB84-0612-01-091418	SPLP	1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0021	0.52	<1
M15-SS14-01-091518	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.001	0.12	<1
M15-SS84-01-091418	SPLP	0.72	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0034	0.32	<1
M16-SB193-0612-01-091318	SPLP	<1	0.11	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.14	0.54	<1
M16-SB193-1218-01-091318	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	10		<0.001	<0.002	0.016	0.48	<1
M16-SS193-01-091318	SPLP	1.1	0.11	0.0027	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.15	0.35	<1
M17-SB64-0612-01-091318	SPLP	<1	0.13	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	1	0.37	<1
M17-SB64-1218-01-091318	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.13	0.12	<1
M17-SS64-01-091318	SPLP	1.3	0.12	0.0056	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.48	0.2	<1
M18-SB145-0612-01-091418	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.046	0.34	<1
M18-SS145-01-091418	SPLP	0.52	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.023	0.17	<1
M19-SB36-0612-01-091818	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.2	1.4	<1
M19-SB36-1218-01-091818	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	0.0002	0.17	1.6	<1
M19-SS36-01-091818	SPLP	0.58	<0.05	0.0088	<0.2	<0.1	<0.005	<10		0.0001	0.0002	0.31	1	<1
M1-SB36-0612-01-091618	SPLP	<1	0.052	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.058	<1
M1-SB36-1218-01-091618	SPLP	<1	0.058	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.085	<1
M1-SB36-1824-01-091618	SPLP	<1	0.064	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.085	<1
M1-SB36-2436-01-091618	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	<0.001	0.039	<1
M1-SS36-01-091618	SPLP	0.68	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0011	0.023	<1
M20-SB59-0612-01-091718	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0052	0.42	<1
M20-SB59-1218-01-091718	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0002	0.0018	0.42	<1
M20-SS59-01-091718	SPLP	0.45	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.019	0.3	<1
M21-SB528-0612-01-091218	SPLP	1.9	0.11	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.12	0.69	<1
M21-SB528-1218-01-091218	SPLP	2.3	0.11	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0021	0.1	0.9	<1
M21-SS46-01-091718	SPLP	0.41	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	0.0001	0.027	0.23	<1
M21-SS528-01-091218	SPLP	1.1	0.064	<0.02	0.03	<0.1	<0.005	<10		<0.001	<0.002	0.056	0.24	<1
M22-SB104-0612-01-091718	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0002	0.0025	0.13	<1
M22-SS104-01-091718	SPLP	1.3	<0.05	0.0012	<0.2	<0.1	<0.005	<10		0.0001	0.0003	0.0027	0.065	<1



Table F2-1. SPLP Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M23-SB54-0612-01-092718	SPLP	0.44	0.01	0.0008	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0076	0.09	0.34
M23-SB54-1218-01-092718	SPLP	0.33	0.0016	0.0012	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0032	0.026	0.37
M23-SS54-01-092718	SPLP	0.53	0.0043	0.0008	<0.2	<0.1	<0.005	<10		0.0001	<0.002	0.012	0.15	0.37
M24-SB76-0612-01-092518	SPLP	2.9	0.056	<0.02	<0.2	<0.1	<0.005	<10		0.0002	0.0009	0.0031	0.0029	<1
M24-SB76-1218-01-092518	SPLP	2.4	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	0.0004	0.0015	0.0079	<1
M24-SS76-01-092518	SPLP	2.1	<0.05	0.0059	<0.2	<0.1	<0.005	<10		0.0002	0.0008	0.0022	0.0056	<1
M25-SB50-0612-01-092818	SPLP	0.86	<0.05	0.024	<0.2	<0.1	<0.005	<10		0.0001	<0.002	0.12	0.38	<1
M25-SB50-1218-01-092818	SPLP	0.78	<0.05	0.012	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.037	0.5	<1
M25-SS50-01-092818	SPLP	1.3	<0.05	0.0043	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.014	0.083	<1
M26-SB28-0612-01-092618	SPLP	1.4	<0.05	0.0016	<0.2	<0.1	<0.005	<10		<0.001	0.0003	0.0061	0.065	<1
M26-SS28-01-092618	SPLP	1.7	<0.05	0.0026	<0.2	<0.1	<0.005	<10		<0.001	0.0005	0.0057	0.049	<1
M27-SB51-0612-01-092618	SPLP	1.3	<0.05	0.0029	<0.2	<0.1	<0.005	<10		<0.001	0.0006	0.014	0.058	<1
M27-SS51-01-092618	SPLP	1.5	<0.05	0.0016	<0.2	<0.1	<0.005	<10		0.0001	0.0006	0.0068	0.068	<1
M28-SB30-0612-01-092618	SPLP	1.4	<0.05	0.0016	<0.2	<0.1	0.0006	<10		0.0001	0.0006	0.034	2.1	<1
M28-SS30-01-092618	SPLP	1	<0.05	0.0009	<0.2	<0.1	<0.005	<10		0.0001	0.0005	0.027	1.4	<1
M28-SSG7-01-092618	SPLP	1.7	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0003	0.0035	0.36	<1
M29-SS48-01-092518	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0004	0.0083	0.46	<1
M2-SB51-090108-01-091718	SPLP	1.8	<0.05	<0.02	<0.2	<0.1	<0.005	11		<0.001	0.0001	0.0006	0.01	<1
M2-SB55-072090-01-091618	SPLP	1.4	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	<0.002	0.0096	0.19	<1
M30-SS180-01-092918	SPLP	1	<0.05	0.03	<0.2	0.016	<0.005	<10		<0.001	<0.002	0.0078	0.36	<1
M31-SB37-0612-01-092918	SPLP	0.65	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0081	0.11	<1
M31-SS37-01-092918	SPLP	0.61	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0032	0.066	<1
M31-SS9-01-092918	SPLP	1.2	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.042	0.93	<1
M32-SB89-0612-01-092918	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	<0.002	0.084	1.8	<1
M32-SS56-01-092918	SPLP	0.5	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.027	0.35	<1
M32-SS89-01-092918	SPLP	0.66	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.13	1.3	<1
M33-SS86-01-091818	SPLP	1.6	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0002	0.021	0.2	<1
M34-SS97-01-092718	SPLP	1.1	<0.05	0.0006	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0045	0.13	1.8
M35-SB22-0612-01-092718	SPLP	0.82	<0.05	0.0021	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0019	0.02	0.066
M35-SS22-01-092718	SPLP	0.96	<0.05	0.0007	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0016	0.024	<1
M36-SS24-01-092718	SPLP	0.59	0.0053	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0012	0.038	0.18
M37-SS44-01-092718	SPLP	1.4	0.0059	0.005	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0051	1.8	0.35
M38-SB2-0612-01-092718	SPLP	3.5	<0.05	0.0015	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.035	0.021	0.41
M38-SB2-1218-01-092718	SPLP	5.7	<0.05	0.0018	<0.2	0.0091	<0.005	<10		<0.001	<0.002	0.071	0.014	1
M38-SS2-01-092718	SPLP	4.2	<0.05	0.0007	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.022	0.02	1.9
M3-SB51-0612-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0029	0.037	<1
M3-SB51-1218-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0012	0.048	<1
M3-SS51-01-091618	SPLP	0.59	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	<0.001	0.04	<1



Table F2-1. SPLP Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	SPLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
M4-SB81-0612-01-091818	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	0.0003	0.0042	0.25	<1
M4-SB81-1218-01-091818	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0002	0.0038	0.25	<1
M4-SS81-01-091818	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0003	0.0033	0.24	<1
M5-SB149-0612-01-093018	SPLP	1.1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0064	0.45	<1
M5-SB479-0612-01-093018	SPLP	2.3	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.013	<1
M5-SS149-01-093018	SPLP	1.2	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0066	0.33	<1
M5-SS479-01-093018	SPLP	2.3	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	<0.001	0.0098	<1
M6-SB285-0612-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0033	0.23	<1
M6-SB285-1218-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0052	0.2	0.12
M6-SS174-01-092718	SPLP	0.88	<0.05	0.0008	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0025	0.077	<1
M6-SS285-01-091618	SPLP	0.49	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0031	0.2	<1
M7-SB161-0612-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0042	0.31	<1
M7-SB161-1218-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0069	0.28	<1
M7-SB161-1824-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0052	0.24	<1
M7-SB161-2430-01-091618	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0001	0.0027	0.21	<1
M7-SS161-01-091618	SPLP	0.49	<0.05	<0.02	<0.2	<0.1	<0.005	<10		0.0001	0.0002	0.0048	0.24	<1
M8-SS120-01-092718	SPLP	0.43	<0.05	0.0009	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0011	0.027	0.24
M8-SS52-01-091818	SPLP	2	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	0.0022	0.0025	1.2	<1
M9-SS19-01-093018	SPLP	0.79	<0.05	<0.02	<0.2	<0.1	<0.005	<10		<0.001	<0.002	0.0003	0.023	<1
T1-SS14-01-091618	SPLP	0.91	<0.05	<0.02	<0.2	<0.1	<0.005	<10	0.064	<0.001	<0.002	<0.001	0.01	<1
T17-SB258-018090-01-092518	SPLP	0.71	<0.05	<0.02	<0.2	<0.1	<0.005	<10	0.019	<0.001	0.0001	0.0003	0.0073	<1
T23-SS32-01-091418	SPLP	<1	<0.05	<0.02	<0.2	<0.1	<0.005	<10	<0.05	<0.001	<0.002	<0.001	0.034	<1
T37-SS94-01-091318	SPLP	3.1	0.16	<0.02	<0.2	<0.1	<0.005	78	0.19	<0.001	<0.002	0.016	0.086	<1
T9-SS67-01-091118	SPLP	1	<0.05	0.0037	<0.2	<0.1	<0.005	15	0.065	<0.001	<0.002	0.002	0.22	<1
M21-SD2-01-091218	SPLP	0.61	<0.05	<0.02	<0.2	<0.1	<0.005	<10	0.087	<0.001	0.0001	0.0068	0.12	<1

Notes:
mg/L Milligram per liter
SPLP Synthetic Precipitation Leaching Procedure



Table F2-1. SPLP Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	SPLP	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
M10-SB10-0612-01-092818	SPLP	0.89		0.86	0.49	2.08	<0.68	0.66	<0.087	<0.026			<0.66	0.093
M10-SS10-01-092818	SPLP	1.08		0.95	0.38	1.71	<0.69	1.09	<0.119	<0.042			<0.72	<0.152
M11-SB35-0612-01-092818	SPLP	2.1		2.1	3.61	6.9	1.17	4.59	0.17	0.033			<0.84	<0.047
M11-SS35-01-092818	SPLP	0.65		0.63	1.35	3.2	<0.63	1.09	<0.14	<0.03			<0.8	<0.089
M12-SS33-01-092818	SPLP	0.32		0.33	0.57	4.7	<0.82	0.79	<0.133	<0.042			<0.78	<0.173
M13-SB114-1230-01-091518	SPLP	0.23		0.124	<0.089	<0.48	<0.69	<0.17	<0.07	<0.026			<0.74	<0.085
M13-SS114-01-091518	SPLP	0.66		0.68	0.129	1.08	<0.73	1.11	<0.087	<0.016			<0.7	<0.074
M14-SB37-0612-01-091818	SPLP	0.61		0.58	0.64	2.05	0.88	1.42	<0.096	<0.023			<0.69	<0.097
M14-SB37-1218-01-091818	SPLP	1.17		1.12	1.31	0.47	1.81	2.92	<0.094	0.012			<0.69	<0.082
M14-SS37-01-091818	SPLP	1.12		0.92	0.56	3.1	0.92	2.10	<0.092	<0.029			<0.71	<0.056
M15-SB84-0612-01-091418	SPLP	0.5		0.52	0.58	1.08	<0.63	0.62	0.073	0.05			<0.87	<0.13
M15-SS14-01-091518	SPLP	0.3		0.35	<0.115	<0.47	<0.68	<0.25	<0.118	<0.065			<0.74	<0.154
M15-SS84-01-091418	SPLP	1.04		1	0.73	1.19	1.06	0.76	0.094	0.028			<1	0.079
M16-SB193-0612-01-091318	SPLP	2.53		1.93	1.87	5.1	1.49	9.80	0.099	<0.057			<0.83	<0.109
M16-SB193-1218-01-091318	SPLP	8.7		7.6	6.7	13.8	5.2	19.80	0.33	<0.085			<0.79	<0.25
M16-SS193-01-091318	SPLP	2.86		2.46	2.65	5.3	1.56	10.20	0.25	<0.079			<0.79	<0.24
M17-SB64-0612-01-091318	SPLP	8.2		7	4.51	9.6	2.4	7.70	0.48	0.067			<0.74	0.128
M17-SB64-1218-01-091318	SPLP	5.4		4.9	4.24	13.7	2.03	7.70	0.36	<0.034			<0.79	<0.116
M17-SS64-01-091318	SPLP	23.4		21.3	13.6	32.7	10.9	38.90	1.53	<0.063			<0.76	<0.23
M18-SB145-0612-01-091418	SPLP	3.95		3.54	21.3	8.2	1.55	3.43	0.132	0.019			<0.69	<0.074
M18-SS145-01-091418	SPLP	2.69		2.13	3.47	7.8	<0.72	3.10	0.165	<0.023			<0.69	<0.056
M19-SB36-0612-01-091818	SPLP	102		88	72	84	31.4	83.00	4.59	0.144			1.24	0.16
M19-SB36-1218-01-091818	SPLP	19.4		17.3	18.5	16.1	6.1	15.60	1.09	<0.027			<0.71	<0.083
M19-SS36-01-091818	SPLP	36.4		32.8	32.7	38	12.7	31.40	1.78	0.078			<0.75	0.067
M1-SB36-0612-01-091618	SPLP	0.181		0.32	<0.144	0.81	<0.71	0.42	<0.083	<0.06			<0.7	<0.24
M1-SB36-1218-01-091618	SPLP	0.44		0.44	0.32	1.61	<0.72	1.68	0.082	<0.061			<0.75	<0.21
M1-SB36-1824-01-091618	SPLP	0.29		0.22	<0.124	0.83	<0.73	0.36	<0.118	<0.058			<0.7	<0.143
M1-SB36-2436-01-091618	SPLP	0.31		0.33	<0.2	1.1	<0.73	1.50	0.069	<0.141			<0.98	<0.31
M1-SS36-01-091618	SPLP	0.32		0.177	0.117	0.65	<0.6	0.53	<0.082	<0.029			<0.75	<0.101
M20-SB59-0612-01-091718	SPLP	0.66		0.59	0.217	1.81	<0.6	0.58	<0.101	<0.028			<0.74	<0.089
M20-SB59-1218-01-091718	SPLP	0.34		0.35	0.109	0.66	<0.63	0.09	<0.047	<0.026			<0.93	<0.129
M20-SS59-01-091718	SPLP	1.41		1.26	0.9	2.48	<0.63	2.27	<0.128	<0.023			<0.76	<0.093
M21-SB528-0612-01-091218	SPLP	0.57		0.62	0.211	3.9	<0.67	0.76	<0.104	<0.017			<0.87	<0.078
M21-SB528-1218-01-091218	SPLP	0.36		0.44	0.148	3	<0.71	0.75	<0.092	0.018			<0.85	<0.072
M21-SS46-01-091718	SPLP	9.3		9	3.71	15.2	1	10.10	0.47	<0.018			<0.9	<0.071
M21-SS528-01-091218	SPLP	0.59		0.44	0.202	0.68	<0.7	1.09	<0.036	<0.0138			<0.83	<0.058
M22-SB104-0612-01-091718	SPLP	0.36		0.41	0.48	2.15	<0.62	2.68	<0.1	<0.022			<0.79	<0.101
M22-SS104-01-091718	SPLP	0.32		0.35	0.68	1.13	<0.64	0.93	0.04	<0.035			<0.83	<0.094



