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REMOVAL SUPPORT TEAM 3
EPA CONTRACT EP-S2-14-01

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July 16, 2018

Mr. Terry Kish, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II
Removal Action Branch
2890 Woodbridge Avenue
Edison, New Jersey 08837

EPA CONTRACT No: EP-S2-14-01

TDD No: TO-0370-0026

DC No: RST3-05-F-0143

**SUBJECT: FINAL SOIL SAMPLING REPORT, SEPTEMBER 2017 EVENT, REVISION 1
EIGHTEEN MILE CREEK SITE
NIAGARA COUNTY, NEW YORK**

Dear Mr. Kish,

Enclosed please find the Final Soil Sampling Report, September 2017 Event, Revision 1, which summarizes the soil sampling activities conducted by the U.S. Environmental Protection Agency (EPA) with the support of Weston Solutions, Inc., Removal Support Team 3 (RST 3) at the Eighteen Mile Creek Site (the Site) located in Niagara County, New York. The sampling event was performed as part of a Remedial Investigation at eight residential properties located in the vicinity of the Site from September 18 through September 21, 2017. This final report incorporates the EPA comments received on July 3, 2018.

If you have any questions or comments, please contact me at (732) 585-4419.

Sincerely,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Michael Garibaldi".

Michael Garibaldi
RST 3 Site Project Manager

Enclosure
cc: TDD File: TO-0370-0026

an employee-owned company



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Environmental Compliance Consultants, Inc., Avatar Environmental, LLC,
On-Site Environmental, Inc., and Sovereign Consulting, Inc.

**FINAL SOIL SAMPLING REPORT,
SEPTEMBER 2017 EVENT, REVISION 1**

**EIGHTEEN MILE CREEK SITE
Niagara County, New York**

SSID No: A269
EPA ID No.: NYN000206456

DC No: RST3-05-F-0143
TDD No: TO-0370-0026
EPA Contract No: EP-S2-14-01

Prepared for:

U.S. Environmental Protection Agency, Region II
2890 Woodbridge Avenue
Edison, New Jersey 08837

Prepared by:

Removal Support Team 3
Weston Solutions, Inc.
Federal East Division
Edison, New Jersey 08837

July 2018

TABLE OF CONTENTS

	<u>Page</u>
1.0 Introduction.....	1
1.1 Site Location and Description.....	1
1.2 Site History and Background.....	1
2.0 Scope of Work	2
3.0 On-Site Personnel	3
4.0 Summary of Site Activities and Observations	3
5.0 Sampling Methodology.....	3
6.0 Laboratories Receiving Samples.....	5
7.0 Sample Collection and Dispatch.....	5
8.0 Soil Analytical Results Summary	5
9.0 Conclusion	6

LIST OF ATTACHMENTS

Attachment A: Figures

- Figure 1: Site Location Map
- Figure 2: Sample Location Layout Map
- Figure 3A: P026 Analytical Results Map (Lead)
- Figure 3B: P027 Analytical Results Map (Lead)
- Figure 3C: P028 Analytical Results Map (Lead)
- Figure 3D: P029 Analytical Results Map (Lead)
- Figure 3E: P030 Analytical Results Map (Lead)
- Figure 3F: P031 Analytical Results Map (Lead)
- Figure 3G: P032 Analytical Results Map (Lead)
- Figure 3H: P033 Analytical Results Map (Lead)

Attachment B: Tables

- Table 1: Sample Collection Summary Table
- Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2B: Property P027, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2C: Property P028, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2D: Property P029, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2E: Property P030, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2F: Property P031, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2G: Property P032, Validated Analytical Results Summary Table - TAL Metals + Tin
- Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals + Tin

Attachment C: Chains of Custody Records

Attachment D: Validated Data Package

1.0 Introduction

On September 18 through September 21, 2017, the U.S. Environmental Protection Agency (EPA) Region II, with the support of Weston Solutions, Inc., Removal Support Team 3 (RST 3), conducted a soil sampling event as part of a Remedial Investigation of the existing soil at the Eighteen Mile Creek Site (the Site). Composite soil samples were collected for laboratory analysis from eight residential properties along Frost Street, Porter Street, and Chapel Street, located in the vicinity of the Site. For privacy reasons, unique identifier numbers (Property P026 through P033) were assigned to each of the investigated properties.

1.1 Site Location and Description

Eighteen Mile Creek (the Creek) originates southeast of the City of Lockport in the Niagara County Park and Golf Course, flows into a sluice that is also fed by the New York State Barge Canal (NYSBC), and exits north of the canal into Eighteen Mile Creek East Branch in Lockport. Eighteen Mile Creek West Branch originates in Upson Park on the north side of the NYSBC and also receives water from two underground flows. The East and West Branches converge and flow under Clinton Street to the Mill Pond. The Creek flows north for approximately 15 miles, past the Clinton Street, Newfane and Burt Dams, and empties near the western end of Lake Ontario in Olcott. The portion of the Creek that was placed on the National Priorities List (NPL) is defined by the stretch that spans approximately 12.7 miles from just south of Clinton Street to Burt Dam. The portion from Clinton to Harwood Streets in the City of Lockport is identified by the New York State Department of Environmental Conservation (NYSDEC) as the Eighteen Mile Creek Corridor (the Corridor).

Refer to Attachment A, Figure 1: Site Location Map.

1.2 Site History and Background

The NYSDEC has conducted multiple environmental investigations within the Corridor which identified polychlorinated biphenyls (PCBs) and heavy metals, both within the Creek and at several properties situated within the Corridor. Based on the findings from the NYDEC investigations, on March 15, 2012, EPA placed the Site on the NPL list.

EPA issued a Record of Decision (ROD) in September 2013, for Operable Unit-1 (OU-1) which, required the relocation of residents from five residential properties along Water Street followed by demolition of the vacant homes and installation of a fence. In addition, the ROD required the demolition of the former Flintkote facility located at 300 Mill Street in order to facilitate completion of Remedial Investigation of the property. The OU-1 ROD was implemented from 2014 to 2015.

In addition to other Remedial Investigation work performed by EPA, in March 2013, EPA collected a single transect of soil samples along the east side of Mill Street opposite of the former Flintkote properties. Surface soil samples were collected and analyzed for metals and PCBs. Elevated concentrations of lead were reported in two of the samples collected. A second sampling event was conducted at those two properties in accordance with the *Superfund Lead-Contaminated Residential Sites Handbook*. With the development of new analytical tools, EPA

collected additional soil samples in October 2016 from known contaminated areas of the former Flintkote property for forensic comparison to the lead found in soil on the residential properties to further evaluate whether or not the elevated concentrations of lead were attributable to the Site.

In July 2017, EPA and RST 3 conducted a Remedial Investigation at nine residential properties located in the vicinity of the Site along Mill Street, Porter Street, and Chapel Street. A total of 163 grab soil samples, including quality assurance/quality control (QA/QC) samples, were collected from all nine properties at depths 0 to 2 inches, 2 to 6 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches, below ground surface (bgs). The soil samples were screened on-site for lead using a portable X-ray Fluorescence (XRF) analyzer and then submitted for laboratory analyses of target analyte list (TAL) metals, including tin, and target compound list (TCL) PCBs. The screening and analytical results were compared with the EPA Removal Management Levels (RMLs) for residential soil. Analytical results indicated that concentrations of lead and/or manganese exceeded the EPA RMLs of 400 milligrams per kilogram (mg/kg) and 1,800 mg/kg, respectively for lead and manganese, in at least one or more soil samples collected at each of the nine properties. The highest concentration of lead was 1,340 mg/kg at depths 6 to 12 inches bgs and the highest concentration of manganese was 2,830 mg/kg at depths 18 to 24 inches bgs. In addition, concentrations of thallium exceeded the EPA RML of 0.78 mg/kg in at least one or more soil samples collected from three of the sampled properties. The highest concentration of thallium was 1.2 mg/kg at depths 12 to 18 inches bgs. Analytical results did not indicate any concentrations of PCBs above the EPA RML in any soil samples collected from all nine properties.

2.0 Scope of Work

RST 3 was tasked by EPA with the collection of five-point composite soil samples, including QA/QC samples, from soil borings advanced using non-dedicated stainless steel hand augers at eight residential properties (Properties P026, P027, P028, P029, P030, P031, P032, and P033) located in the vicinity of the Site. All the soil samples were submitted for laboratory analyses of TAL metals, including tin. In addition, RST 3 was tasked with providing support for photographic documentation and notation in the Site logbook of all site activities, entering sampling information into the EPA Scribe database, an environmental data management system, and documenting sampling locations with Global Position System (GPS) technology.

Refer to Attachment A, Figure 2: Sample Location Layout Map.

3.0 On-Site Personnel

Name	Affiliation	Duties On-site
Terry Kish	EPA, Region II	On-Scene Coordinator
Michael Mannino	Weston Solutions, Inc., RST 3	Site Project Manager, Site Health and Safety, Sample Collection and Sample Management
Scott Snyder	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management, Sample Quality Control/Quality Assurance
Jesse Lopez	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management, and Global Positioning System Documentation
Andrew Funk	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management
Jana Pezanowski	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management

4.0 Summary of Site Activities and Observations

Prior to mobilization to the Site, the locations of subsurface utilities at each property were marked out following a utility mark-out request submitted by RST 3 to the New York 811 Dig Safe program to identify subsurface utilities within the proposed investigation areas. On September 18, 2017, RST 3 mobilized to the Site to perform the sampling event. On September 19 through September 21, 2017, non-dedicated stainless steel hand augers were utilized to advance soil borings at locations in designated sampling quadrants (quads) at each property. A total of 147 composite soil samples, including QA/QC samples, were collected from the sampling quads at all eight residential properties. Rinsate blanks were collected daily at the end of each sampling day. The soil samples and rinsate blanks were split and shipped to two EPA Contract Laboratory Program (CLP) laboratories, including Chemtech Consulting Group (Chemtech), located in Mountainside, New Jersey and Bonner (Bonner) Analytical Testing Company, located in Hattiesburg, Mississippi, for TAL metals, including tin, analyses.

5.0 Sampling Methodology

All field work was performed in accordance with the RST 3 *Site-Specific Health and Safety Plan* (HASP), the RST 3 *Site-Specific Quality Assurance Project Plan* (QAPP), and EPA's Emergency Response Team (ERT)/Scientific, Engineering, Response & Analytical Services (SERAS) contractor Standard Operation Procedures (SOPs) Number (No.) 2001: *General Field Sampling Guidelines* and SOP No. 2012: *Soil Sampling*. At each property to be sampled, the area of concern (AOC) was divided into sampling quads of approximately equal surface area. The number of quads and sample locations at each property were determined by the EPA On-Scene Coordinator (OSC) and marked using survey flags. Soil sampling was conducted generally following the guidelines provided in the EPA *Superfund Lead-Contaminated Residential Sites Handbook*.

Soil borings were advanced manually using non-dedicated stainless steel hand augers to a depth of two feet bgs at each selected location. Generally, five-point composite soil samples were collected from five discrete depth intervals (0 to 2 inches, 2 to 6 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches bgs) within each sampling quad and composited into one sample for each specific interval. However, it is noteworthy that due to refusal (*i.e.* subsurface obstructions) encountered during auger advancement in sampling Quad 1 of Property P028, four-point composite samples P028-S001-1218-01 and P028-S001-1824-01, were collected at depths 12 to 18 inches bgs and 18 to 24 inches bgs, respectively at soil boring location P028-S001. The soil samples were collected from the stainless steel hand augers using dedicated plastic scoops and placed in re-sealable plastic bags. Organic debris was removed from each bagged sample before being homogenized and then placed into 8 ounce (oz.) glass sample jars. Fresh nitrile gloves were donned between sampling intervals and boring locations. Using this sampling method, five composite soil samples from five discreet depth intervals were collected from each sample quad at each property.

The soil samples were sieved by the laboratory using 150 micrometer (μm) sieve prior to analysis. Field duplicates and matrix spike/matrix spike duplicates (MS/MSD) were collected at the rate of one per 20 field samples or one per property, whichever was less. In order to demonstrate adequate decontamination of non-dedicated sampling equipment (*i.e.* stainless hand augers), a rinsate blank was collected at the end of each sampling day by pouring laboratory grade de-ionized water over

a decontaminated stainless-steel hand auger. The rinse water was collected into sample bottles. Decontamination of non-dedicated sampling equipment (*i.e.*, stainless steel hand augers) was conducted in accordance with EPA's ERT/SERAS contractor SOP No. 2006: *Sampling Equipment Decontamination*, and was performed between sampling intervals and locations, and consisted of a soap (Alconox®) solution scrub and potable water rinse.

All sample information was entered into the EPA Scribe data management system from which sample labels and Chains of Custody (COC) Record were generated. The sample labels were affixed to the soil sample jars and rinsate sample bottles and then preserved on ice in sample coolers. RST 3 performed photographic documentation of the site conditions and notation in a Site logbook of site activities throughout the Remedial Investigation. Sample location coordinates were documented using GPS technology.

After sampling was completed at each property, the soil borings were backfilled with the originally removed soil in reverse order. In the event that additional soil was needed to properly backfill the borehole, top soil was utilized to return the boring locations to their pre-sampling conditions.

6.0 Laboratories Receiving Samples

Sample Matrix	CLP Case Number	Analysis	Name and Address of Laboratory
Soil and Rinsate Blank (Aqueous)	47214	TAL Metals and Tin	Chemtech Consulting Group 284 Sheffield Street Mountainside, New Jersey 07092 <i>(CLP laboratory)</i>
			Bonner Analytical Testing Company 2703 Oak Grove Road Hattiesburg, Mississippi 39402 <i>(CLP laboratory)</i>

CLP: Contract Laboratory Program

TAL: Target Analyte List

7.0 Sample Collection and Dispatch

On September 19, 2017, RST 3 shipped 42 soil samples, including two field duplicates, additional volumes of two samples designated as MS/MSD and one rinsate blank under COC record numbers (Nos.) 2-091917-145428-0004 and 2-091917-162121-0005 via FedEx Airbill No. 8105-8520-1214 to Chemtech for TAL metals, including tin, analyses.

On September 20, 2017, RST 3 shipped 48 soil samples, including two field duplicates, additional volumes of two samples designated as MS/MSD and one rinsate blank under COC record Nos. 2-092017-102254-0006 and 2-092017-143717-0007 via FedEx Airbill No. 8105-8520-1188 to Chemtech for TAL metals, including tin, analyses.

On September 21, 2017, RST 3 shipped 57 soil samples, including three field duplicates, additional volumes of three samples designated as MS/MSD and one rinsate blank under COC record Nos. 2-092117-073140-0008 and 2-092117-123532-0009 via FedEx Airbill No. 8105-8520-1177 to Bonner for TAL metals, including tin, analyses.

Refer to Attachment B, Table 1: Sample Collection Summary Table and Attachment C: Chains of Custody Records.

8.0 Analytical Results Summary

The validated analytical results of the soil samples collected from the eight properties were compared with the EPA RMLs (revised May 2016). Validated analytical results indicated that concentrations of lead were above the EPA RML of 400 mg/kg in at least one or more soil samples collected from at least one or more depth intervals in one or more quads at each of the eight properties sampled during this event. Sample P030-S002-0612-01, which was collected at 6 to 12 inches bgs in Quad 2 of Property P030, indicated the highest concentration of lead at 1,400 mg/kg.

Manganese and thallium were detected at concentrations above the EPA RMLs of 1,800 mg/kg and 0.78 mg/kg respectively, in at least one or more soil samples collected from at least one or more depth intervals in one or more quads at Properties P032 and P033. P033-S006-1218-01, which was collected at 12 to 18 inches bgs from Property P033, indicated the highest concentration of manganese at 2,400 mg/kg and thallium at 1.9 J (estimated result) mg/kg.

Refer to Attachment A, Figure 2: Sample Location Layout Map and Figure 3A through Figure 3H: Analytical Results Maps (Lead); Attachment B, Table 2A through Table 2H: Validated Analytical Results Summary Tables - TAL Metals + Tin; and Attachment D: Validated Data Package.

9.0 Conclusion

Concentrations of lead were above the EPA RMLs in all eight properties sampled during this event. In addition, concentrations of manganese and thallium were above their respective EPA RMLs in two of the properties sampled during this event. It is anticipated that EPA will utilize the results from this sampling event to determine next steps and future actions, which may include an expanded Remedial Investigation of other properties located in the vicinity of the Site, and potentially, the subsequent removal of TAL metal contamination identified in soil at all the investigated properties.

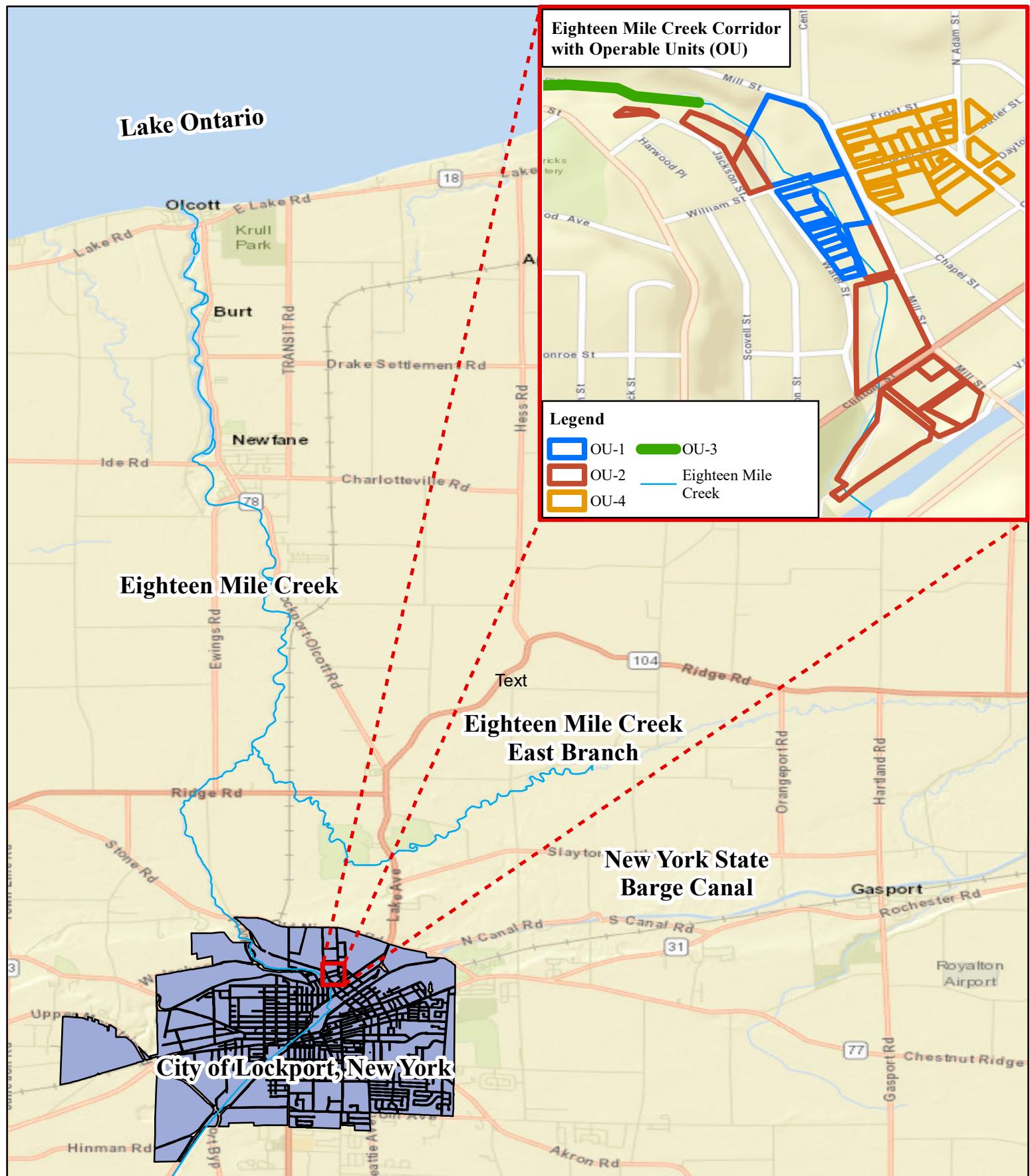
Report prepared by: Michael Garibaldi 7/16/2018
Michael Garibaldi Date
RST 3 Site Project Manager

Report reviewed by: Bernard Nwosu 7/16/2018
Bernard Nwosu Date
RST 3 Group Leader

ATTACHMENT A

Figures

- Figure 1: Site Location Map
- Figure 2: Sample Location Layout Map
- Figure 3A: P026 Analytical Results Map (Lead)
- Figure 3B: P027 Analytical Results Map (Lead)
- Figure 3C: P028 Analytical Results Map (Lead)
- Figure 3D: P029 Analytical Results Map (Lead)
- Figure 3E: P030 Analytical Results Map (Lead)
- Figure 3F: P031 Analytical Results Map (Lead)
- Figure 3G: P032 Analytical Results Map (Lead)
- Figure 3H: P033 Analytical Results Map (Lead)



Legend

- Eighteen Mile Creek Corridor — Eighteen Mile Creek

0 0.5 1 2 3 4 Miles



**Weston Solutions, Inc.
East Division**

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Environmental Compliance Consultants, Inc.,
Avatar Environmental, LLC, On-Site Environmental,
Inc. and Sovereign Consulting, Inc.