Table F2-1. SPLP Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	SPLP	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
M23-SB54-0612-01-092718	SPLP	2.33		2.13	0.83	1.87	<0.62	1.60	0.21	<0.058			<0.8	<0.154
M23-SB54-1218-01-092718	SPLP	1.58		1.27	0.243	1.33	<1.21	0.65	0.097	<0.03			<0.72	<0.135
M23-SS54-01-092718	SPLP	3.92		3.77	1.59	3	0.85	2.41	0.18	0.022			<0.72	<0.181
M24-SB76-0612-01-092518	SPLP	0.4		0.5	<0.101	<0.48	<0.64	<0.15	<0.101	<0.046			<0.69	<0.122
M24-SB76-1218-01-092518	SPLP	0.3		0.42	0.177	<0.69	<0.71	<0.187	<0.084	0.041			<0.87	<0.091
M24-SS76-01-092518	SPLP	0.46		0.53	<0.109	0.53	<0.65	0.22	<0.108	<0.041			<0.67	0.124
M25-SB50-0612-01-092818	SPLP	14.1		14.2	6.5	13.1	4.9	9.60	0.67	0.057			<0.79	<0.112
M25-SB50-1218-01-092818	SPLP	7.6		8.2	2.64	7.9	1.91	3.97	0.34	0.03			<0.7	<0.135
M25-SS50-01-092818	SPLP	12.8		12.4	5.45	12.4	3.36	10.20	0.67	0.053			<0.76	<0.134
M26-SB28-0612-01-092618	SPLP	1.38		1.03	0.48	2.9	<0.6	0.78	0.11	0.036			<0.96	<0.076
M26-SS28-01-092618	SPLP	1.96		1.65	0.45	3	<0.65	1.06	0.126	<0.04			<0.93	<0.106
M27-SB51-0612-01-092618	SPLP	1.24		0.93	1.33	4.6	0.89	1.59	<0.102	0.027			<0.77	<0.083
M27-SS51-01-092618	SPLP	0.8		0.87	0.66	4.2	<0.67	4.60	0.068	<0.025			<0.94	<0.079
M28-SB30-0612-01-092618	SPLP	0.33		0.25	0.322	7.7	<0.64	0.66	<0.079	<0.042			<0.88	<0.111
M28-SS30-01-092618	SPLP	5.5		4.5	7.1	15.9	7	13.00	0.32	0.06			<0.96	<0.084
M28-SSG7-01-092618	SPLP	0.48		0.45	0.234	2.29	<0.63	1.09	0.045	<0.031			<0.87	<0.081
M29-SS48-01-092518	SPLP	0.33		0.33	0.39	1.64	<0.65	1.45	<0.029	<0.027			<1	<0.086
M2-SB51-090108-01-091718	SPLP	<0.106		<0.154	<0.1	<0.34	<0.63	<0.25	<0.046	<0.031			<0.78	<0.099
M2-SB55-072090-01-091618	SPLP	10.2		9.2	19	24	16.1	40.70	0.44	0.133			<0.88	0.178
M30-SS180-01-092918	SPLP	2.35		2.25	<0.14	1.05	<0.72	0.36	<0.114	<0.04			<1	<0.18
M31-SB37-0612-01-092918	SPLP	1.41		1.22	2.97	7.4	1.18	3.45	<0.096	0.021			<0.82	<0.088
M31-SS37-01-092918	SPLP	0.92		0.74	0.94	0.76	<0.65	1.66	0.068	<0.056			<0.91	<0.148
M31-SS9-01-092918	SPLP	6.8		6.2	4.51	7.9	2.4	4.90	0.41	0.035			<0.75	<0.095
M32-SB89-0612-01-092918	SPLP	13.7		12.9	13.9	19.5	7.3	14.70	0.82	0.1			<0.73	<0.077
M32-SS56-01-092918	SPLP	4.7		4.5	5.01	8.2	2.33	9.10	0.13	0.029			<0.74	<0.076
M32-SS89-01-092918	SPLP	4.29		4.21	2.55	8.4	1.27	5.40	0.31	0.045			<0.77	<0.097
M33-SS86-01-091818	SPLP	1.77		1.99	0.34	5.2	<0.63	4.30	<0.089	<0.026			<0.83	<0.117
M34-SS97-01-092718	SPLP	1.32		1.15	0.2	3.6	<0.68	1.05	0.103	<0.032			<0.84	<0.097
M35-SB22-0612-01-092718	SPLP	0.7		0.78	0.177	1.49	<0.69	0.83	<0.034	<0.033			<0.69	<0.1
M35-SS22-01-092718	SPLP	0.68		0.78	0.285	1.52	<0.65	0.53	0.048	0.032			<0.67	<0.086
M36-SS24-01-092718	SPLP	0.152		0.24	0.127	0.61	<0.67	0.28	<0.044	<0.022			<0.7	<0.091
M37-SS44-01-092718	SPLP	1.23		1.1	0.9	2.22	<0.64	1.30	<0.15	0.028			<0.71	<0.094
M38-SB2-0612-01-092718	SPLP	13.2		12.2	0.16	7	<0.61	1.57	0.85	0.013			<0.74	<0.106
M38-SB2-1218-01-092718	SPLP	37.1		30.8	0.181	14.3	<0.66	1.48	1.54	<0.023			<0.73	<0.098
M38-SS2-01-092718	SPLP	9.7		7.8	1.08	4	1.07	2.47	0.47	0.027			<0.88	<0.111
M3-SB51-0612-01-091618	SPLP	0.35		0.47	0.42	0.89	<0.64	0.49	<0.199	<0.041			<0.78	<0.151
M3-SB51-1218-01-091618	SPLP	0.36		0.37	0.108	1.18	<0.59	<0.21	<0.089	<0.032			<0.73	<0.132
M3-SS51-01-091618	SPLP	<0.095		0.2	0.28	0.62	<0.62	<0.22	<0.036	<0.054			<0.9	<0.131



Table F2-1. SPLP Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	SPLP	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
M4-SB81-0612-01-091818	SPLP	1.02		1.11	5.57	4.8	2.22	3.44	<0.112	0.042			<0.97	<0.096
M4-SB81-1218-01-091818	SPLP	3.45		3.63	17.3	22.2	9.8	22.50	0.17	0.158			<0.93	0.151
M4-SS81-01-091818	SPLP	0.42		0.4	0.53	1.91	0.86	1.11	<0.076	<0.042			<0.8	<0.108
M5-SB149-0612-01-093018	SPLP	1.84		1.79	1.57	4.5	0.71	1.40	0.058	0.032			<0.81	<0.087
M5-SB479-0612-01-093018	SPLP	<0.138		<0.193	<0.089	<0.42	<0.61	<0.28	<0.14	<0.025			<0.79	0.097
M5-SS149-01-093018	SPLP	1.24		1.31	1.77	4	1.22	3.22	0.108	<0.031			<0.82	<0.109
M5-SS479-01-093018	SPLP	<0.19		<0.27	<0.091	<0.48	<0.63	0.38	<0.23	<0.031			<0.77	<0.111
M6-SB285-0612-01-091618	SPLP	2.06		2.02	2.92	3.2	2.65	6.40	<0.17	<0.037			<0.86	<0.09
M6-SB285-1218-01-091618	SPLP	4.03		3.49	4.56	4.3	3.14	4.90	0.17	0.045			<0.9	<0.111
M6-SS174-01-092718	SPLP	0.47		0.41	0.45	1.85	<0.71	1.48	0.052	<0.054			<0.7	<0.129
M6-SS285-01-091618	SPLP	0.92		0.75	0.7	1.46	0.97	3.60	<0.096	<0.038			<0.89	<0.098
M7-SB161-0612-01-091618	SPLP	0.3		0.28	0.94	3	<0.69	1.17	<0.025	<0.029			<0.87	<0.133
M7-SB161-1218-01-091618	SPLP	0.63		0.52	1.43	2.5	0.83	2.57	<0.15	<0.042			<0.82	<0.112
M7-SB161-1824-01-091618	SPLP	0.27		0.29	0.41	0.69	<0.63	0.38	<0.117	<0.03			<0.82	<0.106
M7-SB161-2430-01-091618	SPLP	0.53		0.61	1.91	4	<1.01	0.66	<0.104	<0.041			<0.83	<0.103
M7-SS161-01-091618	SPLP	0.92		0.9	1.22	4.4	<0.62	1.94	0.044	<0.037			<0.83	<0.083
M8-SS120-01-092718	SPLP	0.24		0.26	0.49	1.51	<0.66	0.37	<0.108	0.041			<0.74	<0.048
M8-SS52-01-091818	SPLP	0.8		0.76	<0.1	<0.53	<0.66	0.65	0.095	<0.025			<0.83	<0.114
M9-SS19-01-093018	SPLP	<0.126		0.117	0.123	0.5	<0.65	0.33	<0.128	<0.028			<0.85	<0.117
T1-SS14-01-091618	SPLP	<0.14		<0.068	0.107	<0.12	<0.23	<0.2	<-0.032	<0.01			<0.22	<0.053
T17-SB258-018090-01-092518	SPLP	0.12		<0.14	<0.068	<0.36	<0.15	<0.026	<0.021	<0.013			<0.08	<0.004
T23-SS32-01-091418	SPLP	0.3		0.39	<-0.021	<-0.04	<0.03	<0.027	0.052	0.015			<0.16	<0.012
T37-SS94-01-091318	SPLP	<0.017		0.087	<0.077	<0.21	<0.37	<0.09	<0.025	<0.014			<0.13	<-0.051
T9-SS67-01-091118	SPLP	1.03		0.73	<0.005	<0.22	<0.1	<0.11	<0.044	<0.015			<0.29	<0
M21-SD2-01-091218	SPLP	1.27		1.05	0.94	2.13	<0.61	3.65	<0	<0.031			<0.4	<-0.049

Notes:
K-40 Potassium-40
pCi/L Picocuries per liter
SPLP Synthetic precipitation leaching procedure
Th-232a Thorium-232a
Th-232g Thorium 232g
U-238a Uranium-238a
U-238g Uranium-238g



Table F2-2. Soil Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M10-SB10-0612-01-092818	Soil	3,700	0.046	3.1	100	0.26	<15	0.16	18,000	2.2	2.6	7.9	4,700	6.9	6.5
M10-SS10-01-092818	Soil	3,400	0.063	2.2	88	0.24	<15	0.13	18,000	2.2	2.2	6.6	4,200	6.4	6.3
M11-SB35-0612-01-092818	Soil	4,900	0.18	2.8	82	0.2	<12	0.028	32,000	3.4	2.9	7.7	6,700	6.9	17
M11-SS35-01-092818	Soil	7,000	0.16	6.4	270	0.34	<15	0.039	27,000	4.1	4	13	8,200	11	23
M12-SS33-01-092818	Soil	1,600	<0.091	0.51	15	0.074	<14	<0.18	4,800	0.93	0.77	2.2	1,800	2.7	2.6
M13-SB114-1230-01-091518	Soil	2,600	0.12	5	34	0.17	<13	<0.18	14,000	2.1	2.1	5.2	3,900	3.7	6.6
M13-SS114-01-091518	Soil	3,700	0.11	4.1	54	0.24	<15	0.049	20,000	2.9	3.4	6.6	4,800	6	8.7
M14-SB37-0612-01-091818	Soil	3,500	0.097	1.4	140	0.12	<15	<0.2	11,000	2.8	1.7	3.9	3,400	13	11
M14-SB37-1218-01-091818	Soil	3,700	0.11	1.4	59	0.13	<15	<0.19	11,000	2.7	1.7	3.4	3,500	13	13
M14-SS37-01-091818	Soil	4,000	0.16	1.6	78	0.15	<15	<0.2	11,000	3	2	3.8	4,200	15	14
M15-SB84-0612-01-091418	Soil	5,600	0.072	3.8	97	0.3	3.8	0.085	35,000	4.8	4	9.5	7,200	7.1	13
M15-SS14-01-091518	Soil	4,400	0.038	2.8	50	0.24	<15	0.044	3,700	2.8	2.3	5.3	4,900	4.5	6.2
M15-SS84-01-091418	Soil	6,300	0.12	3.4	75	0.36	3.5	0.084	37,000	5.9	4.9	10	8,600	7.6	15
M16-SB193-0612-01-091318	Soil	3,900	0.14	10	58	0.22	<14	0.07	14,000	3.2	2.5	6.8	5,600	6	10
M16-SB193-1218-01-091318	Soil	4,000	0.12	12	58	0.22	<14	0.066	15,000	2.9	2.6	6.4	5,800	5.8	11
M16-SS193-01-091318	Soil	4,000	0.11	11	60	0.24	<15	0.064	16,000	3.3	2.7	7.5	5,800	6.2	11
M17-SB64-0612-01-091318	Soil	3,300	0.11	4.6	38	0.18	<15	0.1	11,000	3.4	2	4.7	4,400	8.5	8.1
M17-SB64-1218-01-091318	Soil	3,400	0.1	4.5	35	0.19	<15	0.084	9,500	3.8	1.9	4.6	4,400	8.2	8.3
M17-SS64-01-091318	Soil	3,400	0.1	5	32	0.19	<15	0.082	11,000	3.9	1.8	4.2	4,500	8.9	8
M18-SB145-0612-01-091418	Soil	5,000	0.45	9.1	240	0.31	<15	0.89	17,000	1.7	4.7	8.3	9,000	18	9.8
M18-SS145-01-091418	Soil	3,700	0.17	3.7	66	0.22	<14	0.23	10,000	1.8	2.8	5.5	5,400	8	6.9
M19-SB36-0612-01-091818	Soil	3,000	0.11	3.3	64	0.11	<15	0.24	12,000	1.8	1.9	4.7	4,100	12	8.1
M19-SB36-1218-01-091818	Soil	3,300	0.078	2.7	28	0.12	<14	0.17	11,000	2	1.8	4.2	3,900	9.3	8.6
M19-SS36-01-091818	Soil	3,300	<0.1	3.4	29	0.13	<15	0.25	11,000	1.9	1.9	5.3	3,800	11	8.3
M1-SB36-0612-01-091618	Soil	3,100	0.048	3.6	32	0.14	<14	0.062	8,800	2	1.9	4.7	2,800	9.8	6.3
M1-SB36-1218-01-091618	Soil	3,000	<0.095	1	24	0.15	<14	0.037	8,600	2	1.4	4.7	2,600	3.4	6.5
M1-SB36-1824-01-091618	Soil	3,200	<0.092	1.1	27	0.16	<14	0.043	8,800	2.1	1.4	4.9	2,800	3.7	6.7
M1-SB36-2436-01-091618	Soil	3,200	0.03	1.4	30	0.17	<15	0.039	9,400	2.3	1.5	4.9	3,000	3.9	6.6
M1-SS36-01-091618	Soil	2,400	<0.096	1.2	28	0.13	<14	0.035	8,500	1.7	1.2	4.4	2,300	3.5	4.4
M20-SB59-0612-01-091718	Soil	4,900	0.17	3.9	210	0.33	<15	0.06	29,000	4.4	3.5	8.3	6,500	7.7	12
M20-SB59-1218-01-091718	Soil	4,100	0.17	2.6	52	0.27	<16	0.045	29,000	3.8	3	7.2	5,600	5.8	11
M20-SS59-01-091718	Soil	4,600	0.17	3.6	63	0.29	<14	0.048	22,000	3.8	3.1	7.2	5,900	9.2	12
M21-SB528-0612-01-091218	Soil	5,700	<0.1	2.7	68	0.31	<15	<0.2	17,000	5.6	3.7	6.5	6,500	6.4	16
M21-SB528-1218-01-091218	Soil	4,700	0.13	2.3	88	0.25	<15	<0.2	20,000	4.8	3.1	7.2	6,100	6.8	13
M21-SS46-01-091718	Soil	4,500	0.17	8.7	100	0.26	<14	0.061	24,000	3	3	11	5,000	23	14
M21-SS528-01-091218	Soil	4,500	<0.1	2	270	0.25	<15	<0.2	18,000	4.4	2.7	5.8	5,600	6	12
M22-SB104-0612-01-091718	Soil	4,600	0.084	2.7	43	0.27	<15	0.1	26,000	4.3	3.3	7.3	6,700	6.9	11



Table F2-2. Soil Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M22-SS104-01-091718	Soil	4,300	0.11	5.2	95	0.27	<15	0.087	25,000	3.5	3.2	7.5	6,000	6	9.4
M23-SB54-0612-01-092718	Soil	2,800	0.11	6.7	40	0.15	<14	<0.19	10,000	1.3	1.9	4.2	3,700	4.3	5.4
M23-SB54-1218-01-092718	Soil	2,600	0.09	7.6	31	0.13	<15	<0.2	5,100	1.1	2	4.1	3,700	4	4.8
M23-SS54-01-092718	Soil	3,500	0.14	7.8	79	0.19	<13	0.034	11,000	1.8	2.3	5.2	4,900	5.3	7.3
M24-SB76-0612-01-092518	Soil	8,600	0.13	28	330	0.59	<14	0.1	43,000	5	8.6	20	16,000	12	22
M24-SB76-1218-01-092518	Soil	5,500	0.098	14	150	0.37	<15	0.087	32,000	8.5	5.5	10	7,800	7.3	12
M24-SS76-01-092518	Soil	9,400	0.17	32	260	0.64	<16	0.11	32,000	5.5	8.4	23	16,000	13	23
M25-SB50-0612-01-092818	Soil	3,800	0.056	4.8	53	0.26	<13	0.092	9,600	1.8	2.6	6.1	4,900	6	7.6
M25-SB50-1218-01-092818	Soil	3,700	0.045	4.4	84	0.3	<15	0.033	11,000	2	2.5	7.8	5,400	5.4	6.8
M25-SS50-01-092818	Soil	4,700	0.035	7.4	84	0.29	<15	0.046	13,000	2.3	3	7.7	5,800	7	9.6
M26-SB28-0612-01-092618	Soil	5,300	0.057	6.9	93	0.33	<15	0.054	25,000	3.8	3.8	9.8	7,100	6.4	11
M26-SS28-01-092618	Soil	5,300	0.059	6.3	88	0.35	<15	0.048	19,000	3.3	3.6	9.6	7,100	6.5	11
M27-SB51-0612-01-092618	Soil	4,900	0.072	6.9	100	0.31	<15	0.043	17,000	2.7	4.3	10	6,700	7.6	12
M27-SS51-01-092618	Soil	4,900	0.098	6.1	68	0.27	<14	0.041	16,000	3	3.3	8.7	6,600	8.3	11
M28-SB30-0612-01-092618	Soil	2,400	0.23	15	51	0.11	<14	1.2	8,200	1.6	2.1	5.2	4,400	6	8.1
M28-SS30-01-092618	Soil	3,900	0.18	12	85	0.19	<14	0.83	14,000	2.7	2.9	8.9	5,400	5.8	12
M28-SSG7-01-092618	Soil	2,600	0.044	2.3	40	0.14	<14	0.064	13,000	2.1	1.4	3	2,200	2	7.2
M29-SS48-01-092518	Soil	3,200	0.085	2.8	27	0.19	<15	0.062	28,000	2	2	6.3	4,000	4.1	7.1
M2-SB51-090108-01-091718	Soil	3,000	<0.1	1.6	46	0.21	2.8	<0.2	4,700	2.8	1.7	3.2	3,500	2.8	4.4
M2-SB55-072090-01-091618	Soil	3,100	0.075	3.3	32	0.12	<14	0.081	13,000	2.3	1.5	3.1	2,900	5.3	6
M30-SS180-01-092918	Soil	5,800	0.064	5.8	130	0.37	<14	0.066	31,000	3.3	3.6	9.6	7,800	7.8	11
M31-SB37-0612-01-092918	Soil	3,800	0.1	8.7	76	0.22	<14	0.071	16,000	2.4	2.3	6.2	5,100	6.5	7.8
M31-SS37-01-092918	Soil	5,000	0.086	4.7	87	0.31	<15	0.075	23,000	3.6	3.6	9.2	7,000	8	9.7
M31-SS9-01-092918	Soil	6,900	0.14	5.1	99	0.42	<13	0.095	48,000	5.9	4.8	12	9,300	12	16
M32-SB89-0612-01-092918	Soil	6,000	0.17	12	120	0.23	<15	0.069	27,000	4.3	3.3	12	6,500	11	17
M32-SS56-01-092918	Soil	5,900	0.072	4.9	68	0.27	<15	0.081	33,000	3.3	3.3	9.5	6,000	7.1	14
M32-SS89-01-092918	Soil	6,600	0.091	6.9	42	0.24	<15	0.1	23,000	4.6	3.2	10	6,500	12	18
M33-SS86-01-091818	Soil	5,300	<0.097	3.8	110	0.27	<15	0.15	32,000	3.6	3.2	9.2	5,900	12	16
M34-SS97-01-092718	Soil	5,300	0.12	3.2	380	0.33	<15	0.064	38,000	4.5	3.9	10	7,300	6.8	13
M35-SB22-0612-01-092718	Soil	3,500	0.075	4.6	50	0.21	<15	0.052	17,000	2.5	2.5	7.6	4,800	5.8	7.3
M35-SS22-01-092718	Soil	3,100	0.044	3	57	0.23	<15	0.044	14,000	2.6	2.8	6.1	4,200	4.7	6.7
M36-SS24-01-092718	Soil	4,600	0.044	2.4	150	0.29	<14	0.071	24,000	3.3	2.9	7.3	5,800	5.6	8.7
M37-SS44-01-092718	Soil	6,500	0.41	2.4	48	0.42	3.8	0.097	36,000	6.3	4.6	13	10,000	8.1	16
M38-SB2-0612-01-092718	Soil	9,200	0.08	19	120	0.58	3.7	0.12	25,000	7.2	6.7	19	11,000	11	23
M38-SB2-1218-01-092718	Soil	8,000	0.068	18	100	0.49	3.2	0.19	23,000	6.4	5.2	16	10,000	10	21
M38-SS2-01-092718	Soil	8,800	0.058	13	88	0.56	3.7	0.11	34,000	7.4	6.6	17	11,000	10	21
M3-SB51-0612-01-091618	Soil	4,700	0.15	4.3	160	0.35	<16	0.05	20,000	3	3.5	10	6,500	7.1	8.4

Table F2-2. Soil Analytical Results (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M3-SB51-1218-01-091618	Soil	4,000	0.14	3.7	150	0.31	<15	0.035	17,000	2.7	3.1	9	6,200	7.2	6.8
M3-SS51-01-091618	Soil	3,000	0.12	2.5	76	0.22	<15	0.041	15,000	2.3	2.4	5.9	4,700	4.4	5.5
M4-SB81-0612-01-091818	Soil	5,400	0.57	6	94	0.3	<15	0.034	17,000	3.8	3.1	5.7	7,700	28	18
M4-SB81-1218-01-091818	Soil	4,600	0.094	2	91	0.24	<15	<0.2	19,000	3.3	2.6	4.3	5,300	6.8	12
M4-SS81-01-091818	Soil	4,300	0.12	1.8	110	0.22	<13	0.032	12,000	3.2	2.6	4.2	5,100	7.4	10
M5-SB149-0612-01-093018	Soil	3,800	0.11	2.2	240	0.23	<14	0.045	16,000	3.3	2.4	18	4,900	5.6	9.6
M5-SB479-0612-01-093018	Soil	6,000	0.048	1.8	110	0.37	<16	<0.21	8,400	3	2.3	2.6	4,300	3	16
M5-SS149-01-093018	Soil	4,000	0.086	2	72	0.21	<13	0.039	20,000	3.3	2.5	5.5	4,800	5.3	10
M5-SS479-01-093018	Soil	5,600	0.048	1.5	82	0.32	<14	<0.18	8,500	2.8	2.2	2.3	4,200	3	15
M6-SB285-0612-01-091618	Soil	2,600	0.043	1.9	55	0.14	<15	<0.2	10,000	1.3	1.7	4.3	3,000	4.8	6.3
M6-SB285-1218-01-091618	Soil	3,700	0.069	4.2	85	0.25	<15	<0.21	13,000	1.7	2.5	6.7	5,000	6	7.1
M6-SS174-01-092718	Soil	3,400	0.11	1.5	49	0.21	<15	<0.2	17,000	4.6	2.2	5	4,700	5.4	7.8
M6-SS285-01-091618	Soil	3,100	<0.1	2.4	58	0.16	<15	<0.2	15,000	1.4	2.1	4.7	3,700	5.1	6.2
M7-SB161-0612-01-091618	Soil	4,900	0.18	2.8	110	0.23	<15	<0.2	18,000	3.8	3	5.9	6,500	11	14
M7-SB161-1218-01-091618	Soil	4,300	0.16	2.3	88	0.21	<15	0.036	23,000	3.5	2.8	5.6	6,100	8.5	12
M7-SB161-1824-01-091618	Soil	3,900	0.069	2.1	66	0.2	<15	<0.2	20,000	3.3	2.4	5.4	5,200	6.5	11
M7-SB161-2430-01-091618	Soil	3,500	0.042	1.7	69	0.18	<15	<0.2	18,000	2.8	2.2	5	4,300	5.9	11
M7-SS161-01-091618	Soil	5,400	0.12	2.8	140	0.25	<15	<0.2	18,000	4.5	3.3	7.1	6,600	20	17
M8-SS120-01-092718	Soil	3,900	0.069	1.2	94	0.35	<15	<0.2	4,200	8.4	2.4	5.7	5,100	6.1	7.9
M8-SS52-01-091818	Soil	5,300	0.4	4.4	110	0.46	<15	<0.21	25,000	4.7	3.7	7.2	11,000	11	11
M9-SS19-01-093018	Soil	1,900	0.047	1.2	37	0.14	<12	<0.16	5,600	1.3	1	1.9	2,700	2.6	4.2
T1-SS14-01-091618	Soil	4,300	<0.1	2.3	93	0.27	<15	0.086	27,000	3.6	2.2	4.9	4,700	5.9	5.8
T9-SS67-01-091118	Soil	4,700	0.1	2.9	120	0.41	<14	0.032	15,000	6.1	3	4.5	6,200	6.1	7.6
T17-SB258-018090-01-092518	Soil	4,100	0.042	2.5	78	0.31	<15	0.035	2,300	3.3	2.7	4	5,000	4.1	5.7
T23-SS32-01-091418	Soil	6,100	<0.097	3.5	94	0.41	<15	0.06	9,300	4.7	3.6	7.3	7,000	6.2	8.5
T37-SS94-01-091318	Soil	4,800	0.05	2.4	150	0.22	<15	0.042	33,000	4.3	2.6	3.4	5,100	4.5	7.5
M21-SD2-01-091218	Soil	3,400	0.14	4.1	58	0.17	<2.5	0.057	12,000	2.6	2.4	9.6	4,900	8	8.6

Note:
mg/kg Milligram per kilogram

Table F2-2. Soil Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M10-SB10-0612-01-092818	Soil	2,400	190	0.33	3.1	3.1	0.033	30	68	0.062	2.4	60	140	14
M10-SS10-01-092818	Soil	2,200	200	0.63	3	1.5	0.036	26	58	0.056	2.1	99	230	12
M11-SB35-0612-01-092818	Soil	4,200	180	0.13	4.6	1.2	0.5	31	74	0.17	2.2	58	550	15
M11-SS35-01-092818	Soil	5,400	170	0.15	6.4	3	0.54	40	220	0.43	3	65	2700	21
M12-SS33-01-092818	Soil	940	56	<0.18	0.95	0.36	0.029	<91	15	0.013	0.91	6.7	36	4.8
M13-SB114-1230-01-091518	Soil	1,800	130	3.8	2.8	0.81	0.035	<90	47	0.022	1.6	5.5	46	15
M13-SS114-01-091518	Soil	2,600	200	1.3	3.6	2.6	0.033	<100	50	0.059	2.3	63	150	15
M14-SB37-0612-01-091818	Soil	2,300	130	0.29	2.5	0.96	0.024	<98	35	0.11	1.5	150	510	<9.8
M14-SB37-1218-01-091818	Soil	2,300	150	0.37	2.3	0.89	0.017	<97	32	0.12	1.5	150	610	<9.7
M14-SS37-01-091818	Soil	2,600	150	0.36	2.7	0.92	0.032	<98	32	0.13	1.7	120	560	9.7
M15-SB84-0612-01-091418	Soil	4,200	230	0.36	6.9	2.2	0.095	<98	92	0.079	3.2	15	160	20
M15-SS14-01-091518	Soil	2,500	180	0.28	3.3	1.2	0.019	<98	13	0.042	2	6.1	39	89
M15-SS84-01-091418	Soil	4,900	240	0.3	8.6	2.5	0.14	<100	100	0.084	4	28	150	26
M16-SB193-0612-01-091318	Soil	3,600	150	5.9	3.9	2.9	0.026	<94	43	0.19	2	50	230	15
M16-SB193-1218-01-091318	Soil	3,600	150	6.8	4	2.4	0.025	<97	47	0.22	2.1	55	280	16
M16-SS193-01-091318	Soil	3,700	160	5.2	4.4	2.1	0.029	<100	46	0.17	2.1	52	240	19
M17-SB64-0612-01-091318	Soil	2,500	140	3.1	3	6.4	0.039	<99	28	0.14	1.6	270	430	17
M17-SB64-1218-01-091318	Soil	2,500	140	3.1	3.1	6.9	0.04	<99	30	0.13	1.5	210	440	17
M17-SS64-01-091318	Soil	2,600	150	2.6	3	5.9	0.048	<99	33	0.11	1.6	180	380	18
M18-SB145-0612-01-091418	Soil	2,800	590	0.24	3.3	1.9	1.1	<100	49	0.27	2.2	480	2300	18
M18-SS145-01-091418	Soil	2,300	130	0.17	2.8	1.2	0.21	<95	27	0.12	1.8	280	870	11
M19-SB36-0612-01-091818	Soil	2,000	120	2.2	2.9	23	0.052	<100	27	0.28	1.6	360	330	17
M19-SB36-1218-01-091818	Soil	2,000	120	2.2	2.7	16	0.047	<96	27	0.2	1.6	340	400	12
M19-SS36-01-091818	Soil	2,000	110	8.1	2.7	21	0.065	<100	29	0.22	1.6	390	420	13
M1-SB36-0612-01-091618	Soil	2,600	76	1.6	2.5	0.48	0.021	<91	24	0.46	1.1	460	150	<9.1
M1-SB36-1218-01-091618	Soil	2,600	72	<0.19	2.4	0.38	0.013	<95	22	0.023	1	4.8	63	<9.5
M1-SB36-1824-01-091618	Soil	2,700	74	<0.18	2.4	0.4	0.015	<92	24	0.025	1.1	5.2	66	<9.2
M1-SB36-2436-01-091618	Soil	2,700	88	<0.19	2.7	0.45	0.017	<97	25	0.027	1.1	4.1	52	<9.7
M1-SS36-01-091618	Soil	1,900	84	0.091	2.1	0.36	0.012	<96	21	0.022	0.97	6	36	6.9
M20-SB59-0612-01-091718	Soil	3,900	200	<0.2	5.8	2.2	0.05	<100	100	0.072	3.2	71	250	21
M20-SB59-1218-01-091718	Soil	3,400	190	<0.21	5.1	1	0.066	<100	97	0.044	2.8	12	140	19
M20-SS59-01-091718	Soil	3,400	170	0.28	4.8	2.2	0.06	<96	72	0.081	2.9	130	510	16
M21-SB528-0612-01-091218	Soil	4,500	120	0.14	6.7	1.4	0.023	<100	66	0.068	3.3	50	160	19
M21-SB528-1218-01-091218	Soil	3,900	140	0.11	5.7	1.5	0.053	<100	73	0.063	2.7	69	180	17
M21-SS46-01-091718	Soil	3,000	190	1.6	4.4	4.9	0.12	<96	53	0.35	1.7	660	520	15
M21-SS528-01-091218	Soil	3,600	130	0.1	4.9	1.1	0.024	<100	60	0.044	2.6	60	120	16
M22-SB104-0612-01-091718	Soil	3,500	140	0.51	5.5	1.2	0.024	<100	100	0.072	2.9	71	230	18
M22-SS104-01-091718	Soil	3,500	210	0.74	5	2.6	0.035	<100	97	0.072	2.4	14	61	18