DATE MODIFIED: 5/20/2018

**Figure 1:
Site Location Map**

Eighteen Mile Creek Site
Niagara County, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL SUPPORT TEAM 3
CONTRACT # EP-S2-14-01

GIS ANALYST:	M. MANNINO
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	180517_UPDATEDSLM.MXD



Legend

- Parcel Boundary
- Quadrangle (Quad) Boundary

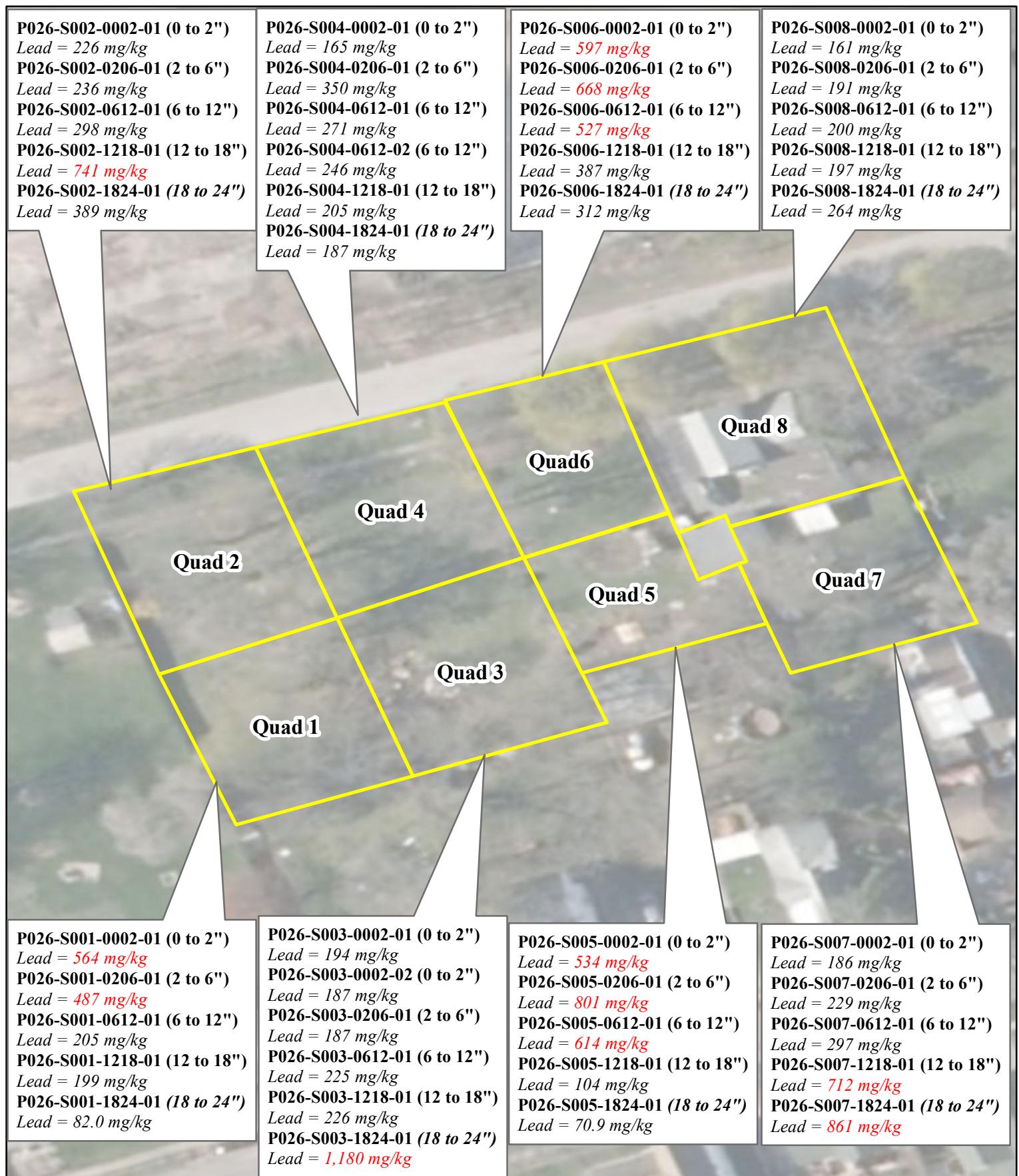


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**Figure 2:
Sample Location Layout Map**

DATE MODIFIED:	5/20/2018
EIGHTEEN MILE CREEK SITE NIAGARA COUNTY, NEW YORK	
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT # EP-S2-14-01	
GIS ANALYST:	M. MANNINO
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	171006_P026-P033



Legend

Notes:

1) All results presented in milligrams per kilogram (mg/kg).

2) Depth of sample collection is presenting in parenthesis next to sample number.

3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

P026 Quads



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Figure 3A: P026 Analytical Results Map (Lead)

DATE MODIFIED: 5/17/2018	Eighteen Mile Creek Site Niagara County, New York
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT # EP-S2-14-01	
GIS ANALYST:	M. MANNINO
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	171006_P026-P033



Legend

P027 Quads

Notes:
 1) All results presented in milligrams per kilogram (mg/kg).
 2) Depth of sample collection is presenting in parenthesis next to sample number.
 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

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Figure 3B: P027 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018	EPA OSC:	M. MANNINO
RST SPM:	T. KISH	U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT # EP-S2-14-01	M. GARIBALDI
FILENAME:	171006_P026-P033		



Legend

Notes:

- 1) All results presented in milligrams per kilogram (mg/kg).
- 2) Depth of sample collection is presenting in parenthesis next to sample number.
- 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

P028 Quads



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Figure 3C: P028 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018	EIGHTEEN MILE CREEK SITE
		Niagara County, New York
		U.S. ENVIRONMENTAL PROTECTION AGENCY
		REMOVAL SUPPORT TEAM 3
		CONTRACT # EP-S2-14-01
GIS ANALYST:	M. MANNINO	
EPA OSC:	T. KISH	
RST SPM:	M. GARIBALDI	
FILENAME:	171006_P026-P033	

P029-S002-0002-01 (0 to 2")
Lead = 201 mg/kg
P029-S002-0206-01 (2 to 6")
Lead = 547 mg/kg
P029-S002-0206-02 (2 to 6")
Lead = 488 mg/kg
P029-S002-0612-01 (6 to 12")
Lead = 388 mg/kg
P029-S002-1218-01 (12 to 18")
Lead = 144 mg/kg
P029-S002-1824-01 (18 to 24")
Lead = 158 mg/kg

Quad 2

Quad 1

P029-S001-0002-01 (0 to 2")
Lead = 199 mg/kg
P029-S001-0206-01 (2 to 6")
Lead = 273 mg/kg
P029-S001-0612-01 (6 to 12")
Lead = 204 mg/kg
P029-S001-1218-01 (12 to 18")
Lead = 190 mg/kg
P029-S001-1824-01 (18 to 24")
Lead = 144 mg/kg

Legend

Notes:

- 1) All results presented in milligrams per kilogram (mg/kg).
- 2) Depth of sample collection is presenting in parenthesis next to sample number.
- 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

P029 Quads



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Figure 3D: P029 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	171006_P026-P033
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT # EP-S2-14-01	
GIS ANALYST:	M. MANNINO

P030-S002-0002-01 (0 to 2")

Lead = 284 mg/kg

P030-S002-0206-01 (2 to 6")

Lead = 447 mg/kg

P030-S002-0612-01 (6 to 12")

Lead = 1,400 mg/kg

P030-S002-1218-01 (12 to 18")

Lead = 473 mg/kg

P030-S002-1824-01 (18 to 24")

Lead = 310 mg/kg



P030-S001-0002-01 (0 to 2")

Lead = 120 mg/kg

P030-S001-0206-01 (2 to 6")

Lead = 122 mg/kg

P030-S001-0612-01 (6 to 12")

Lead = 47.8 mg/kg

P030-S001-1218-01 (12 to 18")

Lead = 37.0 mg/kg

P030-S001-1824-01 (18 to 24")

Lead = 69.3 mg/kg

Legend

Notes:

1) All results presented in milligrams per kilogram (mg/kg).

2) Depth of sample collection is presenting in parenthesis next to sample number.

3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

P030 Quads



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Figure 3E: P030 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018	EIGHTEEN MILE CREEK SITE NIAGARA COUNTY, NEW YORK
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT #: EP-S2-14-01		
GIS ANALYST:	M. MANNINO	
EPA OSC:	T. KISH	
RST SPM:	M. GARIBALDI	
FILENAME:	171006_P026-P033	



Legend

Notes:

- 1) All results presented in milligrams per kilogram (mg/kg).
- 2) Depth of sample collection is presenting in parenthesis next to sample number.
- 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

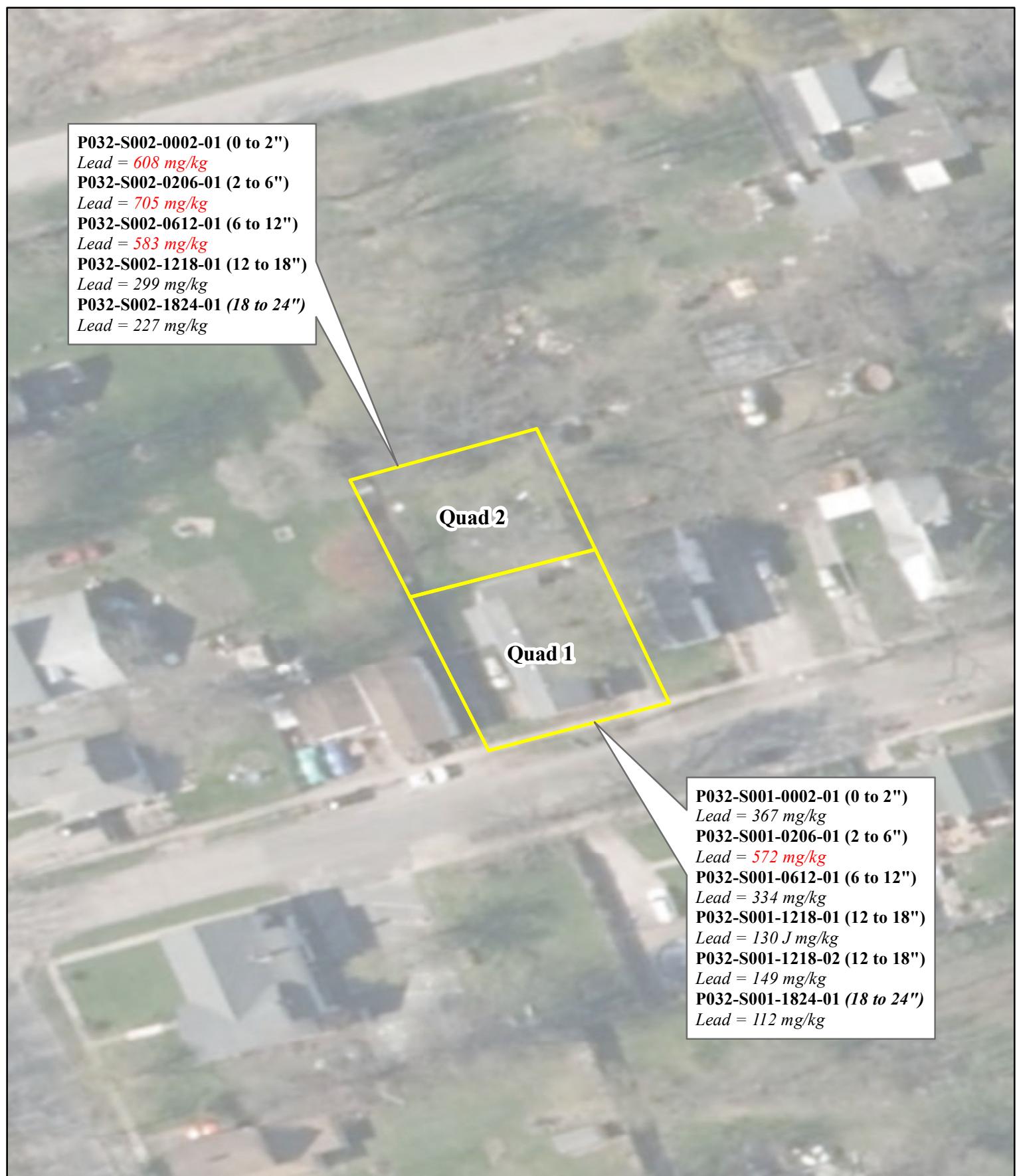
P031 Quads

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Figure 3F: P031 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018	EIGHTEEN MILE CREEK SITE
		Niagara County, New York
		U.S. ENVIRONMENTAL PROTECTION AGENCY
		REMOVAL SUPPORT TEAM 3
		CONTRACT # EP-S2-14-01
GIS ANALYST:	M. MANNINO	
EPA OSC:	T. KISH	
RST SPM:	M. GARIBALDI	
FILENAME:	171006_P026-P033	



Legend

P032 Quads

Notes:

- 1) All results presented in milligrams per kilogram (mg/kg).
- 2) Depth of sample collection is presenting in parenthesis next to sample number.
- 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.

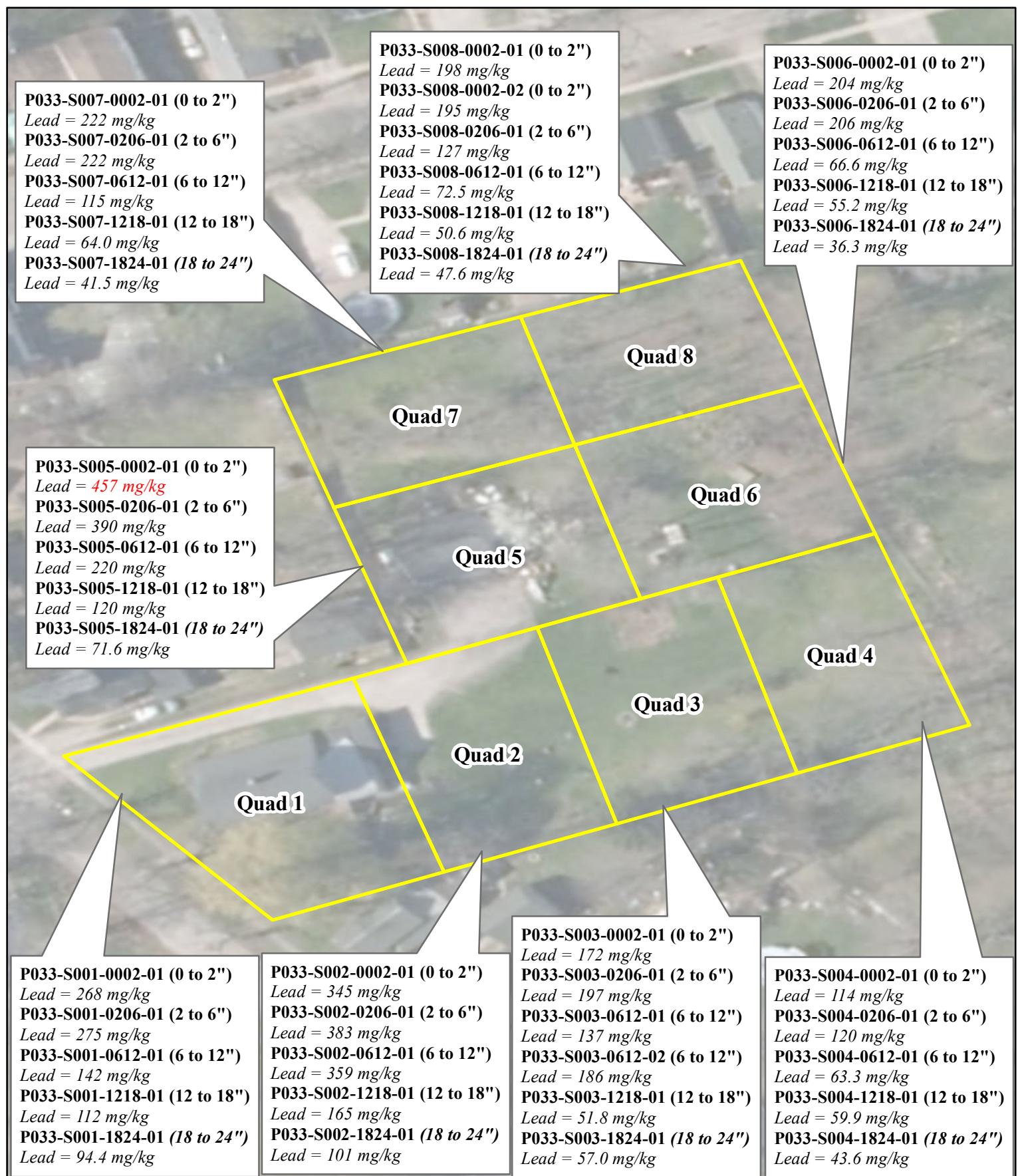


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 Inc. and Sovereign Consulting, Inc

Figure 3G: P032 Analytical Results Map (Lead)

DATE MODIFIED:	5/17/2018	EIGHTEEN MILE CREEK SITE NIAGARA COUNTY, NEW YORK
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT #: EP-S2-14-01		
GIS ANALYST:	M. MANNINO	
EPA OSC:	T. KISH	
RST SPM:	M. GARIBALDI	
FILENAME:	171006_P026-P033	



Legend

P033 Quads

Notes:

- 1) All results presented in milligrams per kilogram (mg/kg).
- 2) Depth of sample collection is presenting in parenthesis next to sample number.
- 3) Values highlighted red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg for Lead.



**Weston Solutions, Inc.
East Division**

In Association With
Scientific and Environmental Associates, Inc.,
Environmental Compliance Consultants, Inc.,
Avatar Environmental, LLC, On-Site Environmental,
Inc. and Sovereign Consulting, Inc.

Figure 3H: P033 Analytical Results Map (Lead)

DATE MODIFIED:	5/20/2018	EIGHTEEN MILE CREEK SITE NIAGARA COUNTY, NEW YORK
U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL SUPPORT TEAM 3 CONTRACT # EP-S2-14-01		
GIS ANALYST:	M. MANNINO	
EPA OSC:	T. KISH	
RST SPM:	M. GARIBALDI	
FILENAME:	171006_P026-P033	

ATTACHMENT B

Tables

Table 1: Sample Collection Summary Table

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2B: Property P027, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2C: Property P028, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2D: Property P029, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2E: Property P030, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2F: Property P031, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2G: Property P032, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 1: Sample Collection Summary Table
Eighteenmile Creek Assessment Site
Lockport, Niagara County, New York
September 19 through September 21, 2017

Property No.	RST 3 Sample No.	CLP Sample No.	Sample Date	Sample Time	Matrix	Collection Method	Depth (Inches)	Sample Type	Analysis
P026	P026-S001-0002-01	MBE023	9/19/2017	14:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S001-0206-01	MBE024	9/19/2017	14:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S001-0612-01	MBE025	9/19/2017	14:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S001-1218-01	MBE026	9/19/2017	14:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S001-1824-01	MBE027	9/19/2017	14:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S002-0002-01	MBE028	9/19/2017	15:20	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S002-0206-01	MBE029	9/19/2017	15:20	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S002-0612-01	MBE030	9/19/2017	15:20	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S002-1218-01	MBE031	9/19/2017	15:20	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S002-1824-01	MBE032	9/19/2017	15:20	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	*P026-S003-0002-01	MBE033	9/19/2017	16:30	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S003-0002-02	MBE085	9/19/2017	16:30	Soil	Composite	0-2	Field Duplicate	TAL Metals + Tin
	P026-S003-0206-01	MBE034	9/19/2017	16:30	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S003-0612-01	MBE035	9/19/2017	16:30	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S003-1218-01	MBE036	9/19/2017	16:30	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S003-1824-01	MBE037	9/19/2017	16:30	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S004-0002-01	MBE038	9/19/2017	12:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S004-0206-01	MBE039	9/19/2017	12:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	*P026-S004-0612-01	MBE040	9/19/2017	12:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S004-0612-02	MBE073	9/19/2017	12:15	Soil	Composite	6-12	Field Duplicate	TAL Metals + Tin
	P026-S004-1218-01	MBE041	9/19/2017	12:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S004-1824-01	MBE042	9/19/2017	12:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S005-0002-01	MBE063	9/19/2017	10:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S005-0206-01	MBE064	9/19/2017	10:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S005-0612-01	MBE065	9/19/2017	10:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S005-1218-01	MBE066	9/19/2017	10:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S005-1824-01	MBE067	9/19/2017	10:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S006-0002-01	MBE068	9/19/2017	11:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S006-0206-01	MBE069	9/19/2017	11:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S006-0612-01	MBE070	9/19/2017	11:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S006-1218-01	MBE071	9/19/2017	11:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S006-1824-01	MBE072	9/19/2017	11:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S007-0002-01	MBE080	9/19/2017	15:20	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S007-0206-01	MBE081	9/19/2017	15:20	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S007-0612-01	MBE082	9/19/2017	15:20	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S007-1218-01	MBE083	9/19/2017	15:20	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S007-1824-01	MBE084	9/19/2017	15:20	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P026-S008-0002-01	MBE074	9/19/2017	14:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P026-S008-0206-01	MBE075	9/19/2017	14:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P026-S008-0612-01	MBE076	9/19/2017	14:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P026-S008-1218-01	MBE077	9/19/2017	14:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P026-S008-1824-01	MBE078	9/19/2017	14:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P027	P027-S001-0002-01	MBE043	9/20/2017	9:10	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P027-S001-0206-01	MBE044	9/20/2017	9:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P027-S001-0612-01	MBE045	9/20/2017	9:10	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P027-S001-1218-01	MBE046	9/20/2017	9:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P027-S001-1824-01	MBE047	9/20/2017	9:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P027-S002-0002-01	MBE048	9/20/2017	9:10	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P027-S002-0206-01	MBE049	9/20/2017	9:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P027-S002-0612-01	MBE050	9/20/2017	9:10	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P027-S002-1218-01	MBE051	9/20/2017	9:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P027-S002-1824-01	MBE052	9/20/2017	9:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin

Notes:

RST 3 = Removal Support Team 3.

No. = Number

TAL = Target Analyte List.

TCL = Target Compound List.

PCBs = Polychlorinated Biphenyls.

DI = De-ionized

NA = Not Applicable.

*Matrix Spike/Matrix Spike Duplicate.

All soil samples were field screened for Lead using X-Ray Fluorescence (XRF) analyzer.