Table F2-2. Soil Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M23-SB54-0612-01-092718	Soil	2,100	100	0.43	2.2	1.2	0.048	19	36	0.079	1.4	27	230	10
M23-SB54-1218-01-092718	Soil	2,000	60	0.49	1.9	1	0.041	21	35	0.077	1.3	15	67	9
M23-SS54-01-092718	Soil	2,600	130	0.51	3.1	1.6	0.05	24	44	0.09	1.8	36	320	12
M24-SB76-0612-01-092518	Soil	8,900	450	7.8	10	1.9	0.034	77	230	1.1	5.2	9.4	16	42
M24-SB76-1218-01-092518	Soil	5,000	310	3.1	6.1	1.1	0.02	43	140	0.41	3.1	6.4	15	21
M24-SS76-01-092518	Soil	9,000	360	7.4	10	1.9	0.032	69	190	1.2	5.8	9.3	21	45
M25-SB50-0612-01-092818	Soil	3,100	120	4.1	2.6	1.3	0.026	24	71	0.17	2.1	89	250	12
M25-SB50-1218-01-092818	Soil	2,900	140	1.4	2.8	0.7	0.016	30	82	0.073	2.7	25	84	13
M25-SS50-01-092818	Soil	4,000	130	0.86	3.3	1.2	0.025	30	83	0.12	2.5	43	170	16
M26-SB28-0612-01-092618	Soil	4,900	280	0.59	5.2	2.5	0.029	51	130	0.084	3	12	43	21
M26-SS28-01-092618	Soil	4,700	220	0.6	4.9	2.4	0.027	49	110	0.078	3.1	14	49	20
M27-SB51-0612-01-092618	Soil	4,200	200	1.3	4.6	1.9	0.026	36	85	0.12	3	30	51	17
M27-SS51-01-092618	Soil	4,100	190	1.2	4.4	1.9	0.029	34	73	0.11	2.8	26	63	17
M28-SB30-0612-01-092618	Soil	1,700	82	3.3	2.4	7.2	0.28	<96	52	0.36	1.3	400	820	9.3
M28-SS30-01-092618	Soil	3,200	110	2.7	4.4	7	0.32	30	68	0.19	2	230	550	16
M28-SSG7-01-092618	Soil	2,800	110	0.099	2	0.7	0.021	21	56	0.029	1.1	34	73	7.7
M29-SS48-01-092518	Soil	2,200	300	0.23	3	2.3	0.018	23	62	0.095	1.5	23	860	10
M2-SB51-090108-01-091718	Soil	1,700	130	0.18	3	0.48	0.0092	200	22	0.035	1.9	0.85	6.9	8.4
M2-SB55-072090-01-091618	Soil	2,100	110	5.7	2.4	0.65	0.021	<96	33	0.18	1.1	36	330	14
M30-SS180-01-092918	Soil	4,600	250	2.2	5	2.5	0.032	42	130	0.12	3.1	15	86	21
M31-SB37-0612-01-092918	Soil	2,600	160	10	3.2	4.5	0.043	28	56	0.18	2.3	43	240	13
M31-SS37-01-092918	Soil	3,600	210	2	5.1	2.1	0.048	39	83	0.12	3	27	72	20
M31-SS9-01-092918	Soil	5,400	300	0.39	8.1	3.5	0.09	68	130	0.14	4	170	860	24
M32-SB89-0612-01-092918	Soil	4,500	230	40	5.4	13	0.059	43	130	0.48	2.7	360	1200	23
M32-SS56-01-092918	Soil	4,700	350	0.53	4.6	3.7	0.08	31	84	0.15	2.3	150	820	23
M32-SS89-01-092918	Soil	5,100	160	14	5.8	12	0.049	45	93	0.23	2.9	440	910	24
M33-SS86-01-091818	Soil	4,700	230	0.59	4.7	2.6	0.038	<97	86	0.14	2.3	130	290	18
M34-SS97-01-092718	Soil	6,000	310	0.81	6.4	0.92	0.021	83	160	0.059	3.8	42	42	45
M35-SB22-0612-01-092718	Soil	3,100	170	0.95	3.3	1.4	0.035	37	79	0.068	2.4	11	20	14
M35-SS22-01-092718	Soil	3,000	150	0.68	3.1	0.99	0.025	35	70	0.055	2.3	6.5	16	13
M36-SS24-01-092718	Soil	4,100	190	0.22	4.6	0.76	0.029	38	120	0.045	2.9	8.5	36	17
M37-SS44-01-092718	Soil	6,400	220	0.41	8.9	0.83	0.05	95	210	0.061	4.8	18	140	27
M38-SB2-0612-01-092718	Soil	9,200	200	0.82	12	4.5	0.051	90	150	0.16	5.3	60	39	34
M38-SB2-1218-01-092718	Soil	8,000	180	1.4	10	4.4	0.057	77	150	0.15	4.6	91	33	29
M38-SS2-01-092718	Soil	8,800	260	0.5	12	3.1	0.042	88	150	0.13	5	30	34	33
M3-SB51-0612-01-091618	Soil	3,000	370	<0.21	4.7	1.7	0.036	<100	60	0.073	3.4	14	97	17
M3-SB51-1218-01-091618	Soil	2,600	380	<0.2	4.2	1	0.03	<100	51	0.065	3	8.8	64	14
M3-SS51-01-091618	Soil	2,100	170	0.11	3.2	0.82	0.021	<100	40	0.036	2.2	2.7	46	11

Table F2-2. Soil Analytical Results (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
Units	Soil	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
M4-SB81-0612-01-091818	Soil	3,500	160	<0.2	4.7	2.8	0.08	<100	46	0.12	2.6	58	730	16
M4-SB81-1218-01-091818	Soil	3,100	140	<0.2	4.5	1.6	0.081	<100	51	0.09	2.3	47	320	14
M4-SS81-01-091818	Soil	2,700	130	0.14	3.9	1.7	0.065	<88	34	0.091	2.5	130	300	16
M5-SB149-0612-01-093018	Soil	3,000	100	0.14	4.3	2.3	0.068	28	82	0.12	2.2	670	440	14
M5-SB479-0612-01-093018	Soil	6,400	88	0.072	3.1	0.81	<0.053	22	63	0.027	2.1	0.64	7.3	16
M5-SS149-01-093018	Soil	3,200	130	0.19	4.4	1.6	0.052	26	60	0.059	2.1	79	280	15
M5-SS479-01-093018	Soil	5,800	98	0.077	2.9	0.6	<0.045	20	48	0.026	2	0.62	6.6	15
M6-SB285-0612-01-091618	Soil	1,600	94	<0.2	<2	0.93	<0.05	<100	27	0.048	1.4	40	140	<10
M6-SB285-1218-01-091618	Soil	2,300	210	0.32	3	0.84	0.01	<100	34	0.065	2.3	55	130	13
M6-SS174-01-092718	Soil	2,400	140	0.16	4	1.9	<0.051	24	41	0.037	2.3	23	150	14
M6-SS285-01-091618	Soil	1,900	120	0.22	2.4	0.63	0.01	<100	39	0.046	1.8	20	110	9.4
M7-SB161-0612-01-091618	Soil	3,600	140	<0.2	5.2	1	0.28	<100	57	0.076	2.7	84	260	24
M7-SB161-1218-01-091618	Soil	3,200	180	<0.2	4.7	0.82	0.081	<99	63	0.065	2.5	98	180	13
M7-SB161-1824-01-091618	Soil	2,900	150	<0.2	3.9	0.91	0.072	<100	54	0.044	2	36	160	13
M7-SB161-2430-01-091618	Soil	2,600	140	<0.2	3.4	0.99	0.061	<100	48	0.044	1.8	71	170	11
M7-SS161-01-091618	Soil	4,000	230	0.11	5.6	1.4	0.065	<100	56	0.12	2.7	150	480	17
M8-SS120-01-092718	Soil	2,400	180	0.094	10	0.48	0.022	27	28	0.058	3.9	24	130	13
M8-SS52-01-091818	Soil	3,800	110	0.079	6.9	1.4	0.09	<100	85	0.053	6.2	21	120	16
M9-SS19-01-093018	Soil	1,200	87	0.037	1.5	0.29	0.0093	18	20	0.015	1.4	4	18	<7.8
T1-SS14-01-091618	Soil	3,000	200	0.27	4.1	0.76	0.017	<100	63	0.049	2.2	5.2	8.6	12
T9-SS67-01-091118	Soil	2,900	160	0.26	6.4	0.73	0.024	150	55	0.059	3.2	1.7	21	14
T17-SB258-018090-01-092518	Soil	2,100	190	0.1	3.7	0.65	0.011	29	13	0.053	2.9	1.9	14	12
T23-SS32-01-091418	Soil	3,300	350	0.32	5.6	1.1	0.031	<97	29	0.054	3.2	3.8	26	20
T37-SS94-01-091318	Soil	6,600	240	<0.2	5	0.77	0.009	3000	170	0.05	2.8	1.3	13	11
M21-SD2-01-091218	Soil	3,000	130	1.3	3	2.6	0.018	17	41	0.55	1.7	89	180	15

Note:
mg/kg Milligram per kilogram



Table F2-2. Soil Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	Soil	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
M10-SB10-0612-01-092818	Soil	35.2	22.5	32.7	33.3	39.4	26.5		1.59	0.52	<0.59	15.6	<0.59	0.57
M10-SS10-01-092818	Soil	29.5	20.8	29.1	34.3	34.8	17.8		1.72	0.49	<0.32	14.1	<0.32	0.47
M11-SB35-0612-01-092818	Soil	13.4	<12.9	14.4	23.2	41.5	21.1		0.64	0.35	<1.05	11.2	<1.05	0.35
M11-SS35-01-092818	Soil	13.2	18.4	13.3	36.7	40	30.5		0.74	0.49	<0.79	14	<0.79	0.47
M12-SS33-01-092818	Soil	2.66	<1.3	2.47	4.82	4.74	4.7		0.096	0.21	<0.11	7.2	<0.11	0.141
M13-SB114-1230-01-091518	Soil	2.25	<2.2	1.97	4.19	3.43	2.51		0.137	0.4	<0.37	15.4	<0.37	0.36
M13-SS114-01-091518	Soil	18.1	<15.2	19.1	21.1	29.8	17		0.77	0.52	<0.63	15.9	<0.63	0.6
M14-SB37-0612-01-091818	Soil	70	55.7	69	69	89	55		2.99	0.49	<-0.6	9.6	<-0.6	0.37
M14-SB37-1218-01-091818	Soil	72	66.8	71	69	94	55		3.26	0.48	<0.66	12.6	<0.66	0.46
M14-SS37-01-091818	Soil	60	65	59	66	92	52		2.61	0.53	<0.77	12	<0.77	0.47
M15-SB84-0612-01-091418	Soil	6.8	5.8	6.4	9.9	13.5	7.1		0.228	0.68	<0.51	18.6	<0.51	0.64
M15-SS14-01-091518	Soil	2.61	<1.8	3.08	3.83	5	2.51		0.103	0.48	<0.24	14.2	<0.24	0.45
M15-SS84-01-091418	Soil	11	<6.5	10.9	13.5	17.3	10.1		0.49	0.77	<0.61	16.2	<0.61	0.79
M16-SB193-0612-01-091318	Soil	23.2	<15	22.5	24.2	34.3	17.7		1.08	0.44	<0.64	11.9	<0.64	0.44
M16-SB193-1218-01-091318	Soil	24.1	<16.9	22.8	31.6	33.1	19.4		0.97	0.5	<0.6	13.9	<0.6	0.46
M16-SS193-01-091318	Soil	20.6	19.9	19.5	25	32.5	14.9		0.76	0.39	<1.18	11.6	<1.18	0.52
M17-SB64-0612-01-091318	Soil	79	69	77	90	132	61		3.67	0.51	<0.4	10.9	<0.4	0.56
M17-SB64-1218-01-091318	Soil	74	47	74	93	125	64		3.27	0.51	<0.7	16.4	<0.7	0.38
M17-SS64-01-091318	Soil	64	69	62	80	124	53		2.75	0.31	<1.8	10.8	<1.8	0.42
M18-SB145-0612-01-091418	Soil	192	187	184	223	260	119		7.9	1.43	<-0.8	12.6	<-0.8	0.63
M18-SS145-01-091418	Soil	70	<44.3	65	99	160	56		2.74	0.51	<-0.5	13.8	<-0.5	0.55
M19-SB36-0612-01-091818	Soil	158	137	145	147	140	82		6.8	0.42	<-0.5	13.6	<-0.5	0.47
M19-SB36-1218-01-091818	Soil	124	98	118	136	114	71		5.8	0.46	<1.1	9.3	<1.1	0.49
M19-SS36-01-091818	Soil	150	100	145	172	157	91		6.4	0.52	<-1	9	<-1	0.52
M1-SB36-0612-01-091618	Soil	2.64	<1.5	2.6	3.66	4.14	3.21		0.11	0.348	<0.3	8.1	<0.3	0.26
M1-SB36-1218-01-091618	Soil	2.13	<1.4	2.1	2.75	3.88	1.94		0.101	0.257	<0.45	8.5	<0.45	0.38
M1-SB36-1824-01-091618	Soil	2.51	<1.26	2.53	3.34	3.99	2.28		<0.094	0.325	<0.2	8.9	<0.2	0.35
M1-SB36-2436-01-091618	Soil	1.89	<1.21	1.75	2.44	3.26	2		0.052	0.309	<0.38	10.5	<0.38	0.33
M1-SS36-01-091618	Soil	2.76	2.4	2.69	5.03	3.8	3.46		0.13	0.266	<0.43	9.8	<0.43	0.3
M20-SB59-0612-01-091718	Soil	18.9	12.9	17.9	24	27.9	17.5		0.75	0.65	<0.5	15.3	<0.5	0.64
M20-SB59-1218-01-091718	Soil	11.9	3.3	11.9	10.8	10.1	7.9		0.69	0.52	<0.33	18.2	<0.33	0.56
M20-SS59-01-091718	Soil	43.5	38.8	43.3	45.3	59.5	32.2		2.05	0.61	<-0.15	16.6	<-0.15	0.64
M21-SB528-0612-01-091218	Soil	19.7	54	21.4	19.2	75.6	16.5		0.8	0.41	<0.6	16.8	<0.6	0.48
M21-SB528-1218-01-091218	Soil	26.9	<15.9	26.7	27.4	56.1	22.3		1.08	0.47	<0.07	18.8	<0.07	0.58
M21-SS46-01-091718	Soil	145	109	136	146	198	87		7.1	0.56	<1	13.7	<1	0.55
M21-SS528-01-091218	Soil	38.8	14.1	38.5	33.9	24.1	22.5		1.84	0.57	<0.62	16.1	<0.62	0.52
M22-SB104-0612-01-091718	Soil	12.5	14.1	13	17.2	33.5	14.4		0.75	0.56	<0.9	18	<0.9	0.53
M22-SS104-01-091718	Soil	7.4	7.1	7.9	10.1	15	6.6		0.44	0.64	<0.08	13.2	<0.08	0.47