Table 1: Sample Collection Summary Table
Eighteenmile Creek Assessment Site
Lockport, Niagara County, New York
September 19 through September 21, 2017

Property No.	RST 3 Sample No.	CLP Sample No.	Sample Date	Sample Time	Matrix	Collection Method	Depth (Inches)	Sample Type	Analysis
P028	P028-S001-0002-01	MBE086	9/20/2017	11:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P028-S001-0206-01	MBE087	9/20/2017	11:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P028-S001-0612-01	MBE088	9/20/2017	11:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P028-S001-1218-01	MBE089	9/20/2017	11:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P028-S001-1824-01	MBE090	9/20/2017	11:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P028-S002-0002-01	MBE091	9/20/2017	11:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P028-S002-0206-01	MBE092	9/20/2017	11:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P028-S002-0612-01	MBE093	9/20/2017	11:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P028-S002-1218-01	MBE094	9/20/2017	11:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P028-S002-1824-01	MBE095	9/20/2017	11:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P029	P029-S001-0002-01	MBE096	9/20/2017	14:35	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P029-S001-0206-01	MBE097	9/20/2017	14:35	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P029-S001-0612-01	MBE098	9/20/2017	14:35	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P029-S001-1218-01	MBE099	9/20/2017	14:35	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P029-S001-1824-01	MBE0A0	9/20/2017	14:35	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P029-S002-0002-01	MBE0A1	9/20/2017	14:05	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	*P029-S002-0206-01	MBE0A2	9/20/2017	14:05	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P029-S002-0206-02	MBE0C6	9/20/2017	14:05	Soil	Composite	2-6	Field Duplicate	TAL Metals + Tin
	P029-S002-0612-01	MBE0A3	9/20/2017	14:05	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P029-S002-1218-01	MBE0A4	9/20/2017	14:05	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
P030	P030-S001-0002-01	MBE0A6	9/20/2017	15:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P030-S001-0206-01	MBE0A7	9/20/2017	15:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P030-S001-0612-01	MBE0A8	9/20/2017	15:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P030-S001-1218-01	MBE0A9	9/20/2017	15:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P030-S001-1824-01	MBE0B0	9/20/2017	15:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P030-S002-0002-01	MBE0B1	9/20/2017	15:45	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P030-S002-0206-01	MBE0B2	9/20/2017	15:45	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P030-S002-0612-01	MBE0B3	9/20/2017	15:45	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P030-S002-1218-01	MBE0B4	9/20/2017	15:45	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P030-S002-1824-01	MBE0B5	9/20/2017	15:45	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P031	*P031-S001-0002-01	MBE0B6	9/20/2017	17:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P031-S001-0002-02	MBE0D8	9/20/2017	17:15	Soil	Composite	0-2	Field Duplicate	TAL Metals + Tin
	P031-S001-0206-01	MBE0B7	9/20/2017	17:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P031-S001-0612-01	MBE0B8	9/20/2017	17:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P031-S001-1218-01	MBE0B9	9/20/2017	17:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P031-S001-1824-01	MBE0C0	9/20/2017	17:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P031-S002-0002-01	MBE0C1	9/20/2017	16:30	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P031-S002-0206-01	MBE0C2	9/20/2017	16:30	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P031-S002-0612-01	MBE0C3	9/20/2017	16:30	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P031-S002-1218-01	MBE0C4	9/20/2017	16:30	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
P032	P032-S001-0002-01	MBE0C5	9/20/2017	16:30	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P032-S001-0206-01	MBE0C8	9/21/2017	15:40	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P032-S001-0612-01	MBE0C9	9/21/2017	15:40	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P032-S001-1218-01	MBE0D0	9/21/2017	15:40	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P032-S001-1824-01	MBE0D1	9/21/2017	15:40	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	*P032-S001-1218-02	MBE0J6	9/21/2017	15:40	Soil	Composite	12-18	Field Duplicate	TAL Metals + Tin
	P032-S001-1824-01	MBE0D2	9/21/2017	15:40	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P032-S002-0002-01	MBE0D3	9/21/2017	16:10	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P032-S002-0206-01	MBE0D4	9/21/2017	16:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P032-S002-0612-01	MBE0D5	9/21/2017	16:10	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P032-S002-1218-01	MBE0D6	9/21/2017	16:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P032-S002-1824-01	MBE0D7	9/21/2017	16:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin

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TCL = Target Compound List.

PCBs = Polychlorinated Biphenyls.

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Table 1: Sample Collection Summary Table
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P033	P033-S001-0002-01	MBE0E3	9/21/2017	9:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S001-0206-01	MBE0E4	9/21/2017	9:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S001-0612-01	MBE0E5	9/21/2017	9:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S001-1218-01	MBE0E6	9/21/2017	9:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S001-1824-01	MBE0E7	9/21/2017	9:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S002-0002-01	MBE0E8	9/21/2017	9:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S002-0206-01	MBE0E9	9/21/2017	9:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S002-0612-01	MBE0F0	9/21/2017	9:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S002-1218-01	MBE0F1	9/21/2017	9:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S002-1824-01	MBE0F2	9/21/2017	9:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S003-0002-01	MBE0F3	9/21/2017	10:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S003-0206-01	MBE0F4	9/21/2017	10:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	*P033-S003-0612-01	MBE0F5	9/21/2017	10:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S003-0612-02	MFE0J3	9/21/2017	10:15	Soil	Composite	6-12	Field Duplicate	TAL Metals + Tin
	P033-S003-1218-01	MFE0F6	9/21/2017	10:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S003-1824-01	MFE0F7	9/21/2017	10:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S004-0002-01	MFE0F8	9/21/2017	10:10	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S004-0206-01	MFE0F9	9/21/2017	10:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S004-0612-01	MFE0G0	9/21/2017	10:10	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S004-1218-01	MFE0G1	9/21/2017	10:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S004-1824-01	MFE0G2	9/21/2017	10:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S005-0002-01	MFE0G3	9/21/2017	12:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S005-0206-01	MFE0G4	9/21/2017	12:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S005-0612-01	MFE0G5	9/21/2017	12:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S005-1218-01	MFE0G6	9/21/2017	12:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S005-1824-01	MFE0G7	9/21/2017	12:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S006-0002-01	MFE0G8	9/21/2017	12:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S006-0206-01	MFE0G9	9/21/2017	12:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S006-0612-01	MFE0H0	9/21/2017	12:00	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S006-1218-01	MFE0H1	9/21/2017	12:00	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S006-1824-01	MFE0H2	9/21/2017	12:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P033-S007-0002-01	MFE0H3	9/21/2017	14:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S007-0206-01	MFE0H4	9/21/2017	14:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S007-0612-01	MFE0H5	9/21/2017	14:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S007-1218-01	MFE0H6	9/21/2017	14:15	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S007-1824-01	MFE0H7	9/21/2017	14:15	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	*P033-S008-0002-01	MFE0H8	9/21/2017	14:10	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P033-S008-0002-02	MFE0J5	9/21/2017	14:10	Soil	Composite	0-2	Field Duplicate	TAL Metals + Tin
	P033-S008-0206-01	MFE0H9	9/21/2017	14:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P033-S008-0612-01	MFE0J0	9/21/2017	14:10	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P033-S008-1218-01	MFE0J1	9/21/2017	14:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P033-S008-1824-01	MFE0J2	9/21/2017	14:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
Blank	RB-09192017	MBE079	9/19/2017	13:35	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin
	RB-09202017	MBE0C7	9/20/2017	15:30	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin
	RB-09212017	MBE0J4	9/21/2017	14:00	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin

Notes:

RST 3 = Removal Support Team 3.

No. = Number

TAL = Target Analyte List.

TCL = Target Compound List.

PCBs = Polychlorinated Biphenyls.

DI = De-ionized

NA = Not Applicable.

*Matrix Spike/Matrix Spike Duplicate.

All soil samples were field screened for Lead using X-Ray Fluorescence (XRF) analyzer.

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 19, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P026-S001-0002-01	P026-S001-0206-01	P026-S001-0612-01	P026-S001-1218-01	P026-S001-1824-01	P026-S002-0002-01	P026-S002-0206-01	P026-S002-0612-01	P026-S002-1218-01	P026-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE023	MBE024	MBE025	MBE026	MBE027	MBE028	MBE029	MBE030	MBE031	MBE032
Sample Date		9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	5,660	5,060	4,480	5,700	5,800	5,580	5,890	5,440	6,280	6,010
Antimony	31	1.1 J	1.3 J	1.2 J	0.88 J	0.74 J	0.73 J	0.72 J	1.1 J	1.6 J	0.96 J
Arsenic	68	18.5	32.7	31.1	19.8	9.7	8.3	9.7	18.9	17.1	18.3
Barium	15,000	462	388	216	412	144	164	168	236	565	332
Beryllium	160	0.76	1.0	1.1	0.97	0.75	0.61	0.66	1.0	0.87	0.88
Cadmium	71	2.4	3.0	2.5	2.3	2.5	1.8	1.6	2.3	4.5	2.6
Calcium	NS	11,200	15,600	7,490	14,100	35,200	18,600	11,200	13,400	17,600	22,600
Chromium	NS	37	27.4	15.2	18.9	13.4	14.6	14.1	17.6	27.0	17.9
Cobalt	23	7.8	10.2	13.1	12.1	9.7	7.0	7.4	11.3	10.8	10.4
Copper	3,100	159	176	97.0	99.0	48.4	66.2	67.9	92.9	151	99.1
Iron	55,000	15,900	26,800	34,700	26,700	28,300	14,300	16,300	24,500	20,700	19,400
Lead	400	564	487	205	199	82.0	226	236	298	741	389
Magnesium	NS	4,100	7,120	2,810	3,320	5,520	6,240	3,620	3,750	4,360	4,070
Manganese	1,800	447	385	390	765	942	422	385	373	579	484
Nickel	1,500	29.2	36.4	31.1	31.2	22.0	28.1	22.7	33.1	32.7	26.1
Potassium	NS	813	774	852	899	866	977	942	832	1030	961
Selenium	390	1.2 J	2.6 U	2.5 U	2.5 U	2.5 U	2.6 U				
Silver	390	1.0	1.4	1.4	1.2	1.2	0.73 J	0.92	1.3	1.3	1.0
Sodium	NS	379 U	365 U	362 U	360 U	350 U	373 U	368 U	368 U	376 U	368 U
Thallium	0.78	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Tin	47,000	20.6	28.5	14.0	13.7	5.5	12.0	15.5	17.7	83.5	38.5
Vanadium	390	22.8	28.5	25.6	22.2	16.4	17.5	18.4	25.3	26.2	24.7 J
Zinc	23,000	710	608	273	422	189	209	162	270	601	321

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

R: Rejected result.

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10^{-4} target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 19, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P026-S003-0002-01	P026-S003-0002-02	P026-S003-0206-01	P002-S003-0612-01	P026-S003-1218-01	P026-S003-1824-01	P026-S004-0002-01	P026-S004-0206-01	P026-S004-0612-01
Sample Depth (inches)		0-2	0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12
CLP Sample No.		MBE033	MBE085	MBE034	MBE035	MBE036	MBE037	MBE038	MBE039	MBE040
Sample Date		7/19/2017	7/19/2017	7/19/2017	7/19/2017	7/19/2017	7/19/2017	9/19/2017	9/19/2017	9/19/2017
Matrix		Soil								
Units		mg/kg								
TAL Metal										
Aluminum	77,000	4,960	4,800	4,330	4,900	5,160	6,160	4,960	4,930	4,980
Antimony	31	1.0 J	0.69 J	0.98 J	1.1 J	0.72 J	1.3 J	0.71 J	0.78 J	1.0 J
Arsenic	68	15.6 J	13.4	18.1	41.4	19.8	14.0	7.9	15.6	22.6
Barium	15,000	195	198	270	187	161	393	115	175	138
Beryllium	160	0.72	0.66	0.82	0.98	0.76	0.70	0.58	0.74	0.92
Cadmium	71	1.9	1.7	1.9	2.5	2.1	1.7	1.7	2.2	2.0
Calcium	NS	29,300	31,500	20,200	29,000	40,800	42,400	35,400	36,600	26,500
Chromium	NS	13.1	12.3	10.3	10.3	13.5	12.8	11.0	12.7	12.4 J
Cobalt	23	7.8	7.1	7.5	10.1	9.3	8.3	7.1	7.7	9.2
Copper	3,100	71.7 J	76.7	113	126	138	124	52.2	85.0	157
Iron	55,000	16,900	15,400	19,600	21,200	20,600	16,600	15,000	17,000	20,300 J
Lead	400	194	187	187	225	226	1,180	165	350	271
Magnesium	NS	15,000	15,800	10,200	6,700	7,720	7,340	18,100	13,700	8,190
Manganese	1,800	439	406	276	498	598	633	623	520	455 J
Nickel	1,500	30.2	27.8	26.0	24.5	22.3	19.6	22.3	22.4	23.5
Potassium	NS	912	809	631	910	908	994	709	900	776
Selenium	390	2.5 U	2.7 U	2.6 U	2.5 U	2.5 U	2.7 U	2.6 U	2.5 U	2.5 UJ
Silver	390	0.83 J-	0.79	0.93	1.0	1.1	0.88	0.71 J	0.87	0.96 J-
Sodium	NS	360 U	382 U	370 U	360 U	357 U	379 U	368 U	360 U	357 U
Thallium	0.78	1.8 R	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 R
Tin	47,000	10.1	8.9	9.7	13.3	31.1	24.6	8.8	22.4	22.3
Vanadium	390	16.2	15.2	17.1	17.8	15.7	19.7	14.1	16.2	17.1
Zinc	23,000	187	177	181	310	248	280	178	329	286

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

R: Rejected result.

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10^{-4} target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 19, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P026-S004-0612-02	P026-S004-1218-01	P026-S004-1824-01	P026-S005-0002-01	P026-S005-0206-01	P026-S005-0612-01	P026-S005-1218-01	P026-S005-1824-01	P026-S006-0002-01	P026-S006-0206-01
Sample Depth (inches)		6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24	0-2	2-6
CLP Sample No.		MBE073	MBE041	MBE042	MBE063	MBE064	MBE065	MBE066	MBE067	MBE068	MBE069
Sample Date		9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017	9/19/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	5,040	4,800	5,030	4,060	5,600	6,090	4,470	4,270	5,680	6,190
Antimony	31	1.5 J	1.1 J	1.2 J	6.2	6.5	2.4 J	0.64 J	0.56 J	0.99 J	0.83 J
Arsenic	68	22.4	19.2	18.8	10.1	16.9	14.6	5.4	3.8	9.5	12.2
Barium	15,000	135	141	172	228	319	247	100	82.6	148	299
Beryllium	160	1.0	0.86	0.77	0.45	0.64	0.66	0.41	0.38	0.57	0.67
Cadmium	71	2.1	2.3	2.3	1.9	2.9	2.3	1.2	1.3	1.8	1.9
Calcium	NS	23,200	32,400	42,100	26,900	22,400	23,400	79,100	91,700	13,800	15,500
Chromium	NS	12.2	21.7	27.3	25.8	39.3	22.4	9.7	7.4	11.8	14.4
Cobalt	23	9.2	9.4	9.7	4.9	7.1	7.4	5.0	5.7	6.3	7.7
Copper	3,100	166	207	137	74.5	113	81.4	32.4	29.6	72.8	98.6
Iron	55,000	22,200	22,200	21,700	11,100	16,000	15,700	10,100	11,300	13,800	14,300
Lead	400	246	205	187	534	801	614	104	70.9	597	668
Magnesium	NS	7,670	6,960	8,670	11,800	6,990	7,380	16,000	18,200	5,420	5,440
Manganese	1,800	405	538	721	277	370	406	458	554	376	413
Nickel	1,500	23.9	27.1	25.8	17.3	23.7	22.9	11.8	11.7	19.5	22.9
Potassium	NS	730	796	846	7.3	960	987	671	720	887	931
Selenium	390	2.6 U	2.6 U	2.6 U	0.62 J	2.6 U	2.5 U				
Silver	390	1.1	1.0	1.1	0.74	1.1	0.97	0.55 J	0.52 J	0.82	1.4
Sodium	NS	373 U	373 U	368 U	370 U	376 U	360 U	362 U	357 U	350 U	360 U
Thallium	0.78	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U				
Tin	47,000	20.7	14.8	28.2	10.1	20.3	20.7	4.7	2.6	13.5	16.4
Vanadium	390	18.2	16.2	16.1	13.3	17.3	17.3	10.4	10.5	16.6	19.8
Zinc	23,000	264	384	308	410	578	366	89.1	85.5	305	311

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

R: Rejected result.

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10^{-4} target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 19, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P026-S006-0612-01	P026-S006-1218-01	P026-S006-1824-01	P026-S007-0002-01	P026-S007-0206-01	P026-S007-0612-01	P026-S007-1218-01	P026-S007-1824-01	P026-S008-0002-01
Sample Depth (inches)		6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24	0-2
CLP Sample No.		MBE070	MBE071	MBE072	MBE080	MBE081	MBE082	MBE083	MBE084	MBE074
Sample Date		9/19/2017	7/19/2017	7/19/2017	7/19/2017	7/19/2017	7/19/2017	9/19/2017	9/19/2017	9/19/2017
Matrix		Soil								
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal										
Aluminum	77,000	5,960	5,840	5,890	5,380	6,420	5,810	6,640	6,890	5,370
Antimony	31	0.60 J	0.53 J	0.49 J	0.46 J	4.6 U	0.57 J	0.69 J	0.61 J	0.45 J
Arsenic	68	11.9	10.5	6.7	5.8	5.3	7.3	9.5	8.9	6.2
Barium	15,000	207	159	139	103	118	137	226	192	87.3
Beryllium	160	0.65	0.60	0.56	0.42	0.47	0.48	0.73	0.62	0.43
Cadmium	71	1.7	1.6	1.7	1.1	1.2	1.3	2.0	1.6	1.0
Calcium	NS	33,700	44,700	33,000	9,240	11,000	14,800	15,600	21,700	13,000
Chromium	NS	11.6	12.8	10.5	10.1	10.4	10.6	16.2	16.1	10.8
Cobalt	23	7.7	6.9	6.9	5.3	6.2	6.1	7.9	7.0	5.2
Copper	3,100	82.8	118	66.4	47.3	46.4	45.9	70.8	73.3	38.5
Iron	55,000	15,400	14,200	15,400	10,700	12,500	12,900	12,600	11,400	10,800
Lead	400	527	387	312	186	229	297	712	861	161
Magnesium	NS	6,790	8,590	7,820	3,980	4,420	4,170	4,970	5,780	5,120
Manganese	1,800	511	469	472	420	554	451	382	381	312
Nickel	1,500	17.2	16.9	14.7	15.7	16.7	16.2	22.3	19.4	16.3
Potassium	NS	871	872	760	692	694	614	839	906	741
Selenium	390	2.5 U	2.5 U	2.5 U	2.6 U	2.7 U	2.6 U	2.5 U	2.4 U	2.5 U
Silver	390	0.86	0.82	0.82	0.58 J	0.61 J	0.65 J	0.85	0.84	0.55 J
Sodium	NS	362 U	352 U	350 U	376 U	379 U	370 U	352 U	345 U	352 U
Thallium	0.78	1.8 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.8 U	1.7 U	1.8 U
Tin	47,000	15.7	11.0	6.9	6.3	5.4	8.1	18.1	15.2	5.3
Vanadium	390	17.9	16.0	14.4	13.3	15.7	14.8	18.6	17.2	13.1
Zinc	23,000	293	199	187	140	139	142	296	236	110

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

R: Rejected result.

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2A: Property P026, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 19, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P026-S008-0206-01	P026-S008-0612-01	P026-S008-1218-01	P026-S008-1824-01
Sample Depth (inches)		2-6	6-12	12-18	18-24
CLP Sample No.		MBE075	MBE076	MBE077	MBE078
Sample Date		7/19/2017	7/19/2017	7/19/2017	7/19/2017
Matrix		Soil	Soil	Soil	Soil
Units		mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal					
Aluminum	77,000	5,780	5,850	6,020	6,910
Antimony	31	0.43 J	4.3 U	4.3 U	0.45 J
Arsenic	68	7.2	7.9	8.3	6.8
Barium	15,000	104	113	124	125
Beryllium	160	0.49	0.50	0.46	0.48
Cadmium	71	1.2	1.2	0.97	1.0
Calcium	NS	17,200	28,200	28,900	29,400
Chromium	NS	10.6	10.3	10.2	11.0
Cobalt	23	5.9	6.2	5.1	5.1
Copper	3,100	42.2	39.5	39.5	37.1
Iron	55,000	11,700	12,200	11,900	12,500
Lead	400	191	200	197	264
Magnesium	NS	5,730	7,190	6,960	6,580
Manganese	1,800	385	425	399	424
Nickel	1,500	16.3	14.3	12.1	13.0
Potassium	NS	774	827	789	867
Selenium	390	2.5 U	2.5 U	2.5 U	2.6 U
Silver	390	0.61 J	0.65 J	0.56 J	0.59 J
Sodium	NS	362 U	360 U	360 U	370 U
Thallium	0.78	1.8 U	1.8 U	1.8 U	1.9 U
Tin	47,000	7.0	7.9	10.9	7.8
Vanadium	390	13.9	13.5	12.3	13.0
Zinc	23,000	109	109	110	99.6

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

R: Rejected result.

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10^{-4} target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2B: Property P027, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 20, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P027-S001-0002-01	P027-S001-0206-01	P027-S001-0612-01	P027-S001-1218-01	P027-S001-1824-01	P027-S002-0002-01	P027-S002-0206-01	P027-S002-0612-01	P027-S002-1218-01	P027-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE043	MBE044	MBE045	MBE046	MBE047	MBE048	MBE049	MBE050	MBE051	MBE052
Sample Date		9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	6,970	7,180	7,410	7,260	5,790	6,560	6,210	6,230	6,530	7,220
Antimony	31	0.72 J	0.68 J	0.72 J	0.48 J	4.3 U	0.46 J	0.41 J	0.39 J	4.4 U	0.53 J
Arsenic	68	10.7	11.4	10.1	7.7	5.5	8.2	8.7	6.4	8.0	7.3
Barium	15,000	189	196	115	71.9	51.6	153	169	105	122	98.0
Beryllium	160	0.74	0.76	0.70	0.68	0.57	0.58	0.60	0.60	0.62	0.62
Cadmium	71	2.2	2.2	1.6	1.6	1.5	1.8	2.0	1.7	1.6	1.5
Calcium	NS	9,700	10,700	6,800	11,600	66,800	21,800	38,300	83,900	27,100	11,000
Chromium	NS	15.9	14.7	12.3	12.5	10.8	15.5	13.9	12.5	12.6	13.2
Cobalt	23	9.1	9.6	10.1	10.3	7.1	7.2	7.7	8.1	8.9	9.5
Copper	3,100	74.2	168	130	38.5	34.0	64.5	73.8	52.7	53.4	41.2
Iron	55,000	17,100	17,300	17,300	18,900	15,000	16,000	15,600	16,200	17,000	17,300
Lead	400	462	482	211	85.3	73.6	435	443	233	216	101
Magnesium	NS	3,850	3,470	2,500	2,590	11,000	6,610	7,460	7,320	4,150	2,870
Manganese	1,800	1,110	1,220	1,320	1,190	794	826	937	1,040	1,500	1,730
Nickel	1,500	24.6	22.5	18.7	20.6	18.7	23.0	22.1	20.5	17.9	20.3
Potassium	NS	1,420	1,260	1,120	1,060	1,150	1,200	1,200	1,370	1,270	1,210
Selenium	390	2.5 U	2.6 U	2.5 U	2.5 U	2.5 U	2.6 U				
Silver	390	0.86	0.87	0.76	0.67 J	0.50 J	0.83	0.82	0.73	0.74	0.70 J
Sodium	NS	130 J	140 J	130 J	133 J	140 J	209 J	192 J	226 J	261 J	287 J
Thallium	0.78	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U				
Tin	47,000	12.5	14.9	8.6	4.4	3.3	11.3	13.1	20.7	54.9	8.0
Vanadium	390	17.1	17.4	15.6	14.3	11.5	16.0	15.0	13.7	13.8	13.9
Zinc	23,000	245	276	123	64.2	67.2	288	263	132	115	69.8

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2C: Property P028, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 20, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P028-S001-0002-01	P028-S001-0206-01	P028-S001-0612-01	P028-S001-1218-01	P028-S001-1824-01	P028-S002-0002-01	P028-S002-0206-01	P028-S002-0612-01	P028-S002-1218-01	P028-S002-0002-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE086	MBE087	MBE088	MBE089	MBE090	MBE091	MBE092	MBE093	MBE094	MBE095
Sample Date		9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	5,470	5,580	5,480	5,710	7,420	6,060	6,880	7,240	7,410	7,110
Antimony	31	4.6 U	0.64 J	4.5 U	4.4 U	4.5 U	0.72 J	0.68 J	0.52 J	0.69 J	0.42 J
Arsenic	68	10.3	9.0	8.5	9.2	8.2	7.4	8.5	8.9	13.6	12.7
Barium	15,000	149	163	144	124	119	163	210	194	276	242
Beryllium	160	0.50	0.55	0.55	0.53	0.60	0.46	0.58	0.61	0.73	0.64
Cadmium	71	1.6	1.9	1.7	1.8	1.7	1.6	2.2	1.8	2.4	2.4
Calcium	NS	14,200	30,800	19,500	25,100	17,000	11,600	20,500	15,200	19,600	32,700
Chromium	NS	12.6	10.4	10.8	14.9	13.4	13.2	15.4	12.7	16.5	16.1
Cobalt	23	6.7	7.4	7.7	7.9	8.5	5.9	7.8	7.4	9.8	8.6
Copper	3,100	55.5	52.5	58.6	69.6	52.2	56.4	82.3	91.3	122	157
Iron	55,000	13,300	14,200	14,900	17,000	18,800	12,600	15,600	14,800	18,700	17,800
Lead	400	297	362	257	219	166	242	380	345	622	450
Magnesium	NS	5,340	8,760	5,110	6,190	5,260	3,070	4,110	3,310	3,340	4,380
Manganese	1,800	742	759	934	1,060	1,690	575	758	732	1,220	1,230
Nickel	1,500	17.1	19.5	16.7	19.4	19.4	15.8	19.6	16.8	21.2	19.7
Potassium	NS	878	825	860	940	820	903	1,050	903	1,370	1,310
Selenium	390	2.7 U	2.5 U	2.6 U	2.5 U	2.6 U	2.6 U	2.5 U	2.6 U	2.5 U	2.6 U
Silver	390	0.76 U	0.73 U	0.75 U	0.73 U	0.75 U	0.74 U	0.70 U	0.75 U	0.73 U	0.75 U
Sodium	NS	88.0 J	100 J	107 J	112 J	101 J	88.3 J	109 J	130 J	216 J	199 J
Thallium	0.78	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U
Tin	47,000	8.3	10.1	16.4	22.2	22.8	11.3	17.3	16.5	33.0	35.1
Vanadium	390	13.8	13.8	13.4	13.9	16.7	14	15.8	17.1	20.7	16.2
Zinc	23,000	226	276	169	126	121	247	347	288	346	348

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2D: Property P029, Validated Analytical Results Summary Table - TAL Metals plus Tin

**Eighteen Mile Creek Site
Niagara County, New York
September 20, 2017**

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P029-S001-0002-01	P029-S001-0206-01	P029-S001-0612-01	P029-S001-1218-01	P029-S001-1824-01	P029-S002-0002-01	P029-S002-0206-01	P029-S002-0206-02	P029-S002-0612-01	P029-S002-1218-01	P029-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	2-6	6-12	12-18	18-24
CLP Sample No.		MBE096	MBE097	MBE098	MBE099	MBE0A0	MBE0A1	MBE0A2	MBE0C6	MBE0A3	MBE0A4	MBE0A5
Sample Date		9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017
Matrix		Soil										
Units		mg/kg										
TAL Metal												
Aluminum	77,000	5,440	6,220	5,290	5,710	5,610	5,350	7,990	6,160	5,730	3,800	4,040
Antimony	31	0.78 J	0.72 J	0.86 J	0.63 J	0.55 J	0.42 J	0.74 J	0.72 J	0.92 J	1.4 J	1.6 J
Arsenic	68	8.2	12.4	11.3	9.5	8.2	4.9	26.4 J	10.0 J	12.0	18.3	18.6
Barium	15,000	95.5	96.5	116	138	144	85.7	561 J	204 J	219	218	233
Beryllium	160	0.54	0.67	0.77	0.74	0.72	0.41	1.2	0.59	0.71	1.0	1.1
Cadmium	71	1.7	1.7	1.5	1.5	1.2	1.0	3.6 J	2.0 J	2.4	3.9	4.3
Calcium	NS	38,800	15,200	17,000	21,400	26,300	4,350	19,900	12,500	12,200	5,190	5,440
Chromium	NS	15.0	12.6	11.8	16.1	12.4	13.4	28.9 J	13.9 J	12.2	10.5	11.9
Cobalt	23	6.1	7.2	7.9	7.8	8.4	5.1	13.3	6.5	7.3	7.9	8.6
Copper	3,100	97.2	66.6	113	137	107	48.3	179 J	93.3 J	76.5	86.9	92.6
Iron	55,000	15,400	17,300	22,000	18,300	15,100	12,500	22,200	16,100	23,000	51,900	54,600
Lead	400	199	273	204	190	144	201	547	488	388	144	158
Magnesium	NS	18,600	7,110	4,990	5,010	5,000	2,410	5,010	3,220	2,990	1,240	1,360
Manganese	1,800	641	560	588	766	844	327	416	438	421	184	196
Nickel	1,500	19.0	23.7	19.9	19.2	19.2	16.3	48.7 J	21.4 J	21.4	23.2	25.8
Potassium	NS	791	751	805	849	842	520	1,130	556	623	662	728
Selenium	390	2.5 U	2.5 U	2.7 U	2.5 U	2.6 U	2.5 U	0.53 J	2.6 U	2.5 U	0.98 J	2.6 U
Silver	390	0.68 J	0.65 J	0.80	0.76	0.64 J	0.44 J	0.73 R	0.75 U	0.71 U	0.73 U	0.75 U
Sodium	NS	146 J	166 J	193 J	170 J	199 J	127 J	202 J	123 J	149 J	279 J	284 J
Thallium	0.78	1.8 U	1.8 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 UJ	1.9 U	1.8 U	1.8 U	1.9 U
Tin	47,000	12.1	9.5	14.4	14.8	15.2	7.5	34.0 J	14.5 J	11.3	9.3	12.3
Vanadium	390	13.7	17.5	16.3	14.7	13.7	14.6	25.6	20.3	23.2	33.5	35.6
Zinc	23,000	198	188	151	162	132	161	680 J	327 J	281	124	133

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2E: Property P030, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 20, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P030-S001-0002-01	P030-S001-0206-01	P030-S001-0612-01	P030-S001-1218-01	P030-S001-1824-01	P030-S002-0002-01	P030-S002-0206-01	P030-S002-0612-01	P030-S002-1218-01	P030-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0A6	MBE0A7	MBE0A8	MBE0A9	MBE0B0	MBE0B1	MBE0B2	MBE0B3	MBE0B4	MBE0B5
Sample Date		9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	10,000	9,450	8,970	9,300	9,030	6,080	6,010	5,520	4,000	4,920
Antimony	31	0.43 J	0.59 J	0.40 J	0.41 J	0.37 J	0.69 J	1.2 J	1.7 J	1.5 J	0.75 J
Arsenic	68	5.7	5.8	3.6	3.0	3.9	6.7	10.0	20.5	14.5	16.2
Barium	15,000	90.2	89.1	65.1	57.1	68.7	145	281	526	583	522
Beryllium	160	0.64	0.63	0.53	0.51	0.52	0.56	0.72	1.2	1.0	0.98
Cadmium	71	1.4	1.2	0.83	0.71	0.99	2.9	4.6	6.1	4.2	3.0
Calcium	NS	4,440	3,320	2,220	2,720	2,860	12,400	10,800	8,990	7,230	15,200
Chromium	NS	14.9	15.0	12.0	12.0	11.9	14.2	18.3	21.8	21.0	17.3
Cobalt	23	7.4	7.8	6.9	6.8	6.6	7.4	9.3	10.9	8.1	7.8
Copper	3,100	40.6	38.4	28.6	31.4	35.6	67.6	88.7	131	110	89.7
Iron	55,000	18,600	17,700 J	15,700	15,800	16,000	23,800	31,600	47,300	52,000	47,400
Lead	400	120	122	47.8	37.0	69.3	284	447	1,400	473	310
Magnesium	NS	3,750	3,400	2,920	2,990	2,970	7,170	5,440	3,120	2,340	3,200
Manganese	1,800	388	353	402	430	382	479	535	382	278	266
Nickel	1,500	22.3	22.6	17.0	15.6	16.6	26.8	40.9	52.1	38.0	28.5
Potassium	NS	940	776	593	547	569	807	752	789	720	734
Selenium	390	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.6 U	2.6 U	2.5 U	2.6 U	2.6 U
Silver	390	0.70 J	0.59 J	0.47 J	0.47 J	0.51 J	0.87	1.2	1.7	1.6	1.5
Sodium	NS	133 J	129 J	115 J	116 J	128 J	155 J	203 J	323 J	328 J	356 J
Thallium	0.78	1.8 U	1.8 U	1.8 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.8 U	1.9 U
Tin	47,000	5.3	4.5	2.9 J	2.7 J	10.0	8.8	13.9	23.5	20.2	34.9
Vanadium	390	21.0	20.2	17.7	17.7	17.3	16.2	19.4	28.6	30.1	30.1
Zinc	23,000	149	125	60.7	51.5	63.6	328	304	359	226	157

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10^{-4} target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2F: Property P031, Validated Analytical Results Summary Table - TAL Metals plus Tin

**Eighteen Mile Creek Site
Niagara County, New York
September 20, 2017**

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P031-S001-0002-01	P031-S001-0206-01	P031-S001-0612-01	P031-S001-1218-01	P031-S001-1824-01	P031-S002-0002-01	P031-S002-0002-02	P031-S002-0206-01	P031-S002-0612-01	P031-S002-1218-01	P031-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	0-2	2-6	6-12	12-18	18-24
CLP Sample No.	MBE0B6	MBE0B7	MBE0B8	MBE0B9	MBE0C0	MBE0C1	MBE0D8	MBE0C2	MBE0C3	MBE0C4	MBE0C5	
Sample Date	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	9/20/2017	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
TAL Metal												
Aluminum	77,000	6,500	10,600	10,400	11,100	12,000	6,490	6,680	6,640	7,540	6,140	8,070
Antimony	31	0.68 J	6.0 U	6.0 U	6.0 U	6.0 U	0.87 J	0.83 J	0.77 J	0.88 J	0.76 J	0.45 J
Arsenic	68	6.7	11.0	9.3	9.3	9.5	9.1	9.8	11.2	22.5	9.6	23.7
Barium	15,000	182	183	178	200	146	415	418	512	1140	205	247
Beryllium	160	0.61	0.90	0.79	0.79	0.88	0.64	0.69	0.70	1.1	0.58	0.93
Cadmium	71	2.6	0.78	0.69	0.58	0.50 U	2.8	3.0 J	3.4	5.4	2.0	2.2
Calcium	NS	39,300	51,500	50,500	58,800	44,100	31,700	37,800	31,200	27,900	11,500	21,200
Chromium	NS	13.9	19.4	18.6	18.9	19.7	22.9	23.0 J	23.0	48.2	13.8	15.3
Cobalt	23	7.4	6.8	6.6	6.7	6.9	8.2	8.5	8.7	13.8	6.6	9.6
Copper	3,100	67.5	42.3	41.2	32.3	29.8	107	119	136	397	96.1	89.4
Iron	55,000	15,000	18,500	17,400	18,400	18,900	16,100	17,200	17,400	25,200	16,200	16,100
Lead	400	348	331	328	342	195	470	478	629	883	485	278
Magnesium	NS	10,800	8,680	10,000	9,310	7,560	8,400	9,180	7,320	10,100	3,160	4,610
Manganese	1,800	776	865	847	1090	1410	500	518	528	555	435	354
Nickel	1,500	24.7	26.2	22.5	21.7	22.8	36.4 J	38.2	39.4	83.8	20.7	26.8
Potassium	NS	1,310	2,480	2,280	2,330	2,560	1,160	1,290	1,140	1,120	556	1,100
Selenium	390	2.5 U	1.3 J	1.0 J	1.3 J	1.3 J	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U
Silver	390	0.72 U	0.21 J	0.16 J	0.21 J	0.26 J	0.73 R	0.72 R	0.73 U	0.71 U	0.69 U	0.72 U
Sodium	NS	119 J	500 U	500 U	500 U	500 U	128 J	146 J	134 J	240 J	130 J	183 J
Thallium	0.78	1.8 U	0.26 J	0.14 J	0.51 J	0.74 J	1.8 UJ	1.8 UJ	1.8 U	1.8 U	1.7 U	1.8 U
Tin	47,000	10.7	7.6 J	5.9 J	5.8 J	5.0 J	20.0	23.8	28.0	58.4	14.9	11.8
Vanadium	390	15.4	20.3	19.6	19.7	20.1	18.0	18.9	19.1	29	20.5	21.4
Zinc	23,000	284	323	333	309	199	502	501	624	1300	323	358

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2G: Property P032, Validated Analytical Results Summary Table - TAL Metals plus Tin

Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P032-S001-0002-01	P032-S001-0206-01	P032-S001-0612-01	P032-S001-1218-01	P032-S001-1218-02	P032-S001-1824-01	P032-S002-0002-01	P032-S002-0206-01	P032-S002-0612-01	P032-S002-1218-01	P032-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0C8	MBE0C9	MBE0D0	MBE0D1	MBE0J6	MBE0D2	MBE0D3	MBE0D4	MBE0D5	MBE0D6	MBE0D7
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017
Matrix		Soil										
Units		mg/kg										
TAL Metal												
Aluminum	77,000	9,740	11,300	12,900	16,100	14,700	14,700	11,900	12,300	12,900	12,300	12,400
Antimony	31	6.0 U	6.0 U	6.0 U	6.0 U	1.1 J	6.0 U					
Arsenic	68	10.7	12.7	13.8	11.3	11.9	12.0	13.9	18.6	19.1	12.2	10.1
Barium	15,000	142	255	190	131	162	113	254	297	271	187	194
Beryllium	160	0.76	0.88	0.93	1.0	0.96	1.0	0.99	1.1	1.1	0.95	0.92
Cadmium	71	0.79	1.2	0.50 U	0.50 U	0.50 U	0.50 U	1.2	1.2	0.78	0.60	0.60
Calcium	NS	31,200	33,100	29,400	16,000	21,100	13,200	22,300	21,000	20,600	38,600	43,400
Chromium	NS	22.1	56.4	20.5	19.5	18.9	19.5	24.8	26.5	25.7	20.1	19.6
Cobalt	23	6.8	7.6	8.5	8.5 J-	8.6	8.8	7.6	8.3	8.2	6.9	6.9
Copper	3,100	59.7	95.9	98.4	43.1 J	42.3	35.2	156	200	268	159	76.6
Iron	55,000	18,100	18,200	21,500	23,100 J	21,100	24,100	20,400	21,400	21,300	18,700	18,400
Lead	400	367	572	334	130 J	149	112	608	705	583	299	227
Magnesium	NS	9,870	8,960	4,180	3,740	3,930	4,170	5,380	4,890	4,400	6,590	5,720
Manganese	1,800	975	919	1,540	2,250	2,150	2,190	1,060	1,090	1,250	1,260	1,770
Nickel	1,500	25.4	29.6	22.6	22.9	21.5	23.8	28.7	27.8	24.3	21.1	21.2
Potassium	NS	2,070	1,830	2,660	3,150	2,600	2,330	2,440	2,310	2,330	2,460	2,390
Selenium	390	1.9 J	1.7 J	2.2 J	1.5 J-	2.1 J	2.5 J	2.2 J	2.2 J	2.1 J	1.8 J	1.7 J
Silver	390	1.0 U	0.23 J	1.0 U	1.0 UJ	0.39 J	1.0 U	0.21 J	0.66 J	0.37 J	0.26 J	0.11 J
Sodium	NS	500 U										
Thallium	0.78	0.34 J	0.28 J	0.96 J	0.78 J	1.6 J	1.4 J	0.42 J	0.42 J	0.53 J	0.67 J	1.1 J
Tin	47,000	12.0	16.6	15.2	6.2 J	7.1 J	5.0 U	18.5	23.0	20.0	12.5	7.9 J
Vanadium	390	19.8	22.3	22.7	25.8 J-	23.7	24.6	23.3	25.6	24.8	21.1	20.1
Zinc	23,000	429	940	366	206	234	218	495	620	505	312	229

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P033-S001-0002-01	P033-S001-0206-01	P033-S001-0612-01	P033-S001-1218-01	P033-S001-1824-01	P033-S002-0002-01	P033-S002-0206-01	P033-S002-0612-01	P033-S002-1218-01	P033-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0E3	MBE0E4	MBE0E5	MBE0E6	MBE0E7	MBE0E8	MBE0E9	MBE0F0	MBE0F1	MBE0F2
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017
Matrix		Soil									
Units		mg/kg									
TAL Metal											
Aluminum	77,000	10,700	11,600	12,600	13,000	12,800	10,500	9,940	11,100	10,700	9,800
Antimony	31	6.0 U									
Arsenic	68	15.6	17.9	12.3	10.7	11.3	12.4	12.5	14.5	8.3	5.1
Barium	15,000	117	129	105	89.9	77.3	203	237	258	151	111
Beryllium	160	0.83	0.91	0.81	0.79	0.83	0.76	0.74	0.83	0.77	0.69
Cadmium	71	0.54	0.50 U	0.50 U	0.50 U	0.50 U	1.1	1.2	0.95	0.50 U	0.50 U
Calcium	NS	15,800	15,500	12,900	9,280	19,500	34,700	50,500	21,100	29,800	34,600
Chromium	NS	17.4	18.6	16.5	15.2	16.2	34.7	36.7	81.3	30.4	16.9
Cobalt	23	7.9	8.2	8.2	8.5	8.0	7.1	6.9	7.4	6.7	5.8
Copper	3,100	54.6	56.9	34.9	31.2	31.9	64.3	72.7	101	43.6	22.0
Iron	55,000	17,900	19,100	18,300	18,200	18,300	17,600	17,200	18,900	17,400	14,800
Lead	400	268	275	142	112	94.4	345	383	359	165	101
Magnesium	NS	6,440	5,930	3,680	3,420	6,430	14,800	20,400	5,330	3,670	4,200
Manganese	1,800	1,170	1,330	1,560	1,520	1,360	1,130	1,140	1,220	1,170	1,150
Nickel	1,500	26.8	25.3	18.3	17.7	19.8	28.6	30.7	31.9	23.1	18.2
Potassium	NS	2,100	2,190	2,060	2,000	2,160	2,510	2,440	2,570	2,810	2,680
Selenium	390	2.3 J	2.4 J	2.1 J	2.1 J	1.5 J	2.0 J	2.0 J	2.0 J	1.5 J	1.3 J
Silver	390	0.31 J	0.37 J	0.35 J	0.30 J	0.28 J	0.32 J	0.35 J	0.50 J	0.20 J	0.17 J
Sodium	NS	500 U									
Thallium	0.78	0.72 J	0.90 J	1.2 J	1.1 J	0.83 J	0.55 J	0.61 J	0.64 J	0.59 J	0.58 J
Tin	47,000	6.2 J	7.8 J	4.8 UJ	3.3 UJ	2.6 UJ	12.3	12.8	27.4	65.8	4.1 UJ
Vanadium	390	19.7	20.8	20.1	20.4	19.8	19.3	18.6	21.1	17.8	15.6
Zinc	23,000	221	194	126	117	101	368	425	397	202	112

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P033-S003-0002-01	P033-S003-0206-01	P033-S003-0612-01	P033-S003-0612-02	P033-S003-1218-01	P033-S003-1824-01	P033-S004-0002-01	P033-S004-0206-01	P033-S004-0612-01
Sample Depth (inches)		0-2	2-6	6-12	6-12	12-18	18-24	0-2	2-6	6-12
CLP Sample No.		MBE0F3	MBE0F4	MBE0F5	MBE0J3	MBE0F6	MBE0F7	MBE0F8	MBE0F9	MBE0G0
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017
Matrix		Soil								
Units		mg/kg								
TAL Metal										
Aluminum	77,000	11,200	12,000	12,400	11,800	8,760	9,930	11,900	12,900	12,200
Antimony	31	6.0 U	1.4 J	6.0 U	6.0 U	0.77 J	0.86 J	1.4 J	6.0 U	6.0 U
Arsenic	68	12.7	14.1	12.1	12.5	6.3	8.4	16.7	20.8	14.8
Barium	15,000	114	125	99.0	104	58.5	84.1	109	127	83.4
Beryllium	160	0.82	0.88	0.85	0.82	0.62	0.70	0.91	0.99	0.88
Cadmium	71	0.50 U	0.57	0.50 U						
Calcium	NS	7,610	7,600	7,760 J	8,120	10,700	28,400	8,880	8,140	8,980
Chromium	NS	29.5	56.5	53.8 J	99.7 J	15.8	15.9	18.1	19.4	17.3
Cobalt	23	7.4	8.1	7.5 J	7.7	5.4	6.6	8.0	8.5	7.8
Copper	3,100	55.0	75.7	57.9	79.7	25.6	32.1	43.0	46.5	34.0
Iron	55,000	18,200	19,700	19,000 J	18,900	14,600	17,500	18,600	20,300	19,800
Lead	400	172	197	137	186	51.8	57.0	114	120	63.3
Magnesium	NS	3,120	3,050	2,850	3,010	2,480	5,080	3,230	3,090	3,270
Manganese	1,800	1,120	1,200	1,220 J	1,310	1,060	1,790	1,570	1,900	1,520
Nickel	1,500	24.8	30.7	25.8	29.5	16.5	19.5	25.7	26.4	22.5
Potassium	NS	2,640	2,690	2,890	2,570	2,280	2,540	2,660	2,590	2,090
Selenium	390	1.7 J	2.1 J	1.7 J-	1.8 J	1.2 J	1.6 J	2.2 J	2.5 J	1.8 J
Silver	390	0.26 J	0.32 J	1.0 U	0.12 J	0.14 J	0.23 J	0.34 J	1.0 U	1.0 U
Sodium	NS	500 U								
Thallium	0.78	0.54 J	0.57 J	0.31 J	0.60 J	0.59 J	1.1 J	1.2 J	1.3 J	0.89 J
Tin	47,000	9.6 J	16.7	18.2 J-	27.8	5.0 UJ	5.0 UJ	5.0 UJ	5.6 J	5.0 U
Vanadium	390	20.3	21.9	21	20.9	15.1	17.3	21.3	23.3	19.8
Zinc	23,000	205	239	168	194	80.2	82.8	149	158	107