Table F2-2. Soil Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	Soil	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
M23-SB54-0612-01-092718	Soil	9.7	<26.1	9.1	14.5	48.2	12.3		0.48	0.254	<0.66	13.6	<0.66	0.23
M23-SB54-1218-01-092718	Soil	6.9	6	5.6	6.3	8.5	5.1		0.26	0.315	<0.36	16	<0.36	0.33
M23-SS54-01-092718	Soil	14	15	14.8	28.6	29	19		0.63	0.317	<0.32	16.5	<0.32	0.39
M24-SB76-0612-01-092518	Soil	5.66	<3.9	4.91	6.9	7.9	3.7		0.205	1.25	<1.2	20.6	<1.2	1.08
M24-SB76-1218-01-092518	Soil	3.23	<2.9	2.9	4.08	4.03	2.04		0.25	0.79	<0.57	14.7	<0.57	0.83
M24-SS76-01-092518	Soil	5.23	<2.5	5.32	4.83	7.3	4.1		0.3	1.03	<0.67	22.2	<0.67	1.11
M25-SB50-0612-01-092818	Soil	97	57.1	117	93	84.3	53		4.78	0.6	<0.75	14.6	<0.75	0.44
M25-SB50-1218-01-092818	Soil	12.8	<14.4	12.5	10.2	22.4	8.7		0.52	0.45	<1.01	14.2	<1.01	0.5
M25-SS50-01-092818	Soil	21.3	<15.5	20	21.3	31.6	15.2		0.91	0.48	<0.42	13.5	<0.42	0.46
M26-SB28-0612-01-092618	Soil	7.5	<4.1	7.9	14.5	15.6	8		0.31	0.62	<0.63	14.7	<0.63	0.59
M26-SS28-01-092618	Soil	6.6	<4.3	6.6	13.2	14.2	8.5		0.33	0.49	<0.22	14.1	<0.22	0.62
M27-SB51-0612-01-092618	Soil	15.6	11.8	14.9	42.2	53.6	30.4		0.67	0.61	<0.7	17.3	<0.7	0.53
M27-SS51-01-092618	Soil	13	13.4	15.6	65	51.8	25.1		0.47	0.65	<0.51	18.3	<0.51	0.64
M28-SB30-0612-01-092618	Soil	173	195	157	143	175	112		7.4	0.391	<0.5	<5.8	<0.5	0.42
M28-SS30-01-092618	Soil	141	121	132	109	127	70		5.7	0.49	<0.6	9	<0.6	0.5
M28-SSG7-01-092618	Soil	14.6	10.9	12.7	7.2	6.23	4		0.68	0.177	<0.19	10.8	<0.19	0.3
M29-SS48-01-092518	Soil	15.4	17.2	16	16.1	21.6	9.1		0.68	0.378	<0.48	11.6	<0.48	0.31
M2-SB51-090108-01-091718	Soil	0.67	<0.6	0.54	0.92	0.8	1.06		0.076	0.359	<0.3	12.8	<0.3	0.33
M2-SB55-072090-01-091618	Soil	15.9	11.4	17.2	21.7	25	21.4		0.92	0.306	<-0.38	9.2	<-0.38	0.253
M30-SS180-01-092918	Soil	9.4	<2.7	9.6	14.2	16	9		0.49	0.5	<1.26	14.2	<1.26	0.51
M31-SB37-0612-01-092918	Soil	24.4	27.4	23.8	52	57.3	42		1.59	0.371	<1.02	15.1	<1.02	0.41
M31-SS37-01-092918	Soil	30.1	<5.5	27.6	21.4	11	12.7		1.84	0.372	<0.82	15	<0.82	0.33
M31-SS9-01-092918	Soil	228	89	222	214	103	91		10.7	0.64	<0.8	13.9	<0.8	0.59
M32-SB89-0612-01-092918	Soil	164	78.8	155	147	100	52		7.3	0.52	<1.22	14.2	<1.22	0.41
M32-SS56-01-092918	Soil	171	47.2	161	76	61	41		7.5	0.43	<0.05	12.8	<0.05	0.39
M32-SS89-01-092918	Soil	101	137	104	91	141	50		4.7	0.55	<0.76	14.1	<0.76	0.46
M33-SS86-01-091818	Soil	64	59.3	65	77	93	51		2.84	0.52	<0.53	18	<0.53	0.58
M34-SS97-01-092718	Soil	15	4.7	14.8	19.3	20.7	13.2		0.95	0.59	<0.55	11.7	<0.55	0.6
M35-SB22-0612-01-092718	Soil	4.42	<2.4	4.57	6.5	9.4	5		0.2	0.48	<0.12	17.8	<0.12	0.5
M35-SS22-01-092718	Soil	5.8	3.2	4.83	7.2	8.8	4.7		0.27	0.52	<0.01	14.3	<0.01	0.49
M36-SS24-01-092718	Soil	3.95	<2.9	3.75	5.47	5.45	3.7		0.2	0.44	<0.65	11.8	<0.65	0.51
M37-SS44-01-092718	Soil	16.8	17.2	16.4	13.7	23.8	7.2		0.83	0.77	<0.61	21.4	<0.61	0.76
M38-SB2-0612-01-092718	Soil	23.4	<17.2	27.2	79	105	38.8		1.11	0.85	<0.8	22.6	<0.8	0.86
M38-SB2-1218-01-092718	Soil	34.3	24.3	36.4	57.9	74.9	37.2		1.51	0.82	<0.7	20.9	<0.7	0.83
M38-SS2-01-092718	Soil	12.9	<9.1	16	38.6	36.7	24.4		0.59	0.85	<1.53	17.8	<1.53	0.95
M3-SB51-0612-01-091618	Soil	4.07	<1.8	3.94	5.16	6.67	2.73		0.129	0.58	<0.47	17.3	<0.47	0.68
M3-SB51-1218-01-091618	Soil	3.04	<1.7	2.63	4.22	6.75	3.05		0.149	0.55	<0.54	14.8	<0.54	0.62
M3-SS51-01-091618	Soil	0.97	<0.8	0.85	1.21	2.3	1.13		0.071	0.342	<0.44	11.3	<0.44	0.42



Table F2-2. Soil Analytical Results (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
Units	Soil	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g	pCi/g
M4-SB81-0612-01-091818	Soil	25.4	41.5	24.5	35.5	61.2	32.2		1.01	0.6	<0.65	14.6	<0.65	0.5
M4-SB81-1218-01-091818	Soil	19.5	21.8	19	34.5	46.7	29.6		0.99	0.43	<0.52	11.1	<0.52	0.5
M4-SS81-01-091818	Soil	24.3	20.2	25.1	37.3	43.9	27.1		1.25	0.55	<-0.08	10.4	<-0.08	0.42
M5-SB149-0612-01-093018	Soil	14.2	27.2	13.2	14.4	41.1	13.7		0.95	0.295	<0.15	8.4	<0.15	0.44
M5-SB479-0612-01-093018	Soil	0.69	<1.2	0.6	0.79	0.76	0.89		<0.043	0.59	<0.7	15.1	<0.7	0.67
M5-SS149-01-093018	Soil	33.3	17.4	32.5	32.9	36	23.6		1.66	0.45	<-0.2	14.3	<-0.2	0.53
M5-SS479-01-093018	Soil	0.69	<1	0.52	0.64	0.61	0.77		<0.004	0.61	<0.26	16.3	<0.26	0.69
M6-SB285-0612-01-091618	Soil	11.6	15.7	11.8	14.1	33.5	19.1		0.68	0.39	<-0.18	12.2	<-0.18	0.45
M6-SB285-1218-01-091618	Soil	30.1	<16.6	28.3	26.9	34.3	24.9		1.25	0.5	<0.17	13.2	<0.17	0.49
M6-SS174-01-092718	Soil	9.9	6.2	10.4	12.4	11	9.9		0.53	0.45	<0.71	13.7	<0.71	0.51
M6-SS285-01-091618	Soil	7.6	<4.5	7.2	9.5	13.2	16.1		0.35	0.384	<-0.09	11.6	<-0.09	0.39
M7-SB161-0612-01-091618	Soil	32.7	35.4	31.9	54.8	72.2	38.8		1.51	0.48	<0.86	14.7	<0.86	0.6
M7-SB161-1218-01-091618	Soil	15.3	40.3	14.5	19.5	53.5	18.9		0.61	0.42	<0.2	8.8	<0.2	0.38
M7-SB161-1824-01-091618	Soil	15.6	11.3	15.6	20.9	36.1	17.7		0.59	0.54	<0.1	12.1	<0.1	0.53
M7-SB161-2430-01-091618	Soil	45.4	29	44.9	54.3	63.1	43		2.02	0.47	<0.39	13.7	<0.39	0.43
M7-SS161-01-091618	Soil	56.7	47.9	54.3	70	106	62		2.48	0.73	<0.25	17.2	<0.25	0.56
M8-SS120-01-092718	Soil	3.51	<1.9	3.42	9.6	8.1	5.7		0.172	0.63	<0.39	12.1	<0.39	0.63
M8-SS52-01-091818	Soil	13.1	7	12.7	8.4	10.6	7.7		0.62	1.3	0.98	16.6	0.98	1.38
M9-SS19-01-093018	Soil	0.91	<1.48	1.19	1.39	2.67	1.79		<0.048	0.279	<0.36	13.7	<0.36	0.36
T1-SS14-01-091618	Soil	2.94	3.1	2.95	4.32	6.85	3.6		0.18	0.48	<0.38	12	<0.38	0.42
T9-SS67-01-091118	Soil	1.17	<1.1	1.01	1.15	1.16	<0.51		0.049	0.7	0.6	17	0.6	0.69
T17-SB258-018090-01-092518	Soil	1.15	<-0.8	1.11	1.99	2.56	1.74		<0.052	0.55	<0.5	14.6	<0.5	0.53
T23-SS32-01-091418	Soil	1.9	<1.5	1.87	2.63	3.24	2.54		0.105	0.67	<0.74	15.6	<0.74	0.75
T37-SS94-01-091318	Soil	0.88	<0.4	0.88	0.8	1.01	0.7		0.064	0.57	<0.67	13.8	<0.67	0.62
M21-SD2-01-091218	Soil	23.2	13.1	14.2	17.4	42.5	17.1		0.77	0.42	<-0.16	10.5	<-0.16	0.33

Notes:
K-40 Potassium-40
pCi/g Picocuries per gram
Th-232a Thorium-232a
Th-232g Thorium 232g
U-238a Uranium-238a
U-238g Uranium-238g

Table F2-3. SPLP Percent Recoveries (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
M10-SB10-0612-01-092818	SPLP %R	--	--	3.8%	1.2%	--	--	--	1.1%	--	--	--	--	0.6%	--
M10-SS10-01-092818	SPLP %R	--	--	1.3%	--	--	--	--	--	--	--	--	--	0.4%	--
M11-SB35-0612-01-092818	SPLP %R	--	--	2.1%	1.0%	--	--	--	0.8%	--	--	--	--	0.6%	--
M11-SS35-01-092818	SPLP %R	0.8%	21.3%	1.2%	0.4%	--	--	--	0.8%	2.4%	--	--	0.4%	0.7%	--
M12-SS33-01-092818	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	--	2.0%	--
M13-SB114-1230-01-091518	SPLP %R	--	--	--	1.0%	--	--	--	--	--	--	--	--	0.5%	--
M13-SS114-01-091518	SPLP %R	--	--	1.4%	1.5%	--	--	--	1.1%	--	--	--	--	0.3%	--
M14-SB37-0612-01-091818	SPLP %R	0.2%	--	--	0.4%	--	--	--	--	3.3%	--	--	--	0.1%	--
M14-SB37-1218-01-091818	SPLP %R	0.2%	--	--	1.3%	--	--	--	--	3.0%	--	--	--	0.2%	--
M14-SS37-01-091818	SPLP %R	0.1%	--	--	0.9%	--	--	--	1.1%	--	--	--	--	--	--
M15-SB84-0612-01-091418	SPLP %R	--	--	--	0.8%	--	--	--	0.7%	--	--	--	0.5%	0.3%	--
M15-SS14-01-091518	SPLP %R	0.5%	--	--	1.7%	--	--	--	4.8%	--	--	--	--	0.4%	--
M15-SS84-01-091418	SPLP %R	--	--	1.4%	1.3%	--	--	--	0.5%	--	--	--	--	--	--
M16-SB193-0612-01-091318	SPLP %R	0.6%	--	--	4.1%	--	--	--	3.3%	--	1.7%	--	--	--	--
M16-SB193-1218-01-091318	SPLP %R	--	--	--	0.5%	--	--	--	--	--	--	--	--	--	--
M16-SS193-01-091318	SPLP %R	0.5%	--	1.8%	2.9%	--	--	--	3.1%	--	1.4%	--	--	--	--
M17-SB64-0612-01-091318	SPLP %R	--	--	--	4.6%	--	--	--	2.4%	--	--	--	--	--	--
M17-SB64-1218-01-091318	SPLP %R	--	--	--	0.9%	--	--	--	2.5%	--	--	--	--	--	--
M17-SS64-01-091318	SPLP %R	--	--	1.6%	3.4%	--	--	--	2.7%	--	--	--	--	--	--
M18-SB145-0612-01-091418	SPLP %R	--	--	--	0.3%	--	--	--	1.6%	--	--	--	--	0.4%	--
M18-SS145-01-091418	SPLP %R	--	--	2.2%	0.7%	--	--	--	2.2%	--	--	--	--	0.5%	--
M19-SB36-0612-01-091818	SPLP %R	0.2%	--	--	1.0%	--	--	--	--	5.2%	--	--	--	1.0%	--
M19-SB36-1218-01-091818	SPLP %R	0.3%	--	--	1.9%	--	--	--	--	3.8%	--	--	--	1.3%	--
M19-SS36-01-091818	SPLP %R	0.3%	--	2.8%	2.1%	--	--	--	1.7%	--	--	--	--	1.4%	--
M1-SB36-0612-01-091618	SPLP %R	0.8%	--	--	2.4%	--	--	--	--	--	--	--	--	0.3%	--
M1-SB36-1218-01-091618	SPLP %R	--	--	--	3.2%	--	--	--	--	--	--	--	--	1.0%	--
M1-SB36-1824-01-091618	SPLP %R	--	--	--	2.6%	--	--	--	--	--	--	--	--	0.6%	--
M1-SB36-2436-01-091618	SPLP %R	0.8%	--	--	2.6%	--	--	--	--	--	--	--	--	1.8%	--
M1-SS36-01-091618	SPLP %R	--	--	--	2.4%	--	--	--	--	--	--	--	--	--	--
M20-SB59-0612-01-091718	SPLP %R	--	--	--	0.5%	--	--	--	0.8%	--	--	--	--	--	--
M20-SB59-1218-01-091718	SPLP %R	--	--	--	1.1%	--	--	--	0.7%	--	--	--	--	--	--
M20-SS59-01-091718	SPLP %R	--	--	1.8%	1.5%	--	--	--	0.9%	--	--	--	--	--	--
M21-SB528-0612-01-091218	SPLP %R	0.9%	--	5.4%	5.0%	3.2%	--	--	4.5%	--	--	--	--	--	--
M21-SB528-1218-01-091218	SPLP %R	1.0%	--	5.6%	3.2%	2.4%	--	--	3.6%	--	--	--	--	--	--
M21-SS46-01-091718	SPLP %R	0.2%	--	1.5%	0.8%	--	--	--	1.3%	--	--	--	--	0.3%	--
M21-SS528-01-091218	SPLP %R	0.6%	--	2.0%	0.7%	--	--	--	1.9%	--	--	--	--	--	--
M22-SB104-0612-01-091718	SPLP %R	0.4%	--	--	0.7%	--	--	--	--	2.0%	--	--	--	--	--
M22-SS104-01-091718	SPLP %R	0.5%	--	1.8%	0.6%	--	--	--	1.0%	--	--	--	0.7%	--	--
M23-SB54-0612-01-092718	SPLP %R	--	--	3.6%	25.0%	--	--	--	--	--	--	--	--	0.5%	--