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P033-S004-1218-01	P033-S004-1824-01	P033-S005-0002-01	P033-S005-0206-01	P033-S005-0612-01	P033-S005-1218-01	P033-S005-1824-01	P033-S006-0002-01	P033-S006-0206-01
Sample Depth (inches)		12-18	18-24	0-2	2-6	6-12	12-18	18-24	0-2	2-6
CLP Sample No.		MBE0G1	MBE0G2	MBE0G3	MBE0G4	MBE0G5	MBE0G6	MBE0G7	MBE0G8	MBE0G9
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/19/2017
Matrix		Soil								
Units		mg/kg								
TAL Metal										
Aluminum	77,000	12,000	11,600	9,770	10,200	10,500	12,300	12,600	11,600	12,700
Antimony	31	6.0 U								
Arsenic	68	13.2	10.7	14.3	16.0	12.3	9.0	7.0	14.8	19.0
Barium	15,000	75.2	66.6	198	195	137	83.6	77.7	103	113
Beryllium	160	0.81	0.80	0.82	0.92	0.85	0.77	0.76	0.85	0.93
Cadmium	71	0.50 U	0.50 U	2.1	1.7	0.54	0.50 U	0.50 U	0.55	0.51
Calcium	NS	13,600	12,000	24,700	15,500	11,600	15,600	20,100	4,700	4,320
Chromium	NS	17.8	15.5	70.4	78.3	42.9	48.0	24.9	106	100
Cobalt	23	7.8	7.6	8.3	8.7	8.6	8.0	7.6	8.1	8.5
Copper	3,100	32.8	30.2	101	108	67.0	50.2	32.3	95.7	94.8
Iron	55,000	19,600	18,200	21,200	21,600	21,000	19,500	18,900	18,500	19,700
Lead	400	59.9	43.6	457	390	220	120	71.6	204	206
Magnesium	NS	4,730	4,590	10,600	5,000	3,300	3,710	5,570	2,320	2,460
Manganese	1,800	1,510	1,530	971	953	1,220	1,350	1,410	1,470	1,530
Nickel	1,500	23.2	21.7	39.5	38.2	27.2	24.4	20.0	39.2	36.7
Potassium	NS	2,490	2,520	2,030	1,940	1,870	2,150	2,490	2,390	2,410
Selenium	390	1.7 J	1.5 J	2.1 J	2.3 J	2.2 J	1.7 J	1.5 J	2.1 J	2.2 J
Silver	390	1.0 U	1.0 U	0.060 J	0.083 J	1.0 U	1.0 U	1.0 U	0.47 J	0.47 J
Sodium	NS	500 U								
Thallium	0.78	0.89 J	0.90 J	2.5 U	2.5 U	0.45 J	0.64 J	0.65 J	1.0 J	1.0 J
Tin	47,000	5.0 U	5.0 U	23.8	26.2	13.5	11.4	5.0 U	29.3	28.5
Vanadium	390	19.6	18.2	21.6	22.8	21.3	20.4	19.9	21.7	23.6
Zinc	23,000	95.3	84.1	510	448	235	179	117	226	219

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P033-S006-0612-01	P033-S006-1218-01	P033-S006-1824-01	P033-S007-0002-01	P033-S007-0206-01	P033-S007-0612-01	P033-S007-1218-01	P033-S007-1824-01	P033-S008-0002-01
Sample Depth (inches)		6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24	0-2
CLP Sample No.		MBE0H0	MBE0H1	MBE0H2	MBE0H3	MBE0H4	MBE0H5	MBE0H6	MBE0H7	MBE0H8
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017
Matrix		Soil								
Units		mg/kg								
TAL Metal										
Aluminum	77,000	12,200	12,700	10,800	12,600	12,400	13,000	12,300	12,300	13,000 J
Antimony	31	6.0 U	1.1 J-							
Arsenic	68	11.0	11.5	9.0	16.0	16.7	14.0	9.4	8.8	21.7
Barium	15,000	80.1	84.8	61.9	134	137	103	67.4	60.4	124 J
Beryllium	160	0.82	0.86	0.78	0.95	0.94	0.91	0.80	0.82	0.97
Cadmium	71	0.50 U	0.50 U	0.50 U	0.68	0.67	0.50 U	0.50 U	0.50 U	0.56 J
Calcium	NS	3,100	12,000	23,400	9,510	7,430	13,000	35,800	48,600	8,420 J
Chromium	NS	27.8	28.7	20.3	18.8	18.2	16.9	15.7	16.1	39.0 J
Cobalt	23	7.1	7.6	9.5	8.7	8.6	8.0	7.2	6.8	8.6 J
Copper	3,100	33.0	36.4	31.7	49.7	50.2	37.3	30.7	27.3	63.1
Iron	55,000	17,000	18,400	17,600	19,600	19,400	18,900	17,700	18,000	19,800 J
Lead	400	66.6	55.2	36.3	222	222	115	64.0	41.5	198
Magnesium	NS	2,440	3,390	10,400	3,190	2,800	3,660	5,920	7,030	3,770 J
Manganese	1,800	1,760	2,400	1,930	1,900	1,940	1,840	1,210	1,410	1,930 J
Nickel	1,500	19.8	24.0	28.4	27.1	26.4	22.4	21.1	20.8	31.2
Potassium	NS	2,200	2,320	2,230	2,820	2,640	2,470	2,760	3,170	2,980 J
Selenium	390	1.8 J	2.0 J	1.5 J	2.2 J	2.5 J	2.0 J	1.4 J	1.1 J	2.4 J
Silver	390	0.27 J	0.37 J	0.29 J	0.37 J	0.35 J	0.28 J	0.089 J	0.22 J	0.45 J
Sodium	NS	500 U								
Thallium	0.78	1.3 J	1.9 J	1.5 J	1.4 J	1.5 J	1.2 J	0.65 J	0.84 J	1.4 J
Tin	47,000	5.7 J	5.3 J	5.0 UJ	5.8 J	6.2 J	5.0 UJ	5.0 UJ	5.0 J	10.9 J-
Vanadium	390	19.2	20	17.6	21.8	21.5	21	18.6	18.7	23.0 J
Zinc	23,000	106	100	75.8	229	234	149	97.5	80.2	217

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

Table 2H: Property P033, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteen Mile Creek Site
Niagara County, New York
September 21, 2017

RST 3 Sample No.	EPA RML Residential Soil ¹ (mg/kg)	P033-S008-0002-02	P033-S008-0206-01	P033-S008-0612-01	P033-S008-1218-01	P033-S008-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0J5	MBE0H9	MBE0J0	MBE0J1	MBE0J2
Sample Date		9/21/2017	9/21/2017	9/21/2017	9/21/2017	9/21/2017
Matrix		Soil	Soil	Soil	Soil	Soil
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal						
Aluminum	77,000	12,200	13,000	12,200	11,900	10,800
Antimony	31	1.1 J	1.1 J	0.93 J	0.84 J	0.81 J
Arsenic	68	18.4	22.4	14.3	12.8	11.3
Barium	15,000	122	117	95.3	84.1	80.4
Beryllium	160	0.91	0.97	0.80	0.75	0.71
Cadmium	71	0.52	0.50 U	0.50 U	0.50 U	0.50 U
Calcium	NS	8,750	5,760	11,900	29,700	56,500
Chromium	NS	38.1	37.4	21.9	17.2	14.8
Cobalt	23	8.3	8.6	7.4	6.8	6.6
Copper	3,100	61.2	60.8	36.8	31.6	35.1
Iron	55,000	19,200	20,100	18,300	17,000	16,900
Lead	400	195	127	72.5	50.6	47.6
Magnesium	NS	3,810	2,720	4,940	8,360	10,800
Manganese	1,800	2,180	2,260	2,330	1,950	1,910
Nickel	1,500	29.8	28.3	21.1	19.1	18.4
Potassium	NS	2,800	2,810	2,160	2,190	2,240
Selenium	390	2.4 J	2.5 J	2.3 J	1.6 J	1.5 J
Silver	390	0.45 J	0.43 J	0.41 J	0.33 J	0.31 J
Sodium	NS	500 U				
Thallium	0.78	1.5 J	1.7 J	1.7 J	1.3 J	1.2 J
Tin	47,000	10.5	10.9	6.9 J	5.0 UJ	5.0 UJ
Vanadium	390	22.0	22.9	20.6	19.8	18.0
Zinc	23,000	205	176	100	81	76.1

Notes:

RST 3: Removal Support Team 3.

TAL: Target Analyte List.

No.: Number; NS: Not specified.

mg/kg: milligrams per kilograms.

U: Non-detect.

J: Estimated result; J+: Estimated result biased high; J-: Estimated result biased low.

B: Sample concentration above Method Detection Limit (MDL), but below Contract Required Detection Limit (CRDL).

¹ U.S. Environmental Protection Agency (EPA) Removal Management Levels (RMLs) for residential soil corresponding to a 10⁻⁴ target risk (TR) level for carcinogens or a target hazard quotient (THQ) of 1 for non-carcinogens, May 2016.

ATTACHMENT C

Chains of Custody Records

USEPA CLP COC (REGION COPY)

Date Shipped: 9/19/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1214

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-091917-145428-0004

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P026-S001-0002-01	MBE023	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S001	09/19/2017 14:00	Field Sample
P026-S001-0206-01	MBE024	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S001	09/19/2017 14:00	Field Sample
P026-S001-0612-01	MBE025	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S001	09/19/2017 14:00	Field Sample
P026-S001-1218-01	MBE026	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S001	09/19/2017 14:00	Field Sample
P026-S001-1824-01	MBE027	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S001	09/19/2017 14:00	Field Sample
P026-S004-0002-01	MBE038	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S004	09/19/2017 12:15	Field Sample
P026-S004-0206-01	MBE039	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S004	09/19/2017 12:15	Field Sample
P026-S004-0612-01	MBE040	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (2)	P026-S004	09/19/2017 12:15	Field Sample
P026-S004-1218-01	MBE041	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S004	09/19/2017 12:15	Field Sample
P026-S004-1824-01	MBE042	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S004	09/19/2017 12:15	Field Sample

Sample(s) to be used for Lab QC: P026-S004-0612-01 Tag A	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	RST3	9/19/17 1530	F-2EX	9/19/17 1830	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/19/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1214

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-091917-145428-0004

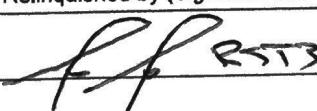
Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P026-S005-0002-01	MBE063	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S005	09/19/2017 10:15	Field Sample
P026-S005-0206-01	MBE064	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S005	09/19/2017 10:15	Field Sample
P026-S005-0612-01	MBE065	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S005	09/19/2017 10:15	Field Sample
P026-S005-1218-01	MBE066	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S005	09/19/2017 10:15	Field Sample
P026-S005-1824-01	MBE067	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S005	09/19/2017 10:15	Field Sample
P026-S006-0002-01	MBE068	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S006	09/19/2017 11:15	Field Sample
P026-S006-0206-01	MBE069	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S006	09/19/2017 11:15	Field Sample
P026-S006-0612-01	MBE070	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S006	09/19/2017 11:15	Field Sample
P026-S006-1218-01	MBE071	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S006	09/19/2017 11:15	Field Sample
P026-S006-1824-01	MBE072	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S006	09/19/2017 11:15	Field Sample

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
all samples		9/19/17 10:30	FEDEX	9/19/17 10:30	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/19/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1214

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-091917-145428-0004

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Special Instructions:	Shipment for Case Complete? N Samples Transferred From Chain of Custody #
Analysis Key: TAL + Tin=TAL Metals + Tin	

Analysis Key: TAL + Tin=TAL Metals + Tin

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 RSTJ	9/19/17 1830	FedEx	9/19/17 1830	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/19/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1214

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-091917-162121-0005

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P026-S002-0002-01	MBE028	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S002	09/19/2017 15:20	Field Sample
P026-S002-0206-01	MBE029	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S002	09/19/2017 15:20	Field Sample
P026-S002-0612-01	MBE030	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S002	09/19/2017 15:20	Field Sample
P026-S002-1218-01	MBE031	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S002	09/19/2017 15:20	Field Sample
P026-S002-1824-01	MBE032	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S002	09/19/2017 15:20	Field Sample
P026-S003-0002-01	MBE033	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (2)	P026-S003	09/19/2017 16:30	Field Sample
P026-S003-0206-01	MBE034	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S003	09/19/2017 16:30	Field Sample
P026-S003-0612-01	MBE035	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S003	09/19/2017 16:30	Field Sample
P026-S003-1218-01	MBE036	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S003	09/19/2017 16:30	Field Sample
P026-S003-1824-01	MBE037	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P026-S003	09/19/2017 16:30	Field Sample

Sample(s) to be used for Lab QC: P026-S003-0002-01 Tag A	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
711 Scmbo	RJF RST3	9/19/17 1630	FedEx	9/19/17 1630	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/19/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1214

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-091917-162121-0005

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Special Instructions:	<input checked="" type="checkbox"/> Shipment for Case Complete? N <input type="checkbox"/> Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
AI1 Samples	 RST3	9/19/17 1830	FEDEX	9/19/17 1830	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/20/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1188

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-092017-102254-0006

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P027-S001-0002-01	MBE043	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S001	09/20/2017 09:10	Field Sample
P027-S001-0206-01	MBE044	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S001	09/20/2017 09:10	Field Sample
P027-S001-0612-01	MBE045	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S001	09/20/2017 09:10	Field Sample
P027-S001-1218-01	MBE046	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S001	09/20/2017 09:10	Field Sample
P027-S001-1824-01	MBE047	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S001	09/20/2017 09:10	Field Sample
P027-S002-0002-01	MBE048	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S002	09/20/2017 09:10	Field Sample
P027-S002-0206-01	MBE049	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S002	09/20/2017 09:10	Field Sample
P027-S002-0612-01	MBE050	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S002	09/20/2017 09:10	Field Sample
P027-S002-1218-01	MBE051	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S002	09/20/2017 09:10	Field Sample
P027-S002-1824-01	MBE052	Soil/ RST3	Composite	TAL Metals + Sn(14)	A (4 C) (1)	P027-S002	09/20/2017 09:10	Field Sample

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	RST3	9/20/17 1900	FedEx	9/20/17 1900	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/20/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1188

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-092017-102254-0006

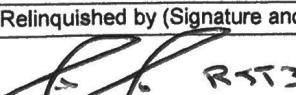
Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P028-S001-0002-01	MBE086	Soil/ RST3	Composite	TAL Metals + Sn(14)	1011 (4 C) (1)	P028-S001	09/20/2017 11:00	Field Sample
P028-S001-0206-01	MBE087	Soil/ RST3	Composite	TAL Metals + Sn(14)	1012 (4 C) (1)	P028-S001	09/20/2017 11:00	Field Sample
P028-S001-0612-01	MBE088	Soil/ RST3	Composite	TAL Metals + Sn(14)	1013 (4 C) (1)	P028-S001	09/20/2017 11:00	Field Sample
P028-S001-1218-01	MBE089	Soil/ RST3	Composite	TAL Metals + Sn(14)	1014 (4 C) (1)	P028-S001	09/20/2017 11:00	Field Sample
P028-S001-1824-01	MBE090	Soil/ RST3	Composite	TAL Metals + Sn(14)	1015 (4 C) (1)	P028-S001	09/20/2017 11:00	Field Sample
P028-S002-0002-01	MBE091	Soil/ RST3	Composite	TAL Metals + Sn(14)	1016 (4 C) (1)	P028-S002	09/20/2017 11:00	Field Sample
P028-S002-0206-01	MBE092	Soil/ RST3	Composite	TAL Metals + Sn(14)	1017 (4 C) (1)	P028-S002	09/20/2017 11:00	Field Sample
P028-S002-0612-01	MBE093	Soil/ RST3	Composite	TAL Metals + Sn(14)	1018 (4 C) (1)	P028-S002	09/20/2017 11:00	Field Sample
P028-S002-1218-01	MBE094	Soil/ RST3	Composite	TAL Metals + Sn(14)	1019 (4 C) (1)	P028-S002	09/20/2017 11:00	Field Sample
P028-S002-1824-01	MBE095	Soil/ RST3	Composite	TAL Metals + Sn(14)	1020 (4 C) (1)	P028-S002	09/20/2017 11:00	Field Sample

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 RST3	9/20/17 1900	FedEx X	9/20/17 1900	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/20/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1188

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092017-143717-0007

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P029-S001-0002-01	MBE096	Soil/ RST3	Composite	TAL Metals + Sn(14)	1021 (4 C) (1)	P029-S001	09/20/2017 14:35	Field Sample
P029-S001-0206-01	MBE097	Soil/ RST3	Composite	TAL Metals + Sn(14)	1022 (4 C) (1)	P029-S001	09/20/2017 14:35	Field Sample
P029-S001-0612-01	MBE098	Soil/ RST3	Composite	TAL Metals + Sn(14)	1023 (4 C) (1)	P029-S001	09/20/2017 14:35	Field Sample
P029-S001-1218-01	MBE099	Soil/ RST3	Composite	TAL Metals + Sn(14)	1024 (4 C) (1)	P029-S001	09/20/2017 14:35	Field Sample
P029-S001-1824-01	MBE0A0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1025 (4 C) (1)	P029-S001	09/20/2017 14:35	Field Sample
P029-S002-0002-01	MBE0A1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1026 (4 C) (1)	P029-S002	09/20/2017 14:05	Field Sample
P029-S002-0206-01	MBE0A2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1027 (4 C) (2)	P029-S002	09/20/2017 14:05	Field Sample
P029-S002-0612-01	MBE0A3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1028 (4 C) (1)	P029-S002	09/20/2017 14:05	Field Sample
P029-S002-1218-01	MBE0A4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1029 (4 C) (1)	P029-S002	09/20/2017 14:05	Field Sample
P029-S002-1824-01	MBE0A5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1030 (4 C) (1)	P029-S002	09/20/2017 14:05	Field Sample

Sample(s) to be used for Lab QC: P029-S002-0206-01 Tag 1027 - Special Instructions: Sample shipments for this Case are complete. Remaining samples under Case No. 47214 are being analyzed by another laboratory.	Shipment for Case Complete? N Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	RST3	9/20/17 1900	FedEx	9/20/17 1900	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/20/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1188

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092017-143717-0007

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P030-S001-0002-01	MBE0A6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1031 (4 C) (1)	P030-S001	09/20/2017 15:15	Field Sample
P030-S001-0206-01	MBE0A7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1032 (4 C) (1)	P030-S001	09/20/2017 15:15	Field Sample
P030-S001-0612-01	MBE0A8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1033 (4 C) (1)	P030-S001	09/20/2017 15:15	Field Sample
P030-S001-1218-01	MBE0A9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1034 (4 C) (1)	P030-S001	09/20/2017 15:15	Field Sample
P030-S001-1824-01	MBE0B0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1035 (4 C) (1)	P030-S001	09/20/2017 15:15	Field Sample
P030-S002-0002-01	MBE0B1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1036 (4 C) (1)	P030-S002	09/20/2017 15:45	Field Sample
P030-S002-0206-01	MBE0B2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1037 (4 C) (1)	P030-S002	09/20/2017 15:45	Field Sample
P030-S002-0612-01	MBE0B3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1038 (4 C) (1)	P030-S002	09/20/2017 15:45	Field Sample
P030-S002-1218-01	MBE0B4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1039 (4 C) (1)	P030-S002	09/20/2017 15:45	Field Sample
P030-S002-1824-01	MBE0B5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1040 (4 C) (1)	P030-S002	09/20/2017 15:45	Field Sample

Special Instructions: Sample shipments for this Case are complete. Remaining samples under Case No. 47214 are being analyzed by another laboratory.

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	RST3	9/20/17 1900	FedEx	9/20/17 1900	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/20/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1188

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092017-143717-0007

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

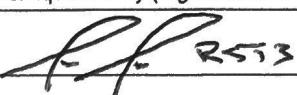
Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P031-S001-0002-01	MBE0B6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1041 (4 C) (1)	P031-S001	09/20/2017 17:15	Field Sample
P031-S002-0002-01	MBE0C1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1046 (4 C) (2)	P031-S002	09/20/2017 16:30	Field Sample
P031-S002-0206-01	MBE0C2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1047 (4 C) (1)	P031-S002	09/20/2017 16:30	Field Sample
P031-S002-0612-01	MBE0C3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1048 (4 C) (1)	P031-S002	09/20/2017 16:30	Field Sample
P031-S002-1218-01	MBE0C4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1049 (4 C) (1)	P031-S002	09/20/2017 16:30	Field Sample
P031-S002-1824-01	MBE0C5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1050 (4 C) (1)	P031-S002	09/20/2017 16:30	Field Sample
P029-S002-0206-02	MBE0C6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1051 (4 C) (1)	P029-S002	09/20/2017 14:05	Field Duplicate
RB-09202017	MBE0C7	DI Water/ RST3	Grab	TAL + Tin(14)	1053 (HNO3 pH<2, 4 C) (1)	Rinsate	09/20/2017 15:30	Rinsate Blank
P031-S002-0002-02	MBE0D8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1064 (4 C) (1)	P031-S002	09/20/2017 16:30	Field Duplicate

Sample(s) to be used for Lab QC: P031-S002-0002-01 Tag 1046 - Special Instructions: Sample shipments for this Case are complete. Remaining samples under Case No. 47214 are being analyzed by another laboratory.