Table F2-3. SPLP Percent Recoveries (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
M23-SB54-1218-01-092718	SPLP %R	--	--	2.6%	34.8%	--	--	--	--	--	--	--	--	--	--
M23-SS54-01-092718	SPLP %R	--	--	2.8%	12.4%	--	--	--	--	--	--	--	--	--	--
M24-SB76-0612-01-092518	SPLP %R	0.4%	--	0.6%	0.6%	--	--	--	0.7%	--	0.4%	--	0.0%	--	--
M24-SB76-1218-01-092518	SPLP %R	0.6%	--	1.0%	1.0%	1.6%	--	--	0.8%	--	--	--	--	--	--
M24-SS76-01-092518	SPLP %R	0.4%	--	0.6%	0.8%	0.9%	--	--	0.9%	--	--	--	0.0%	--	--
M25-SB50-0612-01-092818	SPLP %R	--	--	4.6%	--	--	--	--	--	--	--	--	--	0.9%	--
M25-SB50-1218-01-092818	SPLP %R	--	--	3.5%	--	--	--	--	--	--	--	--	--	0.5%	--
M25-SS50-01-092818	SPLP %R	--	--	2.4%	--	--	--	--	2.8%	--	--	--	--	0.3%	--
M26-SB28-0612-01-092618	SPLP %R	0.6%	--	2.9%	0.5%	--	--	--	1.0%	--	--	--	--	--	--
M26-SS28-01-092618	SPLP %R	0.5%	--	2.9%	0.6%	--	--	--	1.2%	--	--	--	--	--	--
M27-SB51-0612-01-092618	SPLP %R	0.6%	--	2.4%	0.9%	2.6%	--	--	1.4%	--	--	--	0.3%	--	--
M27-SS51-01-092618	SPLP %R	1.4%	408%	3.6%	0.7%	--	--	--	1.3%	--	--	--	0.3%	--	--
M28-SB30-0612-01-092618	SPLP %R	1.3%	--	3.2%	1.1%	--	--	--	--	--	--	--	0.8%	--	--
M28-SS30-01-092618	SPLP %R	0.8%	--	3.0%	1.0%	--	--	--	--	--	--	--	0.4%	--	--
M28-SSG7-01-092618	SPLP %R	1.2%	--	4.2%	1.1%	--	--	--	--	--	--	--	--	--	--
M29-SS48-01-092518	SPLP %R	1.1%	87.1%	2.4%	1.9%	--	--	--	--	--	--	--	0.8%	--	--
M2-SB51-090108-01-091718	SPLP %R	0.8%	--	2.9%	2.1%	3.8%	--	--	5.1%	--	--	--	--	--	--
M2-SB55-072090-01-091618	SPLP %R	0.3%	--	2.1%	3.3%	--	--	--	1.7%	3.8%	--	--	--	1.0%	--
M30-SS180-01-092918	SPLP %R	--	--	2.0%	0.9%	--	--	--	1.0%	--	--	--	--	0.4%	--
M31-SB37-0612-01-092918	SPLP %R	--	--	2.3%	1.0%	--	--	--	--	--	--	--	--	0.7%	--
M31-SS37-01-092918	SPLP %R	--	--	--	1.1%	--	--	--	--	--	--	--	--	0.4%	--
M31-SS9-01-092918	SPLP %R	--	--	2.4%	1.0%	--	--	--	--	--	--	--	--	0.3%	--
M32-SB89-0612-01-092918	SPLP %R	--	--	1.8%	0.8%	--	--	--	--	--	--	--	--	1.0%	--
M32-SS56-01-092918	SPLP %R	--	--	2.7%	1.1%	--	--	--	--	--	--	--	--	0.5%	--
M32-SS89-01-092918	SPLP %R	--	39.6%	2.3%	2.2%	--	--	--	--	--	--	--	--	1.0%	--
M33-SS86-01-091818	SPLP %R	0.5%	--	3.5%	0.9%	--	--	--	0.6%	--	--	--	--	0.5%	--
M34-SS97-01-092718	SPLP %R	--	--	5.1%	9.5%	--	--	--	0.5%	--	--	--	--	0.5%	--
M35-SB22-0612-01-092718	SPLP %R	--	--	1.8%	7.6%	--	--	--	--	--	--	--	--	0.3%	--
M35-SS22-01-092718	SPLP %R	--	--	3.2%	--	--	--	--	--	--	--	--	--	0.5%	--
M36-SS24-01-092718	SPLP %R	--	--	2.4%	5.1%	--	--	--	--	--	--	--	--	0.3%	--
M37-SS44-01-092718	SPLP %R	--	--	5.8%	21.7%	--	--	--	0.7%	--	--	--	--	0.5%	--
M38-SB2-0612-01-092718	SPLP %R	--	--	1.0%	10.3%	--	--	--	1.5%	--	--	--	--	0.3%	--
M38-SB2-1218-01-092718	SPLP %R	--	--	0.7%	20.0%	--	--	--	3.1%	--	--	--	--	--	--
M38-SS2-01-092718	SPLP %R	--	--	1.4%	40.9%	--	--	--	1.6%	--	--	--	--	--	--
M3-SB51-0612-01-091618	SPLP %R	--	--	--	0.9%	--	--	--	--	--	--	--	--	--	--
M3-SB51-1218-01-091618	SPLP %R	--	--	--	0.8%	--	--	--	--	--	--	--	--	--	--
M3-SS51-01-091618	SPLP %R	--	--	3.5%	1.3%	--	--	--	--	--	--	--	--	--	--
M4-SB81-0612-01-091818	SPLP %R	0.4%	--	--	0.9%	--	--	--	--	--	--	--	--	0.2%	--
M4-SB81-1218-01-091818	SPLP %R	0.6%	--	--	1.3%	--	--	--	1.2%	2.9%	--	--	--	0.4%	--



Table F2-3. SPLP Percent Recoveries (1 of 3)

Sample ID	Matrix	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
M4-SS81-01-091818	SPLP %R	0.7%	--	2.0%	0.9%	--	--	--	1.4%	--	--	--	--	--	--
M5-SB149-0612-01-093018	SPLP %R	0.6%	30.9%	2.8%	0.3%	--	--	--	--	1.9%	--	--	--	--	--
M5-SB479-0612-01-093018	SPLP %R	0.7%	75.0%	--	1.0%	--	--	--	--	--	--	--	0.7%	--	--
M5-SS149-01-093018	SPLP %R	1.2%	--	1.5%	1.2%	--	--	--	--	2.1%	--	--	0.6%	--	--
M5-SS479-01-093018	SPLP %R	0.9%	79.2%	--	1.2%	--	--	--	--	--	--	--	0.5%	--	--
M6-SB285-0612-01-091618	SPLP %R	--	--	--	0.7%	--	--	--	--	--	--	--	--	--	--
M6-SB285-1218-01-091618	SPLP %R	--	--	--	0.6%	--	--	--	--	--	--	--	--	--	--
M6-SS174-01-092718	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	--	0.6%	--
M6-SS285-01-091618	SPLP %R	--	--	5.0%	0.7%	--	--	--	1.1%	--	--	--	--	--	--
M7-SB161-0612-01-091618	SPLP %R	--	--	--	0.8%	--	--	--	--	--	--	--	--	--	--
M7-SB161-1218-01-091618	SPLP %R	--	--	--	1.1%	--	--	--	--	--	--	--	--	--	--
M7-SB161-1824-01-091618	SPLP %R	0.2%	--	--	1.1%	--	--	--	--	2.4%	--	--	--	0.3%	--
M7-SB161-2430-01-091618	SPLP %R	0.3%	--	--	0.7%	--	--	--	--	2.9%	--	--	--	0.5%	--
M7-SS161-01-091618	SPLP %R	0.1%	--	1.4%	0.5%	--	--	--	0.7%	--	--	--	--	0.2%	--
M8-SS120-01-092718	SPLP %R	--	--	--	7.7%	--	--	--	--	--	--	--	1.0%	0.4%	--
M8-SS52-01-091818	SPLP %R	1.3%	--	3.1%	0.9%	1.7%	--	--	1.2%	--	--	--	0.5%	--	--
M9-SS19-01-093018	SPLP %R	--	72.3%	--	1.5%	--	--	--	--	--	--	--	--	--	--
T1-SS14-01-091618	SPLP %R	0.3%	--	1.7%	0.9%	--	--	--	0.9%	--	--	--	--	0.3%	--
T9-SS67-01-091118	SPLP %R	--	--	--	1.1%	1.5%	--	--	0.5%	--	--	--	--	0.3%	--
T17-SB258-018090-01-092518	SPLP %R	--	--	--	0.8%	--	--	--	9.6%	--	--	--	--	--	--
T23-SS32-01-091418	SPLP %R	1.2%	--	--	8.9%	3.9%	--	--	4.1%	--	--	--	--	0.9%	--
T37-SS94-01-091318	SPLP %R	0.5%	--	5.6%	0.4%	--	--	--	0.7%	--	--	--	--	--	--
M21-SD2-01-091218	SPLP %R	--	--	2.0%	1.3%	--	--	--	1.3%	--	--	--	--	--	--

Notes:
 Excluded from summary statistics.
 %R Percent recovery
 SPLP Synthetic precipitation leaching procedure

Table F2-3. SPLP Percent Recoveries (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
M10-SB10-0612-01-092818	SPLP %R	0.5%	--	--	--	--	--	--	--	--	--	0.4%	2.9%	--
M10-SS10-01-092818	SPLP %R	0.4%	--	--	--	--	--	--	--	--	--	0.3%	1.6%	--
M11-SB35-0612-01-092818	SPLP %R	0.3%	--	--	--	--	--	--	--	--	--	0.4%	1.9%	--
M11-SS35-01-092818	SPLP %R	0.7%	--	--	--	--	--	--	--	0.5%	--	0.2%	0.6%	--
M12-SS33-01-092818	SPLP %R	0.8%	--	--	--	--	--	--	--	--	--	0.4%	2.3%	--
M13-SB114-1230-01-091518	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	9.6%	--
M13-SS114-01-091518	SPLP %R	0.3%	--	--	--	--	--	--	--	--	--	0.1%	1.3%	--
M14-SB37-0612-01-091818	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.1%	1.0%	--
M14-SB37-1218-01-091818	SPLP %R	--	--	--	--	--	--	--	--	--	0.4%	0.1%	1.0%	--
M14-SS37-01-091818	SPLP %R	0.3%	--	--	--	--	--	--	--	--	0.1%	0.1%	0.8%	--
M15-SB84-0612-01-091418	SPLP %R	0.5%	--	--	--	--	--	--	--	--	--	0.3%	6.5%	--
M15-SS14-01-091518	SPLP %R	--	--	--	--	--	--	--	--	--	--	0.3%	6.2%	--
M15-SS84-01-091418	SPLP %R	0.3%	--	--	--	--	--	--	--	--	--	0.2%	4.3%	--
M16-SB193-0612-01-091318	SPLP %R	--	--	--	--	--	--	--	--	--	--	5.6%	4.7%	--
M16-SB193-1218-01-091318	SPLP %R	--	--	--	--	--	--	--	--	--	--	0.6%	3.4%	--
M16-SS193-01-091318	SPLP %R	0.6%	1.4%	1.0%	--	--	--	--	--	--	--	5.8%	2.9%	--
M17-SB64-0612-01-091318	SPLP %R	--	1.9%	--	--	--	--	--	--	--	--	7.4%	1.7%	--
M17-SB64-1218-01-091318	SPLP %R	--	--	--	--	--	--	--	--	--	--	1.2%	0.5%	--
M17-SS64-01-091318	SPLP %R	1.0%	1.6%	4.3%	--	--	--	--	--	--	--	5.3%	1.1%	--
M18-SB145-0612-01-091418	SPLP %R	--	--	--	--	--	--	--	--	--	--	0.2%	0.3%	--
M18-SS145-01-091418	SPLP %R	0.5%	--	--	--	--	--	--	--	--	--	0.2%	0.4%	--
M19-SB36-0612-01-091818	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	1.1%	8.5%	--
M19-SB36-1218-01-091818	SPLP %R	--	--	--	--	--	--	--	--	1.0%	0.3%	1.0%	8.0%	--
M19-SS36-01-091818	SPLP %R	0.6%	--	2.2%	--	--	--	--	--	0.9%	0.3%	1.6%	4.8%	--
M1-SB36-0612-01-091618	SPLP %R	--	1.4%	--	--	--	--	--	--	--	--	--	0.8%	--
M1-SB36-1218-01-091618	SPLP %R	--	1.6%	--	--	--	--	--	--	--	--	--	2.7%	--
M1-SB36-1824-01-091618	SPLP %R	--	1.7%	--	--	--	--	--	--	--	--	--	2.6%	--
M1-SB36-2436-01-091618	SPLP %R	0.8%	--	--	--	--	--	--	--	--	0.2%	--	1.5%	--
M1-SS36-01-091618	SPLP %R	0.7%	--	--	--	--	--	--	--	--	0.2%	0.4%	1.3%	--
M20-SB59-0612-01-091718	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.1%	3.4%	--
M20-SB59-1218-01-091718	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.3%	6.0%	--
M20-SS59-01-091718	SPLP %R	0.3%	--	--	--	--	--	--	--	--	0.1%	0.3%	1.2%	--
M21-SB528-0612-01-091218	SPLP %R	0.8%	1.8%	--	--	--	--	--	--	--	--	4.8%	8.6%	--
M21-SB528-1218-01-091218	SPLP %R	1.2%	1.6%	--	--	--	--	--	--	--	1.6%	2.9%	10.0%	--
M21-SS46-01-091718	SPLP %R	0.3%	--	--	--	--	--	--	--	0.6%	0.1%	0.1%	0.9%	--
M21-SS528-01-091218	SPLP %R	0.6%	1.0%	--	--	--	--	--	--	--	--	1.9%	4.0%	--
M22-SB104-0612-01-091718	SPLP %R	0.6%	--	--	--	--	--	--	--	--	0.1%	0.1%	1.1%	--
M22-SS104-01-091718	SPLP %R	0.7%	--	3.2%	--	--	--	--	--	2.8%	0.3%	0.4%	2.1%	--
M23-SB54-0612-01-092718	SPLP %R	0.4%	0.2%	3.7%	--	--	--	--	--	--	--	0.6%	0.8%	68.0%