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: TAL + Tin=TAL Metals + Tin

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples		9/20/17 11:00	FEDEX	9/20/17 11:00	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-092117-073140-0008

Lab: Bonner Analytical Testing Company

Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P031-S001-0206-01	MBE0B7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1042 (4 C) (1)	P031-S001	09/20/2017 17:15	Field Sample
P031-S001-0612-01	MBE0B8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1043 (4 C) (1)	P031-S001	09/20/2017 17:15	Field Sample
P031-S001-1218-01	MBE0B9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1044 (4 C) (1)	P031-S001	09/20/2017 17:15	Field Sample
P031-S001-1824-01	MBE0C0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1045 (4 C) (1)	P031-S001	09/20/2017 17:15	Field Sample
P033-S001-0002-01	MBE0E3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1065 (4 C) (1)	P033-S001	09/21/2017 09:00	Field Sample
P033-S001-0206-01	MBE0E4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1066 (4 C) (1)	P033-S001	09/21/2017 09:00	Field Sample
P033-S001-0612-01	MBE0E5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1067 (4 C) (1)	P033-S001	09/21/2017 09:00	Field Sample
P033-S001-1218-01	MBE0E6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1068 (4 C) (1)	P033-S001	09/21/2017 09:00	Field Sample
P033-S001-1824-01	MBE0E7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1069 (4 C) (1)	P033-S001	09/21/2017 09:00	Field Sample
P033-S002-0002-01	MBE0E8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1070 (4 C) (1)	P033-S002	09/21/2017 09:15	Field Sample

Special Instructions:	Shipment for Case Complete? N	
	Samples Transferred From Chain of Custody #	

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
On Samples	RST3	9/21/17 1800	FedEx	9/21/17 1800	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-092117-073140-0008

Lab: Bonner Analytical Testing Company

Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P033-S002-0206-01	MBE0E9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1071 (4 C) (1)	P033-S002	09/21/2017 09:15	Field Sample
P033-S002-0612-01	MBE0F0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1072 (4 C) (1)	P033-S002	09/21/2017 09:15	Field Sample
P033-S002-1218-01	MBE0F1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1073 (4 C) (1)	P033-S002	09/21/2017 09:15	Field Sample
P033-S002-1824-01	MBE0F2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1074 (4 C) (1)	P033-S002	09/21/2017 09:15	Field Sample
P033-S003-0002-01	MBE0F3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1075 (4 C) (1)	P033-S003	09/21/2017 10:15	Field Sample
P033-S003-0206-01	MBE0F4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1076 (4 C) (1)	P033-S003	09/21/2017 10:15	Field Sample
P033-S003-0612-01	MBE0F5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1077 (4 C) (2)	P033-S003	09/21/2017 10:15	Field Sample
P033-S003-1218-01	MBE0F6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1078 (4 C) (1)	P033-S003	09/21/2017 10:15	Field Sample
P033-S003-1824-01	MBE0F7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1079 (4 C) (1)	P033-S003	09/21/2017 10:15	Field Sample
P033-S004-0002-01	MBE0F8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1080 (4 C) (1)	P033-S004	09/21/2017 10:10	Field Sample

Sample(s) to be used for Lab QC: P033-S003-0612-01 Tag 1077	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #
Analysis Key	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Off Samples	RST3	9/21/17 1600	FedEx	9/21/17 1600	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 1 of 2

No: 2-092117-073140-0008

Lab: Bonner Analytical Testing Company

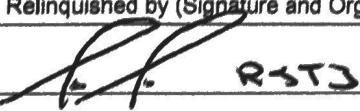
Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P033-S004-0206-01	MBE0F9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1081 (4 C) (1)	P033-S004	09/21/2017 10:10	Field Sample
P033-S004-0612-01	MBE0G0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1082 (4 C) (1)	P033-S004	09/21/2017 10:10	Field Sample
P033-S004-1218-01	MBE0G1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1083 (4 C) (1)	P033-S004	09/21/2017 10:10	Field Sample
P033-S004-1824-01	MBE0G2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1084 (4 C) (1)	P033-S004	09/21/2017 10:10	Field Sample
P033-S005-0002-01	MBE0G3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1085 (4 C) (1)	P033-S005	09/21/2017 12:00	Field Sample
P033-S005-0206-01	MBE0G4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1086 (4 C) (1)	P033-S005	09/21/2017 12:00	Field Sample
P033-S005-0612-01	MBE0G5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1087 (4 C) (1)	P033-S005	09/21/2017 12:00	Field Sample
P033-S005-1218-01	MBE0G6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1088 (4 C) (1)	P033-S005	09/21/2017 12:00	Field Sample
P033-S005-1824-01	MBE0G7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1089 (4 C) (1)	P033-S005	09/21/2017 12:00	Field Sample
P033-S003-0612-02	MBE0J3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1105 (4 C) (1)	P033-S003	09/21/2017 10:15	Field Duplicate

Special Instructions:	Shipment for Case Complete? N
	Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 R-ST3	9/21/17 1600	FeDEX	9/21/17 1600	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092117-123532-0009

Lab: Bonner Analytical Testing Company

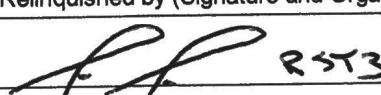
Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P032-S001-0002-01	MBE0C8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1054 (4 C) (1)	P032-S001	09/21/2017 15:40	Field Sample
P032-S001-0206-01	MBE0C9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1055 (4 C) (1)	P032-S001	09/21/2017 15:40	Field Sample
P032-S001-0612-01	MBE0D0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1056 (4 C) (1)	P032-S001	09/21/2017 15:40	Field Sample
P032-S001-1218-01	MBE0D1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1057 (4 C) (2)	P032-S001	09/21/2017 15:40	Field Sample
P032-S001-1824-01	MBE0D2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1063 (4 C) (1)	P032-S001	09/21/2017 15:40	Field Sample
P032-S002-0002-01	MBE0D3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1058 (4 C) (1)	P032-S002	09/21/2017 16:10	Field Sample
P032-S002-0206-01	MBE0D4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1059 (4 C) (1)	P032-S002	09/21/2017 16:10	Field Sample
P032-S002-0612-01	MBE0D5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1060 (4 C) (1)	P032-S002	09/21/2017 16:10	Field Sample
P032-S002-1218-01	MBE0D6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1061 (4 C) (1)	P032-S002	09/21/2017 16:10	Field Sample
P032-S002-1824-01	MBE0D7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1062 (4 C) (1)	P032-S002	09/21/2017 16:10	Field Sample

Shipment for Case Complete? Y Samples Transferred From Chain of Custody #
Sample(s) to be used for Lab QC: P032-S001-1218-01 Tag 1057

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 RST3	9/21/17 1500	FedEx X	9/21/17 1500	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No.: 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092117-123532-0009

Lab: Bonner Analytical Testing Company

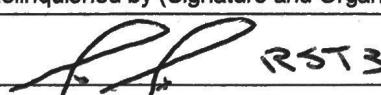
Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	Sample Type
P033-S006-0002-01	MBE0G8	Soil/ RST3	Composite	TAL Metals + Sn(14)	1090 (4 C) (1)	P033-S006	09/21/2017 12:00	Field Sample
P033-S006-0206-01	MBE0G9	Soil/ RST3	Composite	TAL Metals + Sn(14)	1091 (4 C) (1)	P033-S006	09/21/2017 12:00	Field Sample
P033-S006-0612-01	MBE0H0	Soil/ RST3	Composite	TAL Metals + Sn(14)	1092 (4 C) (1)	P033-S006	09/21/2017 12:00	Field Sample
P033-S006-1218-01	MBE0H1	Soil/ RST3	Composite	TAL Metals + Sn(14)	1093 (4 C) (1)	P033-S006	09/21/2017 12:00	Field Sample
P033-S006-1824-01	MBE0H2	Soil/ RST3	Composite	TAL Metals + Sn(14)	1094 (4 C) (1)	P033-S006	09/21/2017 12:00	Field Sample
P033-S007-0002-01	MBE0H3	Soil/ RST3	Composite	TAL Metals + Sn(14)	1095 (4 C) (1)	P033-S007	09/21/2017 14:15	Field Sample
P033-S007-0206-01	MBE0H4	Soil/ RST3	Composite	TAL Metals + Sn(14)	1096 (4 C) (1)	P033-S007	09/21/2017 14:15	Field Sample
P033-S007-0612-01	MBE0H5	Soil/ RST3	Composite	TAL Metals + Sn(14)	1097 (4 C) (1)	P033-S007	09/21/2017 14:15	Field Sample
P033-S007-1218-01	MBE0H6	Soil/ RST3	Composite	TAL Metals + Sn(14)	1098 (4 C) (1)	P033-S007	09/21/2017 14:15	Field Sample
P033-S007-1824-01	MBE0H7	Soil/ RST3	Composite	TAL Metals + Sn(14)	1099 (4 C) (1)	P033-S007	09/21/2017 14:15	Field Sample

Sample(s) to be used for Lab QC: P033-S008-0002-01 Tag 1100	Shipment for Case Complete? <input checked="" type="checkbox"/> Y
	Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 RST3	9/21/17 1800	FedEx	9/21/17 1800	

USEPA CLP COC (REGION COPY)

Date Shipped: 9/21/2017

Carrier Name: FedEx

Airbill No : 8105 8520 1177

CHAIN OF CUSTODY RECORD

Eighteenmile Creek/NY

Case # 47214

Cooler # 2 of 2

No: 2-092117-123532-0009

Lab: Bonner Analytical Testing Company

Lab Contact: Chris Bonner

Lab Phone: 601-264-2854

Sample(s) to be used for Lab QC: P033-S008-0002-01 Tag 1100	<input checked="" type="checkbox"/> Shipment for Case Complete? Y <input type="checkbox"/> Samples Transferred From Chain of Custody #
Analysis Key: TAL + Tin=TAL Metals + Tin	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples	 RST3	9/21/17 1800	FedEx	9/21/17 1800	



Package
US Airbill

FedEx
Tracking
Number

8105 8520 1214

1 From Please print and press hard.

Date 9/19/17

Sender's FedEx
Account Number

4023 510 3

Sender's
Name

Scott Snyder

Phone (973) 219-7394

Company

Western Solutions, Inc.

STC

Address

1090 King Georges Post Rd. 201

Dept/Floor/Suite/Room

City Edison

State NJ ZIP 08837

2 Your Internal Billing Reference

First 24 characters will appear on invoice.

OPTIONAL

3 To

Recipient's
Name

Snehal Mehta

Phone (908) 789-8900

Company

Chemtech Consulting Group

Address

284 Sheffield St.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept/Floor/Suite/Room

Hold Weekday
FedEx location address
REQUIRED NOT available for
FedEx First Overnight.

Hold Saturday
FedEx location address
REQUIRED Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Monteagle

State NJ

ZIP 07042



Ship it. Track it. Pay for it. All online.
Go to fedex.com.

Form
ID No.

0200

Sender's Copy

4 Express Package Service

* To most locations.

Packages up to 150 lbs.

For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day

FedEx First Overnight

Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Priority Overnight

Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Standard Overnight

Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.

Second business morning.* Saturday Delivery NOT available.

FedEx 2Day

Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Express Saver

Third business day.* Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

FedEx Envelope*

FedEx Pak*

FedEx
Box

FedEx
Tube

Other

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

Saturday Delivery

NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required

Package may be left without obtaining a signature for delivery.

Direct Signature

Someone at recipient's address may sign for delivery.

Indirect Signature

If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes As per attached
Shipper's Declaration.

Yes Shipper's Declaration
not required.

Dry Ice
Dry ice, 9, UN 1845 _____ x _____ kg

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender

Acct. No. in Section
1 will be billed.

FedEx Acct. No.
Credit Card No.

Recipient

Third Party

Credit Card

Cash/Check

Exp.
Date

Total Packages

Total Weight

Total Declared Value†

lbs. \$ _____ .00
†Our liability is limited to US\$100 unless you declare a higher value. See back for details. By using this airbill you agree to the service conditions on the back of this airbill and in the current FedEx Service Guide, including terms that limit our liability.

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644



Package
US Airbill

FedEx
Tracking
Number

8105 8520 1188

From Please print and press hard.

Date 9/20/17

Sender's FedEx
Account Number

4023 - 5610 - 3

Sender's
Name

Scott Snyder

Phone 913,219-7394

Company Weston Solutions, Inc.

Ste 201

Address 1090 King Georges Post Rd

Dept/Floor/Suite/Room

City Edison

State NJ ZIP 08837

Your Internal Billing Reference

First 24 characters will appear on invoice.

OPTIONAL

Recipient's
Name

Snehal Mehta Phone 906,789-8900

Company Chantech Consulting Group

Address 284 Sheffield St

Dept/Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Mountainside State NJ ZIP 07042

Hold Weekday
FedEx location address
REQUIRED NOT available for
FedEx First Overnight.

Hold Saturday
FedEx location address
REQUIRED Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.

4 Express Package Service

* To most locations.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

FedEx Envelope*

FedEx Pak*

FedEx Box

FedEx Tube

Other

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

Saturday Delivery
NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required
Package may be left without obtaining a signature for delivery.

Direct Signature
Someone at recipient's address may sign for delivery.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes
As per attached
Shipper's Declaration.

Yes
Shipper's Declaration
not required.

Dry Ice
Dry ice, 9, UN 1845 _____ x _____ kg

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender
Acct. No. in Section
1 will be billed.
FedEx Acct. No.
Credit Card No.

Recipient Third Party Credit Card Cash/Check

Exp.
Date

Total Packages Total Weight Total Declared Value†

lbs. \$ _____ .00

†Our liability is limited to US\$100 unless you declare a higher value. See back for details. By using this airbill you agree to the service conditions on the back of this airbill and in the current FedEx Service Guide, including terms that limit our liability.

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b44



Ship it. Track it. Pay for it. All online.
Go to fedex.com



Package
US Airbill

FedEx
Tracking
Number

8105 8520 1177

1 From Please print and press hard.

Date 9/21/17

Sender's FedEx
Account Number

4023-5610-3

Sender's
Name

Scott Snyder Phone 973-219-7394

Company

Weston Solutions, Inc. SIC 201

Address

1090 King Georges Pkwy R2

Dept./Floor/Suite/Room

City Edison

State NJ

ZIP 08837

2 Your Internal Billing Reference

First 24 characters will appear on invoice.

OPTIONAL

3 To

Recipient's
Name

Patricia Aiken Phone 601-264-2854

Company

Bonner Analytical

Address

2703 Oak Grove Rd.

Dept./Floor/Suite/Room

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Hattiesburg

State MS ZIP 39402

Hold Weekday

FedEx location address
REQUIRED NOT available for
FedEx First Overnight.

Hold Saturday

FedEx location address
REQUIRED Available ONLY for
FedEx Priority Overnight and
FedEx 2Day to select locations.



Ship it. Track it. Pay for it. All online.
Go to fedex.com.

Form
ID No. 0200

Sender's Copy

4 Express Package Service

* To most locations.

Packages up to 150 lbs.

For packages over 150 lbs., use the
FedEx Express Freight US Airbill.

Next Business Day

FedEx First Overnight
Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Priority Overnight
Next business morning.* Friday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Standard Overnight
Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

FedEx 2Day A.M.
Second business morning.* Saturday Delivery NOT available.

FedEx 2Day
Second business afternoon.* Thursday shipments will be delivered on Monday unless Saturday Delivery is selected.

FedEx Express Saver
Third business day.* Saturday Delivery NOT available.

5 Packaging

* Declared value limit \$500.

FedEx Envelope*

FedEx Pak*

FedEx Box

FedEx Tube

Other

6 Special Handling and Delivery Signature Options

Fees may apply. See the FedEx Service Guide.

Saturday Delivery

NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required

Package may be left without obtaining a signature for delivery.

Direct Signature

Someone at recipient's address may sign for delivery.

Indirect Signature
If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only.

Does this shipment contain dangerous goods?

One box must be checked.

No

Yes
As per attached
Shipper's Declaration.

Yes
Shipper's Declaration
not required.

Dry Ice
Dry ice, 9, UN 1845 _____ x _____ kg

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender
Acct. No. in Section
will be billed.

FedEx Acct. No.
Credit Card No.

Recipient

Third Party

Credit Card

Cash/Check

Exp.
Date

Total Packages Total Weight Total Declared Value†

lbs. \$ _____ .00

†Our liability is limited to US\$100 unless you declare a higher value. See back for details. By using this airbill you agree to the service conditions on the back of this airbill and in the current FedEx Service Guide, including terms that limit our liability.

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644

ATTACHMENT D

Validated Data Package



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 11 (Soil) & 1 (Water)

Analysis: Metals (ICP-AES)

SDG No.: MBE0A6

Laboratory: Chemtech Consulting Group

Sampling dates: 9/20/2017

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

Sample MBE0D8 has a non-detected analyte (Silver) that has been qualified R due to associated matrix spike percent recovery less than 30%.

Major Findings:

Sample MBE0D8 has analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentration of **Aluminum, Iron, Lead, Manganese, Arsenic, Barium, Cadmium and Cobalt** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/13/2017

Name: Narendra Kumar

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blanks: MBE0C7

No problems were found for this criterion.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq MDL$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq MDL$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample has matrix spike percent recovery less than 30% and Post-digestion spike sample is not required. Detects are qualified as J-. Non-detects are qualified as R.

Silver MBE0D8.

The following sample has matrix spike recovery in the range of 30 – 74% and the post digestion spike sample has percent recovery less than 75%. Detected analyte with result greater than or equal to MDL is qualified J-. Non-detected analytes are qualified UJ.



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Thallium MBE0D8.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE: MBE0C1/MBE0D8

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the 2xCRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is $>$ 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-AES Serial Dilution (SD) soil sample has percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The detected analytes in samples are qualified J.

Cadmium and Chromium MBE0D8.



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10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: LCS001	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2822.0
Sample Location:	pH: 2	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	356		ug/L	356		1.0	YES	S3VEM
Antimony	Spike	108		ug/L	108		1.0	YES	S3VEM
Arsenic	Spike	19.4	J	ug/L	19.4		1.0	YES	S3VEM
Barium	Spike	295		ug/L	295		1.0	YES	S3VEM
Beryllium	Spike	10.4		ug/L	10.4		1.0	YES	S3VEM
Cadmium	Spike	10.3		ug/L	10.3		1.0	YES	S3VEM
Calcium	Spike	8810		ug/L	8810		1.0	YES	S3VEM
Chromium	Spike	21.9	J	ug/L	21.9		1.0	YES	S3VEM
Cobalt	Spike	89.7		ug/L	89.7		1.0	YES	S3VEM
Copper	Spike	45.0		ug/L	45.0		1.0	YES	S3VEM
Iron	Spike	218	J	ug/L	218		1.0	YES	S3VEM
Lead	Spike	19.6		ug/L	19.6		1.0	YES	S3VEM
Magnesium	Spike	9920		ug/L	9920		1.0	YES	S3VEM
Manganese	Spike	30.3		ug/L	30.3		1.0	YES	S3VEM
Nickel	Spike	75.9		ug/L	75.9		1.0	YES	S3VEM
Potassium	Spike	8750		ug/L	8750		1.0	YES	S3VEM
Selenium	Spike	63.3		ug/L	63.3		1.0	YES	S3VEM
Silver	Spike	17.8		ug/L	17.8		1.0	YES	S3VEM
Sodium	Spike	9000		ug/L	9000		1.0	YES	S3VEM
Thallium	Spike	57.6	J	ug/L	57.6		1.0	YES	S3VEM
Vanadium	Spike	98.2		ug/L	98.2		1.0	YES	S3VEM
Zinc	Spike	101		ug/L	101		1.0	YES	S3VEM
Tin	Spike	13.0		ug/L	13.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: LCS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	35.3		mg/kg	35.3		1.0	YES	S3VEM
Antimony	Spike	10.6		mg/kg	10.6		1.0	YES	S3VEM
Arsenic	Spike	1.7	J	mg/kg	1.7		1.0	YES	S3VEM
Barium	Spike	28.9		mg/kg	28.9		1.0	YES	S3VEM
Beryllium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Spike	917		mg/kg	917		1.0	YES	S3VEM
Chromium	Spike	2.3	J	mg/kg	2.3		1.0	YES	S3VEM
Cobalt	Spike	9.2		mg/kg	9.2		1.0	YES	S3VEM
Copper	Spike	4.4		mg/kg	4.4		1.0	YES	S3VEM
Iron	Spike	21.3	J	mg/kg	21.3		1.0	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1.0	YES	S3VEM
Magnesium	Spike	995		mg/kg	995		1.0	YES	S3VEM
Manganese	Spike	3.0		mg/kg	3.0		1.0	YES	S3VEM
Nickel	Spike	7.7		mg/kg	7.7		1.0	YES	S3VEM
Potassium	Spike	875		mg/kg	875		1.0	YES	S3VEM
Selenium	Spike	6.7		mg/kg	6.7		1.0	YES	S3VEM
Silver	Spike	1.8		mg/kg	1.8		1.0	YES	S3VEM
Sodium	Spike	906		mg/kg	906		1.0	YES	S3VEM
Thallium	Spike	5.6	J	mg/kg	5.6		1.0	YES	S3VEM
Vanadium	Spike	10.0		mg/kg	10.0		1.0	YES	S3VEM
Zinc	Spike	9.7		mg/kg	9.7		1.0	YES	S3VEM
Tin	Spike	8.8		mg/kg	8.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0A6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S001	pH:	Sample Date: 09/20/2017	Sample Time: 15:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10000		mg/kg	10000		1.0	YES	S3VEM
Antimony	Target	0.43	J	mg/kg	0.43	J	1.0	YES	S3VEM
Arsenic	Target	5.7		mg/kg	5.7		1.0	YES	S3VEM
Barium	Target	90.2		mg/kg	90.2		1.0	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64		1.0	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1.0	YES	S3VEM
Calcium	Target	4440		mg/kg	4440		1.0	YES	S3VEM
Chromium	Target	14.9		mg/kg	14.9	*	1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	40.6		mg/kg	40.6		1.0	YES	S3VEM
Iron	Target	18600		mg/kg	18600	*	1.0	YES	S3VEM
Lead	Target	120		mg/kg	120		1.0	YES	S3VEM
Magnesium	Target	3750		mg/kg	3750		1.0	YES	S3VEM
Manganese	Target	388		mg/kg	388	*	1.0	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1.0	YES	S3VEM
Potassium	Target	940		mg/kg	940		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.70	J	mg/kg	0.70	J*	1.0	YES	S3VEM
Sodium	Target	133	J	mg/kg	133	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	21.0		mg/kg	21.0		1.0	YES	S3VEM
Zinc	Target	149		mg/kg	149		1.0	YES	S3VEM
Tin	Target	5.3		mg/kg	5.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0A7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S001	pH:	Sample Date: 09/20/2017	Sample Time: 15:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9450		mg/kg	9450		1.0	YES	S3VEM
Antimony	Target	0.59	J	mg/kg	0.59	J	1.0	YES	S3VEM
Arsenic	Target	5.8		mg/kg	5.8		1.0	YES	S3VEM
Barium	Target	89.1		mg/kg	89.1		1.0	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1.0	YES	S3VEM
Calcium	Target	3320		mg/kg	3320		1.0	YES	S3VEM
Chromium	Target	15.0		mg/kg	15.0	*	1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM
Copper	Target	38.4		mg/kg	38.4		1.0	YES	S3VEM
Iron	Target	17700		mg/kg	17700	*	1.0	YES	S3VEM
Lead	Target	122		mg/kg	122		1.0	YES	S3VEM
Magnesium	Target	3400		mg/kg	3400		1.0	YES	S3VEM
Manganese	Target	353		mg/kg	353	*	1.0	YES	S3VEM
Nickel	Target	22.6		mg/kg	22.6		1.0	YES	S3VEM
Potassium	Target	776		mg/kg	776		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.59	J	mg/kg	0.59	J*	1.0	YES	S3VEM
Sodium	Target	129	J	mg/kg	129	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	20.2		mg/kg	20.2		1.0	YES	S3VEM
Zinc	Target	125		mg/kg	125		1.0	YES	S3VEM
Tin	Target	4.5		mg/kg	4.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0A8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S001	pH:	Sample Date: 09/20/2017	Sample Time: 15:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8970		mg/kg	8970		1.0	YES	S3VEM
Antimony	Target	0.40	J	mg/kg	0.40	J	1.0	YES	S3VEM
Arsenic	Target	3.6		mg/kg	3.6		1.0	YES	S3VEM
Barium	Target	65.1		mg/kg	65.1		1.0	YES	S3VEM
Beryllium	Target	0.53		mg/kg	0.53		1.0	YES	S3VEM
Cadmium	Target	0.83		mg/kg	0.83	*	1.0	YES	S3VEM
Calcium	Target	2220		mg/kg	2220		1.0	YES	S3VEM
Chromium	Target	12.0		mg/kg	12.0	*	1.0	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9		1.0	YES	S3VEM
Copper	Target	28.6		mg/kg	28.6		1.0	YES	S3VEM
Iron	Target	15700		mg/kg	15700	*	1.0	YES	S3VEM
Lead	Target	47.8		mg/kg	47.8		1.0	YES	S3VEM
Magnesium	Target	2920		mg/kg	2920		1.0	YES	S3VEM
Manganese	Target	402		mg/kg	402	*	1.0	YES	S3VEM
Nickel	Target	17.0		mg/kg	17.0		1.0	YES	S3VEM
Potassium	Target	593		mg/kg	593		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J*	1.0	YES	S3VEM
Sodium	Target	115	J	mg/kg	115	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.7		mg/kg	17.7		1.0	YES	S3VEM
Zinc	Target	60.7		mg/kg	60.7		1.0	YES	S3VEM
Tin	Target	2.9	J	mg/kg	2.9	J	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0A9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S001	pH:	Sample Date: 09/20/2017	Sample Time: 15:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9300		mg/kg	9300		1.0	YES	S3VEM
Antimony	Target	0.41	J	mg/kg	0.41	J	1.0	YES	S3VEM
Arsenic	Target	3.0		mg/kg	3.0		1.0	YES	S3VEM
Barium	Target	57.1		mg/kg	57.1		1.0	YES	S3VEM
Beryllium	Target	0.51		mg/kg	0.51		1.0	YES	S3VEM
Cadmium	Target	0.71		mg/kg	0.71	*	1.0	YES	S3VEM
Calcium	Target	2720		mg/kg	2720		1.0	YES	S3VEM
Chromium	Target	12.0		mg/kg	12.0	*	1.0	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8		1.0	YES	S3VEM
Copper	Target	31.4		mg/kg	31.4		1.0	YES	S3VEM
Iron	Target	15800		mg/kg	15800	*	1.0	YES	S3VEM
Lead	Target	37.0		mg/kg	37.0		1.0	YES	S3VEM
Magnesium	Target	2990		mg/kg	2990		1.0	YES	S3VEM
Manganese	Target	430		mg/kg	430	*	1.0	YES	S3VEM
Nickel	Target	15.6		mg/kg	15.6		1.0	YES	S3VEM
Potassium	Target	547		mg/kg	547		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J*	1.0	YES	S3VEM
Sodium	Target	116	J	mg/kg	116	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.7		mg/kg	17.7		1.0	YES	S3VEM
Zinc	Target	51.5		mg/kg	51.5		1.0	YES	S3VEM
Tin	Target	2.7	J	mg/kg	2.7	J	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S001	pH:	Sample Date: 09/20/2017	Sample Time: 15:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9030		mg/kg	9030		1.0	YES	S3VEM
Antimony	Target	0.37	J	mg/kg	0.37	J	1.0	YES	S3VEM
Arsenic	Target	3.9		mg/kg	3.9		1.0	YES	S3VEM
Barium	Target	68.7		mg/kg	68.7		1.0	YES	S3VEM
Beryllium	Target	0.52		mg/kg	0.52		1.0	YES	S3VEM
Cadmium	Target	0.99		mg/kg	0.99	*	1.0	YES	S3VEM
Calcium	Target	2860		mg/kg	2860		1.0	YES	S3VEM
Chromium	Target	11.9		mg/kg	11.9	*	1.0	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6		1.0	YES	S3VEM
Copper	Target	35.6		mg/kg	35.6		1.0	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1.0	YES	S3VEM
Lead	Target	69.3		mg/kg	69.3		1.0	YES	S3VEM
Magnesium	Target	2970		mg/kg	2970		1.0	YES	S3VEM
Manganese	Target	382		mg/kg	382	*	1.0	YES	S3VEM
Nickel	Target	16.6		mg/kg	16.6		1.0	YES	S3VEM
Potassium	Target	569		mg/kg	569		1.0	YES	S3VEM
Selenium	Target	2.4	U	mg/kg	2.4	U	1.0	YES	S3VEM
Silver	Target	0.51	J	mg/kg	0.51	J*	1.0	YES	S3VEM
Sodium	Target	128	J	mg/kg	128	J	1.0	YES	S3VEM
Thallium	Target	1.7	U	mg/kg	1.7	U*	1.0	YES	S3VEM
Vanadium	Target	17.3		mg/kg	17.3		1.0	YES	S3VEM
Zinc	Target	63.6		mg/kg	63.6		1.0	YES	S3VEM
Tin	Target	10.0		mg/kg	10.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S002	pH:	Sample Date: 09/20/2017	Sample Time: 15:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6080		mg/kg	6080		1.0	YES	S3VEM
Antimony	Target	0.69	J	mg/kg	0.69	J	1.0	YES	S3VEM
Arsenic	Target	6.7		mg/kg	6.7		1.0	YES	S3VEM
Barium	Target	145		mg/kg	145		1.0	YES	S3VEM
Beryllium	Target	0.56		mg/kg	0.56		1.0	YES	S3VEM
Cadmium	Target	2.9		mg/kg	2.9	*	1.0	YES	S3VEM
Calcium	Target	12400		mg/kg	12400		1.0	YES	S3VEM
Chromium	Target	14.2		mg/kg	14.2	*	1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	67.6		mg/kg	67.6		1.0	YES	S3VEM
Iron	Target	23800		mg/kg	23800	*	1.0	YES	S3VEM
Lead	Target	284		mg/kg	284		1.0	YES	S3VEM
Magnesium	Target	7170		mg/kg	7170		1.0	YES	S3VEM
Manganese	Target	479		mg/kg	479	*	1.0	YES	S3VEM
Nickel	Target	26.8		mg/kg	26.8		1.0	YES	S3VEM
Potassium	Target	807		mg/kg	807		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.87		mg/kg	0.87	*	1.0	YES	S3VEM
Sodium	Target	155	J	mg/kg	155	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Zinc	Target	328		mg/kg	328		1.0	YES	S3VEM
Tin	Target	8.8		mg/kg	8.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S002	pH:	Sample Date: 09/20/2017	Sample Time: 15:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6010		mg/kg	6010		1.0	YES	S3VEM
Antimony	Target	1.2	J	mg/kg	1.2	J	1.0	YES	S3VEM
Arsenic	Target	10.0		mg/kg	10.0		1.0	YES	S3VEM
Barium	Target	281		mg/kg	281		1.0	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72		1.0	YES	S3VEM
Cadmium	Target	4.6		mg/kg	4.6	*	1.0	YES	S3VEM
Calcium	Target	10800		mg/kg	10800		1.0	YES	S3VEM
Chromium	Target	18.3		mg/kg	18.3	*	1.0	YES	S3VEM
Cobalt	Target	9.3		mg/kg	9.3		1.0	YES	S3VEM
Copper	Target	88.7		mg/kg	88.7		1.0	YES	S3VEM
Iron	Target	31600		mg/kg	31600	*	1.0	YES	S3VEM
Lead	Target	447		mg/kg	447		1.0	YES	S3VEM
Magnesium	Target	5440		mg/kg	5440		1.0	YES	S3VEM
Manganese	Target	535		mg/kg	535	*	1.0	YES	S3VEM
Nickel	Target	40.9		mg/kg	40.9		1.0	YES	S3VEM
Potassium	Target	752		mg/kg	752		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.2		mg/kg	1.2	*	1.0	YES	S3VEM
Sodium	Target	203	J	mg/kg	203	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	19.4		mg/kg	19.4		1.0	YES	S3VEM
Zinc	Target	304		mg/kg	304		1.0	YES	S3VEM
Tin	Target	13.9		mg/kg	13.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S002	pH:	Sample Date: 09/20/2017	Sample Time: 15:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5520		mg/kg	5520		1.0	YES	S3VEM
Antimony	Target	1.7	J	mg/kg	1.7	J	1.0	YES	S3VEM
Arsenic	Target	20.5		mg/kg	20.5		1.0	YES	S3VEM
Barium	Target	526		mg/kg	526		1.0	YES	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Cadmium	Target	6.1		mg/kg	6.1	*	1.0	YES	S3VEM
Calcium	Target	8990		mg/kg	8990		1.0	YES	S3VEM
Chromium	Target	21.8		mg/kg	21.8	*	1.0	YES	S3VEM
Cobalt	Target	10.9		mg/kg	10.9		1.0	YES	S3VEM
Copper	Target	131		mg/kg	131		1.0	YES	S3VEM
Iron	Target	47300		mg/kg	47300	*	1.0	YES	S3VEM
Lead	Target	1400		mg/kg	1400		1.0	YES	S3VEM
Magnesium	Target	3120		mg/kg	3120		1.0	YES	S3VEM
Manganese	Target	382		mg/kg	382	*	1.0	YES	S3VEM
Nickel	Target	52.1		mg/kg	52.1		1.0	YES	S3VEM
Potassium	Target	789		mg/kg	789		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Sodium	Target	323	J	mg/kg	323	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	28.6		mg/kg	28.6		1.0	YES	S3VEM
Zinc	Target	359		mg/kg	359		1.0	YES	S3VEM
Tin	Target	23.5		mg/kg	23.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S002	pH:	Sample Date: 09/20/2017	Sample Time: 15:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4000		mg/kg	4000		1.0	YES	S3VEM
Antimony	Target	1.5	J	mg/kg	1.5	J	1.0	YES	S3VEM
Arsenic	Target	14.5		mg/kg	14.5		1.0	YES	S3VEM
Barium	Target	583		mg/kg	583		1.0	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Cadmium	Target	4.2		mg/kg	4.2	*	1.0	YES	S3VEM
Calcium	Target	7230		mg/kg	7230		1.0	YES	S3VEM
Chromium	Target	21.0		mg/kg	21.0	*	1.0	YES	S3VEM
Cobalt	Target	8.1		mg/kg	8.1		1.0	YES	S3VEM
Copper	Target	110		mg/kg	110		1.0	YES	S3VEM
Iron	Target	52000		mg/kg	52000	*	1.0	YES	S3VEM
Lead	Target	473		mg/kg	473		1.0	YES	S3VEM
Magnesium	Target	2340		mg/kg	2340		1.0	YES	S3VEM
Manganese	Target	278		mg/kg	278	*	1.0	YES	S3VEM
Nickel	Target	38.0		mg/kg	38.0		1.0	YES	S3VEM
Potassium	Target	720		mg/kg	720		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Sodium	Target	328	J	mg/kg	328	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	30.1		mg/kg	30.1		1.0	YES	S3VEM
Zinc	Target	226		mg/kg	226		1.0	YES	S3VEM
Tin	Target	20.2		mg/kg	20.2		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0B5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P030-S002	pH:	Sample Date: 09/20/2017	Sample Time: 15:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4920		mg/kg	4920		1.0	YES	S3VEM
Antimony	Target	0.75	J	mg/kg	0.75	J	1.0	YES	S3VEM
Arsenic	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Barium	Target	522		mg/kg	522		1.0	YES	S3VEM
Beryllium	Target	0.98		mg/kg	0.98		1.0	YES	S3VEM
Cadmium	Target	3.0		mg/kg	3.0	*	1.0	YES	S3VEM
Calcium	Target	15200		mg/kg	15200		1.0	YES	S3VEM
Chromium	Target	17.3		mg/kg	17.3	*	1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM
Copper	Target	89.7		mg/kg	89.7		1.0	YES	S3VEM
Iron	Target	47400		mg/kg	47400	*	1.0	YES	S3VEM
Lead	Target	310		mg/kg	310		1.0	YES	S3VEM
Magnesium	Target	3200		mg/kg	3200		1.0	YES	S3VEM
Manganese	Target	266		mg/kg	266	*	1.0	YES	S3VEM
Nickel	Target	28.5		mg/kg	28.5		1.0	YES	S3VEM
Potassium	Target	734		mg/kg	734		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.5		mg/kg	1.5	*	1.0	YES	S3VEM
Sodium	Target	356	J	mg/kg	356	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	30.1		mg/kg	30.1		1.0	YES	S3VEM
Zinc	Target	157		mg/kg	157		1.0	YES	S3VEM
Tin	Target	34.9		mg/kg	34.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0C7	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location: Rinsate	pH: 2	Sample Date: 09/20/2017	Sample Time: 15:30:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Arsenic	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Barium	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Calcium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Iron	Target	100	U	ug/L	100	U	1.0	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1.0	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1.0	YES	S3VEM
Potassium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Selenium	Target	35.0	U	ug/L	35.0	U	1.0	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Sodium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Zinc	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0D8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6680		mg/kg	6680		1.0	YES	S3VEM
Antimony	Target	0.83	J	mg/kg	0.83	J	1.0	YES	S3VEM
Arsenic	Target	9.8		mg/kg	9.8		1.0	YES	S3VEM
Barium	Target	418		mg/kg	418		1.0	YES	S3VEM
Beryllium	Target	0.69		mg/kg	0.69		1.0	YES	S3VEM
Cadmium	Target	3.0	J	mg/kg	3.0	*	1.0	YES	S3VEM
Calcium	Target	37800		mg/kg	37800		1.0	YES	S3VEM
Chromium	Target	23.0	J	mg/kg	23.0	*	1.0	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5		1.0	YES	S3VEM
Copper	Target	119		mg/kg	119		1.0	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1.0	YES	S3VEM
Lead	Target	478		mg/kg	478		1.0	YES	S3VEM
Magnesium	Target	9180		mg/kg	9180		1.0	YES	S3VEM
Manganese	Target	518		mg/kg	518	*	1.0	YES	S3VEM
Nickel	Target	38.2		mg/kg	38.2		1.0	YES	S3VEM
Potassium	Target	1290		mg/kg	1290		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.72	R	mg/kg	0.72	U*	1.0	YES	S3VEM
Sodium	Target	146	J	mg/kg	146	J	1.0	YES	S3VEM
Thallium	Target	1.8	UJ	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	18.9		mg/kg	18.9		1.0	YES	S3VEM
Zinc	Target	501		mg/kg	501		1.0	YES	S3VEM
Tin	Target	23.8		mg/kg	23.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0D8A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Thallium	Spike	1.8	U	mg/kg	1.8	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0D8D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6660		mg/kg	6660		1.0	YES	S3VEM
Antimony	Target	0.83	J	mg/kg	0.83	J	1.0	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5		1.0	YES	S3VEM
Barium	Target	416		mg/kg	416		1.0	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1.0	YES	S3VEM
Cadmium	Target	2.9		mg/kg	2.9		1.0	YES	S3VEM
Calcium	Target	37500		mg/kg	37500		1.0	YES	S3VEM
Chromium	Target	22.5	J	mg/kg	22.5		1.0	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4		1.0	YES	S3VEM
Copper	Target	118		mg/kg	118		1.0	YES	S3VEM
Iron	Target	17200	J	mg/kg	17200		1.0	YES	S3VEM
Lead	Target	467	J	mg/kg	467		1.0	YES	S3VEM
Magnesium	Target	9150		mg/kg	9150		1.0	YES	S3VEM
Manganese	Target	516		mg/kg	516		1.0	YES	S3VEM
Nickel	Target	37.4		mg/kg	37.4		1.0	YES	S3VEM
Potassium	Target	1290		mg/kg	1290		1.0	YES	S3VEM
Selenium	Target	0.56	J	mg/kg	0.56	J	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U	1.0	YES	S3VEM
Sodium	Target	147	J	mg/kg	147	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U	1.0	YES	S3VEM
Vanadium	Target	18.9		mg/kg	18.9		1.0	YES	S3VEM
Zinc	Target	496		mg/kg	496		1.0	YES	S3VEM
Tin	Target	23.4		mg/kg	23.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0D8L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6790		mg/kg	6790		5.0	YES	S3VEM
Antimony	Target	21.5	U	mg/kg	21.5	U	5.0	YES	S3VEM
Arsenic	Target	10.9		mg/kg	10.9		5.0	YES	S3VEM
Barium	Target	438		mg/kg	438		5.0	YES	S3VEM
Beryllium	Target	0.77	J	mg/kg	0.77	J	5.0	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4	*	5.0	YES	S3VEM
Calcium	Target	40800		mg/kg	40800		5.0	YES	S3VEM
Chromium	Target	26.7	J	mg/kg	26.7	*	5.0	YES	S3VEM
Cobalt	Target	7.7	J	mg/kg	7.7	J	5.0	YES	S3VEM
Copper	Target	123		mg/kg	123		5.0	YES	S3VEM
Iron	Target	19200	J	mg/kg	19200	*	5.0	YES	S3VEM
Lead	Target	483	J	mg/kg	483		5.0	YES	S3VEM
Magnesium	Target	9670		mg/kg	9670		5.0	YES	S3VEM
Manganese	Target	572		mg/kg	572	*	5.0	YES	S3VEM
Nickel	Target	35.7		mg/kg	35.7		5.0	YES	S3VEM
Potassium	Target	1270	J	mg/kg	1270	J	5.0	YES	S3VEM
Selenium	Target	12.5	U	mg/kg	12.5	U	5.0	YES	S3VEM
Silver	Target	3.6	U	mg/kg	3.6	U	5.0	YES	S3VEM
Sodium	Target	127	J	mg/kg	127	J	5.0	YES	S3VEM
Thallium	Target	9.0	U	mg/kg	9.0	U	5.0	YES	S3VEM
Vanadium	Target	20.2		mg/kg	20.2		5.0	YES	S3VEM
Zinc	Target	520		mg/kg	520		5.0	YES	S3VEM
Tin	Target	24.8		mg/kg	24.8		5.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: MBE0D8S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	13.3		mg/kg	13.3		1.0	YES	S3VEM
Arsenic	Spike	14.7		mg/kg	14.7		1.0	YES	S3VEM
Barium	Spike	682		mg/kg	682		1.0	YES	S3VEM
Beryllium	Spike	6.9		mg/kg	6.9		1.0	YES	S3VEM
Cadmium	Spike	10.1		mg/kg	10.1		1.0	YES	S3VEM
Chromium	Spike	48.6	J	mg/kg	48.6		1.0	YES	S3VEM
Cobalt	Spike	83.3		mg/kg	83.3		1.0	YES	S3VEM
Copper	Spike	150		mg/kg	150		1.0	YES	S3VEM
Lead	Spike	479	J	mg/kg	479		1.0	YES	S3VEM
Manganese	Spike	572		mg/kg	572		1.0	YES	S3VEM
Nickel	Spike	115		mg/kg	115		1.0	YES	S3VEM
Selenium	Spike	6.5		mg/kg	6.5		1.0	YES	S3VEM
Silver	Spike	0.50	J	mg/kg	0.50	J*	1.0	YES	S3VEM
Thallium	Spike	4.0		mg/kg	4.0	*	1.0	YES	S3VEM
Vanadium	Spike	86.5		mg/kg	86.5		1.0	YES	S3VEM
Zinc	Spike	543		mg/kg	543		1.0	YES	S3VEM
Tin	Spike	95.7		mg/kg	95.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: PBS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Arsenic	Target			mg/kg	-0.51	J	1.0	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Chromium	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Iron	Target	10.0	UJ	mg/kg	10.0	U	1.0	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1.0	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1.0	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1.0	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U	1.0	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Tin	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM

Sample Number: PBW001	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2822.0
Sample Location:	pH: 2	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Arsenic	Target	10.0	UJ	ug/L	10.0	U	1.0	YES	S3VEM
Barium	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Calcium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1.0	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Iron	Target	100	UJ	ug/L	100	U	1.0	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1.0	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1.0	YES	S3VEM
Potassium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Selenium	Target	35.0	U	ug/L	35.0	U	1.0	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Sodium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Thallium	Target	25.0	UJ	ug/L	25.0	U	1.0	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Zinc	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE0A6

Lab Code: CHM



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EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 20 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE0B7

Laboratory: Bonner Analytical Testing Co.