Table F2-3. SPLP Percent Recoveries (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
M23-SB54-1218-01-092718	SPLP %R	0.3%	0.1%	4.9%	--	--	--	--	--	--	--	0.4%	0.8%	82.2%
M23-SS54-01-092718	SPLP %R	0.4%	0.1%	3.1%	--	--	--	--	--	2.2%	--	0.7%	0.9%	61.7%
M24-SB76-0612-01-092518	SPLP %R	0.7%	0.2%	--	--	--	--	--	--	0.4%	0.3%	0.7%	0.4%	--
M24-SB76-1218-01-092518	SPLP %R	1.0%	--	--	--	--	--	--	--	0.5%	0.3%	0.5%	1.1%	--
M24-SS76-01-092518	SPLP %R	0.5%	--	1.6%	--	--	--	--	--	0.3%	0.3%	0.5%	0.5%	--
M25-SB50-0612-01-092818	SPLP %R	0.6%	--	11.7%	--	--	--	--	--	1.2%	--	2.7%	3.0%	--
M25-SB50-1218-01-092818	SPLP %R	0.5%	--	17.1%	--	--	--	--	--	--	--	3.0%	11.9%	--
M25-SS50-01-092818	SPLP %R	0.7%	--	10.0%	--	--	--	--	--	--	--	0.7%	1.0%	--
M26-SB28-0612-01-092618	SPLP %R	0.6%	--	5.4%	--	--	--	--	--	--	0.2%	1.0%	3.0%	--
M26-SS28-01-092618	SPLP %R	0.7%	--	8.7%	--	--	--	--	--	--	0.3%	0.8%	2.0%	--
M27-SB51-0612-01-092618	SPLP %R	0.6%	--	4.5%	--	--	--	--	--	--	0.4%	0.9%	2.3%	--
M27-SS51-01-092618	SPLP %R	0.7%	--	2.7%	--	--	--	--	--	1.8%	0.4%	0.5%	2.2%	--
M28-SB30-0612-01-092618	SPLP %R	1.6%	--	1.0%	--	--	4.3%	--	--	0.6%	0.9%	0.2%	5.1%	--
M28-SS30-01-092618	SPLP %R	0.6%	--	0.7%	--	--	--	--	--	1.1%	0.5%	0.2%	5.1%	--
M28-SSG7-01-092618	SPLP %R	1.2%	--	--	--	--	--	--	--	--	0.5%	0.2%	9.9%	--
M29-SS48-01-092518	SPLP %R	1.0%	--	--	--	--	--	--	--	--	0.5%	0.7%	1.1%	--
M2-SB51-090108-01-091718	SPLP %R	2.1%	--	--	--	--	--	110%	--	--	0.1%	1.4%	2.9%	--
M2-SB55-072090-01-091618	SPLP %R	1.3%	--	--	--	--	--	--	--	1.1%	--	0.5%	1.2%	--
M30-SS180-01-092918	SPLP %R	0.4%	--	27.3%	--	12.8%	--	--	--	--	--	1.0%	8.4%	--
M31-SB37-0612-01-092918	SPLP %R	0.5%	--	--	--	--	--	--	--	--	--	0.4%	0.9%	--
M31-SS37-01-092918	SPLP %R	0.3%	--	--	--	--	--	--	--	--	--	0.2%	1.8%	--
M31-SS9-01-092918	SPLP %R	0.4%	--	--	--	--	--	--	--	--	--	0.5%	2.2%	--
M32-SB89-0612-01-092918	SPLP %R	0.5%	--	--	--	--	--	--	--	0.4%	--	0.5%	3.0%	--
M32-SS56-01-092918	SPLP %R	0.2%	--	--	--	--	--	--	--	--	--	0.4%	0.9%	--
M32-SS89-01-092918	SPLP %R	0.3%	--	--	--	--	--	--	--	--	--	0.6%	2.9%	--
M33-SS86-01-091818	SPLP %R	0.7%	--	--	--	--	--	--	--	--	0.2%	0.3%	1.4%	--
M34-SS97-01-092718	SPLP %R	0.4%	--	1.5%	--	--	--	--	--	--	--	0.2%	6.2%	80.0%
M35-SB22-0612-01-092718	SPLP %R	0.5%	--	4.4%	--	--	--	--	--	--	--	0.3%	2.0%	9.4%
M35-SS22-01-092718	SPLP %R	0.6%	--	2.1%	--	--	--	--	--	--	--	0.5%	3.0%	--
M36-SS24-01-092718	SPLP %R	0.3%	0.1%	--	--	--	--	--	--	--	--	0.3%	2.1%	21.2%
M37-SS44-01-092718	SPLP %R	0.4%	0.1%	24.4%	--	--	--	--	--	--	--	0.6%	25.7%	25.9%
M38-SB2-0612-01-092718	SPLP %R	0.8%	--	3.7%	--	--	--	--	--	--	--	1.2%	1.1%	24.1%
M38-SB2-1218-01-092718	SPLP %R	1.4%	--	2.6%	--	4.1%	--	--	--	--	--	1.6%	0.8%	69.0%
M38-SS2-01-092718	SPLP %R	1.0%	--	2.8%	--	--	--	--	--	--	--	1.5%	1.2%	115%
M3-SB51-0612-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.4%	0.8%	--
M3-SB51-1218-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.3%	1.5%	--
M3-SS51-01-091618	SPLP %R	0.6%	--	--	--	--	--	--	--	--	0.1%	--	1.7%	--
M4-SB81-0612-01-091818	SPLP %R	--	--	--	--	--	--	--	--	1.7%	0.2%	0.1%	0.7%	--
M4-SB81-1218-01-091818	SPLP %R	0.7%	--	--	--	--	--	--	--	--	0.2%	0.2%	1.6%	--

Table F2-3. SPLP Percent Recoveries (2 of 3)

Sample ID	Matrix	Magnesium	Manganese	Molybdenum	Nickel	Selenium	Silver	Sodium	Strontium	Thallium	Thorium	Uranium	Vanadium	Zinc
M4-SS81-01-091818	SPLP %R	0.8%	--	--	--	--	--	--	--	--	0.2%	0.1%	1.6%	--
M5-SB149-0612-01-093018	SPLP %R	0.7%	--	--	--	--	--	--	--	--	--	0.0%	2.0%	--
M5-SB479-0612-01-093018	SPLP %R	0.7%	--	--	--	--	--	--	--	--	--	--	3.6%	--
M5-SS149-01-093018	SPLP %R	0.8%	--	--	--	--	--	--	--	--	--	0.2%	2.4%	--
M5-SS479-01-093018	SPLP %R	0.8%	--	--	--	--	--	--	--	--	--	--	3.0%	--
M6-SB285-0612-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.2%	3.3%	--
M6-SB285-1218-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.2%	3.1%	--
M6-SS174-01-092718	SPLP %R	0.7%	--	10.0%	--	--	--	--	--	--	--	0.2%	1.0%	--
M6-SS285-01-091618	SPLP %R	0.5%	--	--	--	--	--	--	--	--	0.1%	0.3%	3.6%	--
M7-SB161-0612-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.1%	2.4%	--
M7-SB161-1218-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.1%	3.1%	--
M7-SB161-1824-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.3%	3.0%	--
M7-SB161-2430-01-091618	SPLP %R	--	--	--	--	--	--	--	--	--	0.1%	0.1%	2.5%	--
M7-SS161-01-091618	SPLP %R	0.2%	--	--	--	--	--	--	--	1.7%	0.1%	0.1%	1.0%	--
M8-SS120-01-092718	SPLP %R	0.4%	--	19.1%	--	--	--	--	--	--	--	0.1%	0.4%	36.9%
M8-SS52-01-091818	SPLP %R	1.1%	--	--	--	--	--	--	--	--	0.7%	0.2%	20.0%	--
M9-SS19-01-093018	SPLP %R	1.3%	--	--	--	--	--	--	--	--	--	0.2%	2.6%	--
T1-SS14-01-091618	SPLP %R	0.6%	--	--	--	--	--	--	2.0%	--	--	--	2.3%	--
T9-SS67-01-091118	SPLP %R	0.5%	--	--	--	--	--	--	0.7%	--	0.1%	0.4%	0.7%	--
T17-SB258-018090-01-092518	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	4.9%	--
T23-SS32-01-091418	SPLP %R	1.9%	0.9%	--	--	--	--	--	13.1%	--	--	8.4%	6.6%	--
T37-SS94-01-091318	SPLP %R	0.3%	--	--	--	--	--	10.0%	0.8%	--	--	3.1%	33.8%	--
M21-SD2-01-091218	SPLP %R	0.4%	--	--	--	--	--	--	4.2%	--	0.1%	0.2%	1.3%	--

Notes:

- Excluded from summary statistics.
- %R Percent recovery
- SPLP Synthetic precipitation leaching procedure



Table F2-3. SPLP Percent Recoveries (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
M10-SB10-0612-01-092818	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	0.3%
M10-SS10-01-092818	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M11-SB35-0612-01-092818	SPLP %R	0.3%	--	0.3%	0.3%	0.3%	0.1%	--	0.5%	0.2%	--	--	--	--
M11-SS35-01-092818	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	--	--	--	--	--	--	--	--
M12-SS33-01-092818	SPLP %R	0.2%	--	0.3%	0.2%	2.0%	--	--	--	--	--	--	--	--
M13-SB114-1230-01-091518	SPLP %R	0.2%	--	0.1%	--	--	--	--	--	--	--	--	--	--
M13-SS114-01-091518	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M14-SB37-0612-01-091818	SPLP %R	0.0%	--	0.0%	0.0%	0.0%	0.0%	--	--	--	--	--	--	--
M14-SB37-1218-01-091818	SPLP %R	0.0%	--	0.0%	0.0%	0.0%	0.1%	--	--	0.1%	--	--	--	--
M14-SS37-01-091818	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	0.0%	--	--	--	--	--	--	--
M15-SB84-0612-01-091418	SPLP %R	0.1%	--	0.2%	0.1%	0.2%	--	--	0.6%	0.1%	--	--	--	--
M15-SS14-01-091518	SPLP %R	0.2%	--	0.2%	--	--	--	--	--	--	--	--	--	--
M15-SS84-01-091418	SPLP %R	0.2%	--	0.2%	0.1%	0.1%	0.2%	--	0.4%	0.1%	--	--	--	0.2%
M16-SB193-0612-01-091318	SPLP %R	0.2%	--	0.2%	0.2%	0.3%	0.2%	--	0.2%	--	--	--	--	--
M16-SB193-1218-01-091318	SPLP %R	0.7%	--	0.7%	0.4%	0.8%	0.5%	--	0.7%	--	--	--	--	--
M16-SS193-01-091318	SPLP %R	0.3%	--	0.3%	0.2%	0.3%	0.2%	--	0.7%	--	--	--	--	--
M17-SB64-0612-01-091318	SPLP %R	0.2%	--	0.2%	0.1%	0.1%	0.1%	--	0.3%	0.3%	--	--	--	0.5%
M17-SB64-1218-01-091318	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	0.1%	--	0.2%	--	--	--	--	--
M17-SS64-01-091318	SPLP %R	0.7%	--	0.7%	0.3%	0.5%	0.4%	--	1.1%	--	--	--	--	--
M18-SB145-0612-01-091418	SPLP %R	0.0%	--	0.0%	0.2%	0.1%	0.0%	--	0.0%	0.0%	--	--	--	--
M18-SS145-01-091418	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	--	--	0.1%	--	--	--	--	--
M19-SB36-0612-01-091818	SPLP %R	1.3%	--	1.2%	1.0%	1.2%	0.8%	--	1.4%	0.7%	--	--	--	0.7%
M19-SB36-1218-01-091818	SPLP %R	0.3%	--	0.3%	0.3%	0.3%	0.2%	--	0.4%	--	--	--	--	--
M19-SS36-01-091818	SPLP %R	0.5%	--	0.5%	0.4%	0.5%	0.3%	--	0.6%	0.3%	--	--	--	0.3%
M1-SB36-0612-01-091618	SPLP %R	0.1%	--	0.2%	--	0.4%	--	--	--	--	--	--	--	--
M1-SB36-1218-01-091618	SPLP %R	0.4%	--	0.4%	0.2%	0.8%	--	--	1.6%	--	--	--	--	--
M1-SB36-1824-01-091618	SPLP %R	0.2%	--	0.2%	--	0.4%	--	--	--	--	--	--	--	--
M1-SB36-2436-01-091618	SPLP %R	0.3%	--	0.4%	--	0.7%	--	--	2.7%	--	--	--	--	--
M1-SS36-01-091618	SPLP %R	0.2%	--	0.1%	0.0%	0.3%	--	--	--	--	--	--	--	--
M20-SB59-0612-01-091718	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M20-SB59-1218-01-091718	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M20-SS59-01-091718	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M21-SB528-0612-01-091218	SPLP %R	0.1%	--	0.1%	0.0%	0.1%	--	--	--	--	--	--	--	--
M21-SB528-1218-01-091218	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	--	--	--	0.1%	--	--	--	--
M21-SS46-01-091718	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	0.0%	--	0.1%	--	--	--	--	--
M21-SS528-01-091218	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	--	--	--	--	--	--	--	--
M22-SB104-0612-01-091718	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	--	--	--	--	--	--	--	--
M22-SS104-01-091718	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	--	--	0.2%	--	--	--	--	--
M23-SB54-0612-01-092718	SPLP %R	0.5%	--	0.5%	0.1%	0.1%	--	--	0.9%	--	--	--	--	--



Table F2-3. SPLP Percent Recoveries (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
M23-SB54-1218-01-092718	SPLP %R	0.5%	--	0.5%	0.1%	0.3%	--	--	0.7%	--	--	--	--	--
M23-SS54-01-092718	SPLP %R	0.6%	--	0.5%	0.1%	0.2%	0.1%	--	0.6%	0.1%	--	--	--	--
M24-SB76-0612-01-092518	SPLP %R	0.1%	--	0.2%	--	--	--	--	--	--	--	--	--	--
M24-SB76-1218-01-092518	SPLP %R	0.2%	--	0.3%	0.1%	--	--	--	--	0.1%	--	--	--	--
M24-SS76-01-092518	SPLP %R	0.2%	--	0.2%	--	0.1%	--	--	--	--	--	--	--	0.2%
M25-SB50-0612-01-092818	SPLP %R	0.3%	--	0.2%	0.1%	0.3%	0.2%	--	0.3%	0.2%	--	--	--	--
M25-SB50-1218-01-092818	SPLP %R	1.2%	--	1.3%	0.5%	0.7%	0.4%	--	1.3%	0.1%	--	--	--	--
M25-SS50-01-092818	SPLP %R	1.2%	--	1.2%	0.5%	0.8%	0.4%	--	1.5%	0.2%	--	--	--	--
M26-SB28-0612-01-092618	SPLP %R	0.4%	--	0.3%	0.1%	0.4%	--	--	0.7%	0.1%	--	--	--	--
M26-SS28-01-092618	SPLP %R	0.6%	--	0.5%	0.1%	0.4%	--	--	0.8%	--	--	--	--	--
M27-SB51-0612-01-092618	SPLP %R	0.2%	--	0.1%	0.1%	0.2%	0.1%	--	--	0.1%	--	--	--	--
M27-SS51-01-092618	SPLP %R	0.1%	--	0.1%	0.0%	0.2%	--	--	0.3%	--	--	--	--	--
M28-SB30-0612-01-092618	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	--	--	--	--	--	--	--	--
M28-SS30-01-092618	SPLP %R	0.1%	--	0.1%	0.1%	0.3%	0.2%	--	0.1%	0.2%	--	--	--	--
M28-SSG7-01-092618	SPLP %R	0.1%	--	0.1%	0.1%	0.7%	--	--	0.1%	--	--	--	--	--
M29-SS48-01-092518	SPLP %R	0.0%	--	0.0%	0.0%	0.2%	--	--	--	--	--	--	--	--
M2-SB51-090108-01-091718	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	--	--
M2-SB55-072090-01-091618	SPLP %R	1.3%	--	1.1%	1.8%	1.9%	1.5%	--	1.0%	0.9%	--	--	--	1.4%
M30-SS180-01-092918	SPLP %R	0.5%	--	0.5%	--	0.1%	--	--	--	--	--	--	--	--
M31-SB37-0612-01-092918	SPLP %R	0.1%	--	0.1%	0.1%	0.3%	0.1%	--	--	0.1%	--	--	--	--
M31-SS37-01-092918	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	--	--	0.1%	--	--	--	--	--
M31-SS9-01-092918	SPLP %R	0.1%	--	0.1%	0.0%	0.2%	0.1%	--	0.1%	0.1%	--	--	--	--
M32-SB89-0612-01-092918	SPLP %R	0.2%	--	0.2%	0.2%	0.4%	0.3%	--	0.2%	0.4%	--	--	--	--
M32-SS56-01-092918	SPLP %R	0.1%	--	0.1%	0.1%	0.3%	0.1%	--	0.0%	0.1%	--	--	--	--
M32-SS89-01-092918	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	0.1%	--	0.1%	0.2%	--	--	--	--
M33-SS86-01-091818	SPLP %R	0.1%	--	0.1%	0.01%	0.1%	--	--	--	--	--	--	--	--
M34-SS97-01-092718	SPLP %R	0.2%	--	0.2%	0.0%	0.3%	--	--	0.2%	--	--	--	--	--
M35-SB22-0612-01-092718	SPLP %R	0.3%	--	0.3%	0.1%	0.3%	--	--	--	--	--	--	--	--
M35-SS22-01-092718	SPLP %R	0.2%	--	0.3%	0.1%	0.3%	--	--	0.4%	0.1%	--	--	--	--
M36-SS24-01-092718	SPLP %R	0.1%	--	0.1%	0.0%	0.2%	--	--	--	--	--	--	--	--
M37-SS44-01-092718	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	--	--	--	0.1%	--	--	--	--
M38-SB2-0612-01-092718	SPLP %R	1.1%	--	0.9%	0.0%	0.1%	--	--	1.5%	0.03%	--	--	--	--
M38-SB2-1218-01-092718	SPLP %R	2.2%	--	1.7%	0.0%	0.4%	--	--	2.0%	--	--	--	--	--
M38-SS2-01-092718	SPLP %R	1.5%	--	1.0%	0.1%	0.2%	0.1%	--	1.6%	0.1%	--	--	--	--
M3-SB51-0612-01-091618	SPLP %R	0.2%	--	0.2%	0.2%	0.3%	--	--	--	--	--	--	--	--
M3-SB51-1218-01-091618	SPLP %R	0.2%	--	0.3%	0.1%	0.3%	--	--	--	--	--	--	--	--
M3-SS51-01-091618	SPLP %R	--	--	0.5%	0.5%	0.5%	--	--	--	--	--	--	--	--
M4-SB81-0612-01-091818	SPLP %R	0.1%	--	0.1%	0.3%	0.2%	0.1%	--	--	0.1%	--	--	--	--
M4-SB81-1218-01-091818	SPLP %R	0.4%	--	0.4%	1.0%	1.0%	0.7%	--	0.3%	0.7%	--	--	--	0.6%



Table F2-3. SPLP Percent Recoveries (3 of 3)

Sample ID	Matrix	U-238a	U-238g	Uranium-234	Thorium-230	Radium-226	Lead-210	Polonium-210	Uranium-235	Th-232a	Th-232g	K-40	Radium-228	Thorium-228
M4-SS81-01-091818	SPLP %R	0.03%	--	0.0%	0.0%	0.1%	0.1%	--	--	--	--	--	--	--
M5-SB149-0612-01-093018	SPLP %R	0.3%	--	0.3%	0.2%	0.2%	0.1%	--	0.1%	0.2%	--	--	--	--
M5-SB479-0612-01-093018	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	--	0.3%
M5-SS149-01-093018	SPLP %R	0.1%	--	0.1%	0.1%	0.2%	0.1%	--	0.1%	--	--	--	--	--
M5-SS479-01-093018	SPLP %R	--	--	--	--	--	--	--	--	--	--	--	--	--
M6-SB285-0612-01-091618	SPLP %R	0.4%	--	0.3%	0.4%	0.2%	0.3%	--	--	--	--	--	--	--
M6-SB285-1218-01-091618	SPLP %R	0.3%	--	0.2%	0.3%	0.3%	0.3%	--	0.3%	0.2%	--	--	--	--
M6-SS174-01-092718	SPLP %R	0.1%	--	0.1%	0.1%	0.3%	--	--	0.2%	--	--	--	--	--
M6-SS285-01-091618	SPLP %R	0.2%	--	0.2%	0.1%	0.2%	0.1%	--	--	--	--	--	--	--
M7-SB161-0612-01-091618	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	--	--	--	--	--	--	--	--
M7-SB161-1218-01-091618	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	0.1%	--	--	--	--	--	--	--
M7-SB161-1824-01-091618	SPLP %R	0.0%	--	0.0%	0.0%	0.04%	--	--	--	--	--	--	--	--
M7-SB161-2430-01-091618	SPLP %R	0.0%	--	0.0%	0.1%	0.1%	--	--	--	--	--	--	--	--
M7-SS161-01-091618	SPLP %R	0.0%	--	0.0%	0.0%	0.1%	--	--	0.0%	--	--	--	--	--
M8-SS120-01-092718	SPLP %R	0.1%	--	0.2%	0.1%	0.4%	--	--	--	0.1%	--	--	--	--
M8-SS52-01-091818	SPLP %R	0.1%	--	0.1%	--	--	--	--	0.3%	--	--	--	--	--
M9-SS19-01-093018	SPLP %R	--	--	0.2%	0.2%	0.4%	--	--	--	--	--	--	--	--
T1-SS14-01-091618	SPLP %R	--	--	--	0.05%	--	--	--	--	--	--	--	--	--
T9-SS67-01-091118	SPLP %R	0.2%	--	--	--	--	--	--	--	--	--	--	--	--
T17-SB258-018090-01-092518	SPLP %R	0.5%	--	0.7%	--	--	--	--	--	0.1%	--	--	--	--
T23-SS32-01-091418	SPLP %R	--	--	0.1%	--	--	--	--	--	--	--	--	--	--
T37-SS94-01-091318	SPLP %R	2.3%	--	1.7%	--	--	--	--	--	--	--	--	--	--
M21-SD2-01-091218	SPLP %R	0.1%	--	0.1%	0.1%	0.1%	--	--	--	--	--	--	--	--

Notes:
 %R Percent recovery
 K-40 Potassium-40
 SPLP Synthetic precipitation leaching procedure
 Th-232a Thorium-232a
 Th-232g Thorium 232g
 U-238a Uranium-238a
 U-238g Uranium-238g

ATTACHMENT F3

TCLP RESULTS



Table F3-1. TCLP Results

Sample ID	Matrix	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
Units	TCLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TCLP Standard		5	100	1	5	5	1	5
M10-SB10-0612-01-092818	TCLP	<0.1	1.6	<0.05	<0.1	0.0086	<0.06	<0.1
M10-SS10-01-092818	TCLP	<0.1	1.1	<0.05	<0.1	0.013	0.06	<0.1
M11-SB35-0612-01-092818	TCLP	<0.1	1.2	<0.05	<0.1	<0.04	<0.06	<0.1
M11-SS35-01-092818	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M12-SS33-01-092818	TCLP	<0.1	<1	<0.05	<0.1	0.0045	<0.06	<0.1
M13-SB114-1230-01-091518	TCLP	<0.1	0.68	<0.05	<0.1	<0.04	<0.06	<0.1
M13-SS114-01-091518	TCLP	0.1	0.74	<0.05	<0.1	<0.04	<0.06	<0.1
M14-SB37-0612-01-091818	TCLP	<0.1	1.6	<0.05	<0.1	<0.04	<0.06	<0.1
M14-SB37-1218-01-091818	TCLP	<0.1	1.2	<0.05	<0.1	<0.04	<0.06	<0.1
M14-SS37-01-091818	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M15-SB84-0612-01-091418	TCLP	<0.1	1	<0.05	<0.1	<0.04	<0.06	<0.1
M15-SS14-01-091518	TCLP	<0.1	0.54	<0.05	<0.1	<0.04	<0.06	<0.1
M15-SS84-01-091418	TCLP	0.023	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M16-SB193-0612-01-091318	TCLP	<0.1	0.51	<0.05	<0.1	<0.04	<0.06	<0.1
M16-SB193-1218-01-091318	TCLP	<0.1	0.65	<0.05	<0.1	<0.04	<0.06	<0.1
M16-SS193-01-091318	TCLP	<0.1	0.56	<0.05	<0.1	<0.04	<0.06	<0.1
M17-SB64-0612-01-091318	TCLP	<0.1	0.34	0.0022	<0.1	<0.04	<0.06	<0.1
M17-SB64-1218-01-091318	TCLP	<0.1	0.32	0.0015	<0.1	<0.04	<0.06	<0.1
M17-SS64-01-091318	TCLP	<0.1	0.33	<0.05	<0.1	<0.04	<0.06	<0.1
M18-SB145-0612-01-091418	TCLP	<0.1	1.5	0.0057	<0.1	<0.04	<0.06	0.0062
M18-SS145-01-091418	TCLP	0.022	0.98	<0.05	<0.1	<0.04	<0.06	<0.1
M19-SB36-0612-01-091818	TCLP	<0.1	0.52	<0.05	<0.1	0.006	<0.06	<0.1
M19-SB36-1218-01-091818	TCLP	<0.1	0.66	<0.05	<0.1	<0.04	<0.06	<0.1
M19-SS36-01-091818	TCLP	0.034	0.58	<0.05	<0.1	0.011	<0.06	<0.1
M1-SB36-0612-01-091618	TCLP	<0.1	0.51	<0.05	<0.1	<0.04	<0.06	0.0064
M1-SB36-1218-01-091618	TCLP	<0.1	0.52	<0.05	<0.1	<0.04	<0.06	<0.1



Table F3-1. TCLP Results

Sample ID	Matrix	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
Units	TCLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TCLP Standard		5	100	1	5	5	1	5
M1-SB36-1824-01-091618	TCLP	<0.1	0.53	<0.05	<0.1	<0.04	<0.06	<0.1
M1-SB36-2436-01-091618	TCLP	<0.1	0.6	<0.05	<0.1	<0.04	0.064	<0.1
M1-SS36-01-091618	TCLP	<0.1	0.66	<0.05	<0.1	<0.04	<0.06	<0.1
M20-SB59-0612-01-091718	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M20-SB59-1218-01-091718	TCLP	<0.1	0.75	<0.05	<0.1	<0.04	<0.06	<0.1
M20-SS59-01-091718	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M21-SB528-0612-01-091218	TCLP	<0.1	0.86	<0.05	<0.1	<0.04	<0.06	<0.1
M21-SB528-1218-01-091218	TCLP	<0.1	0.76	<0.05	<0.1	<0.04	<0.06	<0.1
M21-SS46-01-091718	TCLP	<0.1	0.97	0.002	<0.1	0.019	<0.06	<0.1
M21-SS528-01-091218	TCLP	<0.1	1	<0.05	<0.1	<0.04	<0.06	<0.1
M22-SB104-0612-01-091718	TCLP	<0.1	0.41	<0.05	<0.1	<0.04	<0.06	<0.1
M22-SS104-01-091718	TCLP	<0.1	0.69	<0.05	<0.1	<0.04	<0.06	<0.1
M23-SB54-0612-01-092718	TCLP	0.018	0.66	<0.05	<0.1	0.0084	<0.06	<0.1
M23-SB54-1218-01-092718	TCLP	<0.1	0.65	<0.05	<0.1	<0.04	<0.06	<0.1
M23-SS54-01-092718	TCLP	0.011	0.89	<0.05	<0.1	<0.04	<0.06	<0.1
M24-SB76-0612-01-092518	TCLP	<0.1	2.3	<0.05	<0.1	<0.04	0.039	<0.1
M24-SB76-1218-01-092518	TCLP	0.016	1.7	<0.05	<0.1	<0.04	0.037	<0.1
M24-SS76-01-092518	TCLP	<0.1	2.4	<0.05	<0.1	<0.04	0.0085	<0.1
M25-SB50-0612-01-092818	TCLP	<0.1	<1	<0.05	<0.1	0.0043	<0.06	<0.1
M25-SB50-1218-01-092818	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M25-SS50-01-092818	TCLP	<0.1	0.74	<0.05	<0.1	<0.04	<0.06	<0.1
M26-SB28-0612-01-092618	TCLP	<0.1	0.73	<0.05	<0.1	<0.04	0.03	<0.1
M26-SS28-01-092618	TCLP	<0.1	0.73	<0.05	<0.1	<0.04	<0.06	<0.1
M27-SB51-0612-01-092618	TCLP	0.014	0.89	<0.05	<0.1	<0.04	0.012	<0.1
M27-SS51-01-092618	TCLP	0.033	0.75	<0.05	<0.1	<0.04	<0.06	<0.1
M28-SB30-0612-01-092618	TCLP	0.033	0.73	0.011	<0.1	<0.04	0.017	<0.1



Table F3-1. TCLP Results

Sample ID	Matrix	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
Units	TCLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TCLP Standard		5	100	1	5	5	1	5
M28-SS30-01-092618	TCLP	<0.1	1.1	0.0024	<0.1	<0.04	<0.06	<0.1
M28-SSG7-01-092618	TCLP	<0.1	0.58	<0.05	<0.1	<0.04	0.034	<0.1
M29-SS48-01-092518	TCLP	<0.1	0.43	<0.05	<0.1	<0.04	<0.06	<0.1
M2-SB51-090108-01-091718	TCLP	0.014	0.37	<0.05	<0.1	<0.04	<0.06	<0.1
M2-SB55-072090-01-091618	TCLP	<0.1	0.86	<0.05	<0.1	0.005	<0.06	<0.1
M30-SS180-01-092918	TCLP	<0.1	1.4	<0.05	<0.1	<0.04	<0.06	<0.1
M31-SB37-0612-01-092918	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M31-SS37-01-092918	TCLP	<0.1	1.2	<0.05	<0.1	<0.04	<0.06	<0.1
M31-SS9-01-092918	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M32-SB89-0612-01-092918	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M32-SS56-01-092918	TCLP	<0.1	1	<0.05	<0.1	<0.04	<0.06	<0.1
M32-SS89-01-092918	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M33-SS86-01-091818	TCLP	0.018	0.94	<0.05	<0.1	<0.04	<0.06	<0.1
M34-SS97-01-092718	TCLP	<0.1	1.4	<0.05	<0.1	<0.04	<0.06	<0.1
M35-SB22-0612-01-092718	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M35-SS22-01-092718	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M36-SS24-01-092718	TCLP	0.029	0.92	<0.05	<0.1	<0.04	<0.06	<0.1
M37-SS44-01-092718	TCLP	<0.1	0.56	0.0016	<0.1	0.0071	<0.06	<0.1
M38-SB2-0612-01-092718	TCLP	<0.1	0.43	<0.05	<0.1	<0.04	<0.06	<0.1
M38-SB2-1218-01-092718	TCLP	<0.1	0.41	<0.05	<0.1	0.0098	<0.06	<0.1
M38-SS2-01-092718	TCLP	<0.1	0.55	<0.05	<0.1	<0.04	<0.06	<0.1
M3-SB51-0612-01-091618	TCLP	<0.1	1.9	<0.05	<0.1	0.0033	<0.06	<0.1
M3-SB51-1218-01-091618	TCLP	<0.1	1.7	<0.05	<0.1	0.0031	<0.06	<0.1
M3-SS51-01-091618	TCLP	<0.1	1.4	<0.05	<0.1	0.005	<0.06	<0.1
M4-SB81-0612-01-091818	TCLP	<0.1	0.95	<0.05	<0.1	<0.04	<0.06	<0.1
M4-SB81-1218-01-091818	TCLP	<0.1	1	<0.05	<0.1	<0.04	<0.06	<0.1



Table F3-1. TCLP Results

Sample ID	Matrix	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
Units	TCLP	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TCLP Standard		5	100	1	5	5	1	5
M4-SS81-01-091818	TCLP	<0.1	0.93	<0.05	<0.1	<0.04	<0.06	<0.1
M5-SB149-0612-01-093018	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M5-SB479-0612-01-093018	TCLP	<0.1	1.4	<0.05	<0.1	<0.04	<0.06	<0.1
M5-SS149-01-093018	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
M5-SS479-01-093018	TCLP	<0.1	1.2	<0.05	<0.1	<0.04	<0.06	<0.1
M6-SB285-0612-01-091618	TCLP	<0.1	0.76	<0.05	<0.1	0.011	<0.06	<0.1
M6-SB285-1218-01-091618	TCLP	<0.1	0.91	<0.05	<0.1	<0.04	<0.06	<0.1
M6-SS174-01-092718	TCLP	<0.1	0.6	<0.05	<0.1	<0.04	<0.06	<0.1
M6-SS285-01-091618	TCLP	0.042	0.73	<0.05	<0.1	<0.04	<0.06	<0.1
M7-SB161-0612-01-091618	TCLP	<0.1	1.2	<0.05	<0.1	0.0049	<0.06	<0.1
M7-SB161-1218-01-091618	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M7-SB161-1824-01-091618	TCLP	<0.1	1.1	<0.05	<0.1	<0.04	<0.06	<0.1
M7-SB161-2430-01-091618	TCLP	<0.1	0.94	<0.05	<0.1	<0.04	<0.06	<0.1
M7-SS161-01-091618	TCLP	0.028	1.2	<0.05	<0.1	<0.04	<0.06	<0.1
M8-SS120-01-092718	TCLP	<0.1	0.66	<0.05	<0.1	<0.04	<0.06	<0.1
M8-SS52-01-091818	TCLP	0.05	1.4	<0.05	<0.1	<0.04	<0.06	<0.1
M9-SS19-01-093018	TCLP	<0.1	<1	<0.05	<0.1	<0.04	<0.06	<0.1
T1-SS14-01-091618	TCLP	<0.1	1.4	<0.05	<0.1	<0.04	<0.06	<0.1
T9-SS67-01-091118	TCLP	<0.1	1.8	<0.05	<0.1	<0.04	<0.06	<0.1
T17-SB258-018090-01-092518	TCLP	0.025	0.67	<0.05	<0.1	<0.04	0.052	<0.1
T23-SS32-01-091418	TCLP	<0.1	1	<0.05	<0.1	<0.04	<0.06	<0.1
T37-SS94-01-091318	TCLP	<0.1	<1	<0.05	<0.1	0.0056	<0.06	<0.1
M21-SD2-01-091218	TCLP	0.0097	1.1	<0.05	<0.1	0.0043	<0.06	<0.1

Notes:

mg/L Milligram per liter

TCLP Toxicity characteristic leaching procedure