Sampling dates: 9/20/2017 to 9/21/17

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

Samples MBE0B7, MBE0B8, MBE0B9, MBE0C0, MBE0E3, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0F2, MBE0F3, MBE0F5, MBE0F6, MBE0F7 and MBE0F8 have analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentration of **Aluminum, Iron, Manganese, Thallium, Arsenic and Cobalt** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/19/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

The following samples are associated with the calibration which does not have at least one standard at or below the CRQL. Detected analytes with the result $<2X$ CRQL are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0B7, MBE0B8, MBE0B9, MBE0C0, MBE0E3, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0F2, MBE0F3, MBE0F6, MBE0F7, MBE0F8.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical



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2890, Woodbridge Avenue, Edison, NJ 08837

sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results less than or equal to CRQLs. The associated CCB analyte results are less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBE0B7, MBE0B8, MBE0B9, MBE0C0, MBE0E3, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0E8, MBE0E9, MBE0F0, MBE0F1, MBE0F2, MBE0F3, MBE0F5.

Cadmium MBE0C0, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0F1, MBE0F2, MBE0F3, MBE0F5, MBE0F6, MBE0F7, MBE0F8.

Silver MBE0F5.

Sodium MBE0B7, MBE0B8, MBE0B9, MBE0C0, MBE0E3, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0E8, MBE0E9, MBE0F0, MBE0F1, MBE0F2, MBE0F3, MBE0F4, MBE0F5, MBE0F6, MBE0F7, MBE0F8.

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated PB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Sodium MBE0B7, MBE0B8, MBE0B9, MBE0C0, MBE0E3, MBE0E4, MBE0E5, MBE0E6, MBE0E7, MBE0E8, MBE0E9, MBE0F0, MBE0F1, MBE0F2, MBE0F3, MBE0F4, MBE0F5, MBE0F6, MBE0F7, MBE0F8.

Tin MBE0E5, MBE0E6, MBE0E7, MBE0F2, MBE0F6, MBE0F7, MBE0F8.

Field Blanks: MBE0C7, MBE0J4

No problems were found for this criterion.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm \text{CRQL}$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq \text{MDL}$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq \text{MDL}$, the possibility of false negatives in the



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samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample has matrix spike recovery less than 30% and the post digestion spike sample has percent recovery less than 75%. Detected analytes are qualified J-. Non-detected analytes are qualified R.

Antimony MBE0F5.

The following sample has matrix spike recovery in the range of 30 – 74% and the post digestion spike sample has percent recovery less than 75%. Detected analytes are qualified J-. Non-detected analytes are qualified UJ.

Selenium, Tin MBE0F5.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE: MBE0F5/MBE0J3.

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the 2xCRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

The following Duplicate and original soil sample results are greater than or equal to 5x the CRQL and RPD is greater than 50%. Detected analytes are qualified J.

Chromium MBE0F5 and MBE0J3 (in SDG MBE0C8)



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8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-AES Serial Dilution (SD) soil sample has percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The Detected analytes are qualified J.

Cadmium, Calcium, Chromium, Cobalt, Iron, Manganese MBE0F5.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	41.1		mg/kg	41.1		1	YES	S3VEM
Antimony	Spike	11.7		mg/kg	11.7		1	YES	S3VEM
Arsenic	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Barium	Spike	40.1		mg/kg	40.1		1	YES	S3VEM
Beryllium	Spike	0.98		mg/kg	0.98		1	YES	S3VEM
Cadmium	Spike	0.99		mg/kg	0.99		1	YES	S3VEM
Calcium	Spike	1020		mg/kg	1020		1	YES	S3VEM
Chromium	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Cobalt	Spike	10.1		mg/kg	10.1		1	YES	S3VEM
Copper	Spike	5.1		mg/kg	5.1		1	YES	S3VEM
Iron	Spike	21.9		mg/kg	21.9		1	YES	S3VEM
Lead	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Magnesium	Spike	992		mg/kg	992		1	YES	S3VEM
Manganese	Spike	3.2		mg/kg	3.2		1	YES	S3VEM
Nickel	Spike	8.2		mg/kg	8.2		1	YES	S3VEM
Potassium	Spike	986		mg/kg	986		1	YES	S3VEM
Selenium	Spike	6.7		mg/kg	6.7		1	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Sodium	Spike	994		mg/kg	994		1	YES	S3VEM
Thallium	Spike	4.9		mg/kg	4.9		1	YES	S3VEM
Vanadium	Spike	10.0		mg/kg	10.0		1	YES	S3VEM
Zinc	Spike	12.2		mg/kg	12.2		1	YES	S3VEM
Tin	Spike	10.7		mg/kg	10.7		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: LCS02	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	38.1		mg/kg	38.1		1	YES	S3VEM
Antimony	Spike	11.6		mg/kg	11.6		1	YES	S3VEM
Arsenic	Spike	1.7		mg/kg	1.7		1	YES	S3VEM
Barium	Spike	40.6		mg/kg	40.6		1	YES	S3VEM
Beryllium	Spike	0.97		mg/kg	0.97		1	YES	S3VEM
Cadmium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Spike	1050		mg/kg	1050		1	YES	S3VEM
Chromium	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Cobalt	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Copper	Spike	5.1		mg/kg	5.1		1	YES	S3VEM
Iron	Spike	21.2		mg/kg	21.2		1	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Magnesium	Spike	997		mg/kg	997		1	YES	S3VEM
Manganese	Spike	3.1		mg/kg	3.1		1	YES	S3VEM
Nickel	Spike	8.3		mg/kg	8.3		1	YES	S3VEM
Potassium	Spike	980		mg/kg	980		1	YES	S3VEM
Selenium	Spike	6.6		mg/kg	6.6		1	YES	S3VEM
Silver	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Sodium	Spike	1010		mg/kg	1010		1	YES	S3VEM
Thallium	Spike	4.9		mg/kg	4.9		1	YES	S3VEM
Vanadium	Spike	10.0		mg/kg	10.0		1	YES	S3VEM
Zinc	Spike	12.1		mg/kg	12.1		1	YES	S3VEM
Tin	Spike	11.1		mg/kg	11.1		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0B7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S001	pH:	Sample Date: 09/20/2017	Sample Time: 17:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10600		mg/kg	10600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0		1	YES	S3VEM
Barium	Target	183		mg/kg	183	*	1	YES	S3VEM
Beryllium	Target	0.90		mg/kg	0.90		1	YES	S3VEM
Cadmium	Target	0.78		mg/kg	0.78	*	1	YES	S3VEM
Calcium	Target	51500		mg/kg	51500	D*	2	YES	S3VEM
Chromium	Target	19.4		mg/kg	19.4	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	42.3		mg/kg	42.3		1	YES	S3VEM
Iron	Target	18500		mg/kg	18500	*	1	YES	S3VEM
Lead	Target	331		mg/kg	331		1	YES	S3VEM
Magnesium	Target	8680		mg/kg	8680	*	1	YES	S3VEM
Manganese	Target	865		mg/kg	865	*	1	YES	S3VEM
Nickel	Target	26.2		mg/kg	26.2		1	YES	S3VEM
Potassium	Target	2480		mg/kg	2480		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.21	J	mg/kg	0.21	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	103	J	1	YES	S3VEM
Thallium	Target	0.26	J	mg/kg	0.26	J	1	YES	S3VEM
Vanadium	Target	20.3		mg/kg	20.3		1	YES	S3VEM
Zinc	Target	323		mg/kg	323		1	YES	S3VEM
Tin	Target	7.6	J	mg/kg	7.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0B8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S001	pH:	Sample Date: 09/20/2017	Sample Time: 17:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10400		mg/kg	10400		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	9.3		mg/kg	9.3		1	YES	S3VEM
Barium	Target	178		mg/kg	178	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Cadmium	Target	0.69		mg/kg	0.69	*	1	YES	S3VEM
Calcium	Target	50500		mg/kg	50500	D*	2	YES	S3VEM
Chromium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	41.2		mg/kg	41.2		1	YES	S3VEM
Iron	Target	17400		mg/kg	17400	*	1	YES	S3VEM
Lead	Target	328		mg/kg	328		1	YES	S3VEM
Magnesium	Target	10000		mg/kg	10000	*	1	YES	S3VEM
Manganese	Target	847		mg/kg	847	*	1	YES	S3VEM
Nickel	Target	22.5		mg/kg	22.5		1	YES	S3VEM
Potassium	Target	2280		mg/kg	2280		1	YES	S3VEM
Selenium	Target	1.0	J	mg/kg	1.0	J*	1	YES	S3VEM
Silver	Target	0.16	J	mg/kg	0.16	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	120	J	1	YES	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	YES	S3VEM
Vanadium	Target	19.6		mg/kg	19.6		1	YES	S3VEM
Zinc	Target	333		mg/kg	333		1	YES	S3VEM
Tin	Target	5.9	J	mg/kg	5.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0B9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S001	pH:	Sample Date: 09/20/2017	Sample Time: 17:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11100		mg/kg	11100		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	9.3		mg/kg	9.3		1	YES	S3VEM
Barium	Target	200		mg/kg	200	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Cadmium	Target	0.58		mg/kg	0.58	*	1	YES	S3VEM
Calcium	Target	58800		mg/kg	58800	D*	2	YES	S3VEM
Chromium	Target	18.9		mg/kg	18.9	*	1	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7	*	1	YES	S3VEM
Copper	Target	32.3		mg/kg	32.3		1	YES	S3VEM
Iron	Target	18400		mg/kg	18400	*	1	YES	S3VEM
Lead	Target	342		mg/kg	342		1	YES	S3VEM
Magnesium	Target	9310		mg/kg	9310	*	1	YES	S3VEM
Manganese	Target	1090		mg/kg	1090	*	1	YES	S3VEM
Nickel	Target	21.7		mg/kg	21.7		1	YES	S3VEM
Potassium	Target	2330		mg/kg	2330		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.21	J	mg/kg	0.21	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	124	J	1	YES	S3VEM
Thallium	Target	0.51	J	mg/kg	0.51	J	1	YES	S3VEM
Vanadium	Target	19.7		mg/kg	19.7		1	YES	S3VEM
Zinc	Target	309		mg/kg	309		1	YES	S3VEM
Tin	Target	5.8	J	mg/kg	5.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0C0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S001	pH:	Sample Date: 09/20/2017	Sample Time: 17:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12000		mg/kg	12000		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.94	J*	1	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5		1	YES	S3VEM
Barium	Target	146		mg/kg	146	*	1	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.46	J*	1	YES	S3VEM
Calcium	Target	44100		mg/kg	44100	D*	2	YES	S3VEM
Chromium	Target	19.7		mg/kg	19.7	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	29.8		mg/kg	29.8		1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	195		mg/kg	195		1	YES	S3VEM
Magnesium	Target	7560		mg/kg	7560	*	1	YES	S3VEM
Manganese	Target	1410		mg/kg	1410	*	1	YES	S3VEM
Nickel	Target	22.8		mg/kg	22.8		1	YES	S3VEM
Potassium	Target	2560		mg/kg	2560		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	113	J	1	YES	S3VEM
Thallium	Target	0.74	J	mg/kg	0.74	J	1	YES	S3VEM
Vanadium	Target	20.1		mg/kg	20.1		1	YES	S3VEM
Zinc	Target	199		mg/kg	199		1	YES	S3VEM
Tin	Target	5.0	J	mg/kg	5.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S001	pH:	Sample Date: 09/21/2017	Sample Time: 09:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10700		mg/kg	10700		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	15.6		mg/kg	15.6		1	YES	S3VEM
Barium	Target	117		mg/kg	117	*	1	YES	S3VEM
Beryllium	Target	0.83		mg/kg	0.83		1	YES	S3VEM
Cadmium	Target	0.54		mg/kg	0.54	*	1	YES	S3VEM
Calcium	Target	15800		mg/kg	15800	*	1	YES	S3VEM
Chromium	Target	17.4		mg/kg	17.4	*	1	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9	*	1	YES	S3VEM
Copper	Target	54.6		mg/kg	54.6		1	YES	S3VEM
Iron	Target	17900		mg/kg	17900	*	1	YES	S3VEM
Lead	Target	268		mg/kg	268		1	YES	S3VEM
Magnesium	Target	6440		mg/kg	6440	*	1	YES	S3VEM
Manganese	Target	1170		mg/kg	1170	*	1	YES	S3VEM
Nickel	Target	26.8		mg/kg	26.8		1	YES	S3VEM
Potassium	Target	2100		mg/kg	2100		1	YES	S3VEM
Selenium	Target	2.3	J	mg/kg	2.3	J*	1	YES	S3VEM
Silver	Target	0.31	J	mg/kg	0.31	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	64.6	J	1	YES	S3VEM
Thallium	Target	0.72	J	mg/kg	0.72	J	1	YES	S3VEM
Vanadium	Target	19.7		mg/kg	19.7		1	YES	S3VEM
Zinc	Target	221		mg/kg	221		1	YES	S3VEM
Tin	Target	6.2	J	mg/kg	6.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S001	pH:	Sample Date: 09/21/2017	Sample Time: 09:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11600		mg/kg	11600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	17.9		mg/kg	17.9		1	YES	S3VEM
Barium	Target	129		mg/kg	129	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.48	J*	1	YES	S3VEM
Calcium	Target	15500		mg/kg	15500	*	1	YES	S3VEM
Chromium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Copper	Target	56.9		mg/kg	56.9		1	YES	S3VEM
Iron	Target	19100		mg/kg	19100	*	1	YES	S3VEM
Lead	Target	275		mg/kg	275		1	YES	S3VEM
Magnesium	Target	5930		mg/kg	5930	*	1	YES	S3VEM
Manganese	Target	1330		mg/kg	1330	*	1	YES	S3VEM
Nickel	Target	25.3		mg/kg	25.3		1	YES	S3VEM
Potassium	Target	2190		mg/kg	2190		1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J*	1	YES	S3VEM
Silver	Target	0.37	J	mg/kg	0.37	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	65.6	J	1	YES	S3VEM
Thallium	Target	0.90	J	mg/kg	0.90	J	1	YES	S3VEM
Vanadium	Target	20.8		mg/kg	20.8		1	YES	S3VEM
Zinc	Target	194		mg/kg	194		1	YES	S3VEM
Tin	Target	7.8	J	mg/kg	7.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S001	pH:	Sample Date: 09/21/2017	Sample Time: 09:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12600		mg/kg	12600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.87	J*	1	YES	S3VEM
Arsenic	Target	12.3		mg/kg	12.3		1	YES	S3VEM
Barium	Target	105		mg/kg	105	*	1	YES	S3VEM
Beryllium	Target	0.81		mg/kg	0.81		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.34	J*	1	YES	S3VEM
Calcium	Target	12900		mg/kg	12900	*	1	YES	S3VEM
Chromium	Target	16.5		mg/kg	16.5	*	1	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Copper	Target	34.9		mg/kg	34.9		1	YES	S3VEM
Iron	Target	18300		mg/kg	18300	*	1	YES	S3VEM
Lead	Target	142		mg/kg	142		1	YES	S3VEM
Magnesium	Target	3680		mg/kg	3680	*	1	YES	S3VEM
Manganese	Target	1560		mg/kg	1560	*	1	YES	S3VEM
Nickel	Target	18.3		mg/kg	18.3		1	YES	S3VEM
Potassium	Target	2060		mg/kg	2060		1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.35	J	mg/kg	0.35	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	55.1	J	1	YES	S3VEM
Thallium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Vanadium	Target	20.1		mg/kg	20.1		1	YES	S3VEM
Zinc	Target	126		mg/kg	126		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	4.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S001	pH:	Sample Date: 09/21/2017	Sample Time: 09:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13000		mg/kg	13000		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.71	J*	1	YES	S3VEM
Arsenic	Target	10.7		mg/kg	10.7		1	YES	S3VEM
Barium	Target	89.9		mg/kg	89.9	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.29	J*	1	YES	S3VEM
Calcium	Target	9280		mg/kg	9280	*	1	YES	S3VEM
Chromium	Target	15.2		mg/kg	15.2	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	31.2		mg/kg	31.2		1	YES	S3VEM
Iron	Target	18200		mg/kg	18200	*	1	YES	S3VEM
Lead	Target	112		mg/kg	112		1	YES	S3VEM
Magnesium	Target	3420		mg/kg	3420	*	1	YES	S3VEM
Manganese	Target	1520		mg/kg	1520	*	1	YES	S3VEM
Nickel	Target	17.7		mg/kg	17.7		1	YES	S3VEM
Potassium	Target	2000		mg/kg	2000		1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.30	J	mg/kg	0.30	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	50.4	J	1	YES	S3VEM
Thallium	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Vanadium	Target	20.4		mg/kg	20.4		1	YES	S3VEM
Zinc	Target	117		mg/kg	117		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S001	pH:	Sample Date: 09/21/2017	Sample Time: 09:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12800		mg/kg	12800		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.89	J*	1	YES	S3VEM
Arsenic	Target	11.3		mg/kg	11.3		1	YES	S3VEM
Barium	Target	77.3		mg/kg	77.3	*	1	YES	S3VEM
Beryllium	Target	0.83		mg/kg	0.83		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.22	J*	1	YES	S3VEM
Calcium	Target	19500		mg/kg	19500	*	1	YES	S3VEM
Chromium	Target	16.2		mg/kg	16.2	*	1	YES	S3VEM
Cobalt	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Copper	Target	31.9		mg/kg	31.9		1	YES	S3VEM
Iron	Target	18300		mg/kg	18300	*	1	YES	S3VEM
Lead	Target	94.4		mg/kg	94.4		1	YES	S3VEM
Magnesium	Target	6430		mg/kg	6430	*	1	YES	S3VEM
Manganese	Target	1360		mg/kg	1360	*	1	YES	S3VEM
Nickel	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Potassium	Target	2160		mg/kg	2160		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.28	J	mg/kg	0.28	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	59.1	J	1	YES	S3VEM
Thallium	Target	0.83	J	mg/kg	0.83	J	1	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Zinc	Target	101		mg/kg	101		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	2.6	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S002	pH:	Sample Date: 09/21/2017	Sample Time: 09:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10500		mg/kg	10500		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	12.4		mg/kg	12.4		1	YES	S3VEM
Barium	Target	203		mg/kg	203	*	1	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	34700		mg/kg	34700	*	1	YES	S3VEM
Chromium	Target	34.7		mg/kg	34.7	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	64.3		mg/kg	64.3		1	YES	S3VEM
Iron	Target	17600		mg/kg	17600	*	1	YES	S3VEM
Lead	Target	345		mg/kg	345		1	YES	S3VEM
Magnesium	Target	14800		mg/kg	14800	*	1	YES	S3VEM
Manganese	Target	1130		mg/kg	1130	*	1	YES	S3VEM
Nickel	Target	28.6		mg/kg	28.6		1	YES	S3VEM
Potassium	Target	2510		mg/kg	2510		1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.32	J	mg/kg	0.32	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	89.5	J	1	YES	S3VEM
Thallium	Target	0.55	J	mg/kg	0.55	J	1	YES	S3VEM
Vanadium	Target	19.3		mg/kg	19.3		1	YES	S3VEM
Zinc	Target	368		mg/kg	368		1	YES	S3VEM
Tin	Target	12.3		mg/kg	12.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0E9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S002	pH:	Sample Date: 09/21/2017	Sample Time: 09:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9940		mg/kg	9940		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	12.5		mg/kg	12.5		1	YES	S3VEM
Barium	Target	237		mg/kg	237	*	1	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	50500		mg/kg	50500	D*	2	YES	S3VEM
Chromium	Target	36.7		mg/kg	36.7	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	72.7		mg/kg	72.7		1	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1	YES	S3VEM
Lead	Target	383		mg/kg	383		1	YES	S3VEM
Magnesium	Target	20400		mg/kg	20400	*	1	YES	S3VEM
Manganese	Target	1140		mg/kg	1140	*	1	YES	S3VEM
Nickel	Target	30.7		mg/kg	30.7		1	YES	S3VEM
Potassium	Target	2440		mg/kg	2440		1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.35	J	mg/kg	0.35	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	102	J	1	YES	S3VEM
Thallium	Target	0.61	J	mg/kg	0.61	J	1	YES	S3VEM
Vanadium	Target	18.6		mg/kg	18.6		1	YES	S3VEM
Zinc	Target	425		mg/kg	425		1	YES	S3VEM
Tin	Target	12.8		mg/kg	12.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S002	pH:	Sample Date: 09/21/2017	Sample Time: 09:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11100		mg/kg	11100		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	14.5		mg/kg	14.5		1	YES	S3VEM
Barium	Target	258		mg/kg	258	*	1	YES	S3VEM
Beryllium	Target	0.83		mg/kg	0.83		1	YES	S3VEM
Cadmium	Target	0.95		mg/kg	0.95	*	1	YES	S3VEM
Calcium	Target	21100		mg/kg	21100	*	1	YES	S3VEM
Chromium	Target	81.3		mg/kg	81.3	*	1	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4	*	1	YES	S3VEM
Copper	Target	101		mg/kg	101		1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	359		mg/kg	359		1	YES	S3VEM
Magnesium	Target	5330		mg/kg	5330	*	1	YES	S3VEM
Manganese	Target	1220		mg/kg	1220	*	1	YES	S3VEM
Nickel	Target	31.9		mg/kg	31.9		1	YES	S3VEM
Potassium	Target	2570		mg/kg	2570		1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.50	J	mg/kg	0.50	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	91.9	J	1	YES	S3VEM
Thallium	Target	0.64	J	mg/kg	0.64	J	1	YES	S3VEM
Vanadium	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Zinc	Target	397		mg/kg	397		1	YES	S3VEM
Tin	Target	27.4		mg/kg	27.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S002	pH:	Sample Date: 09/21/2017	Sample Time: 09:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10700		mg/kg	10700		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	8.3		mg/kg	8.3		1	YES	S3VEM
Barium	Target	151		mg/kg	151	*	1	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.49	J*	1	YES	S3VEM
Calcium	Target	29800		mg/kg	29800	*	1	YES	S3VEM
Chromium	Target	30.4		mg/kg	30.4	*	1	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7	*	1	YES	S3VEM
Copper	Target	43.6		mg/kg	43.6		1	YES	S3VEM
Iron	Target	17400		mg/kg	17400	*	1	YES	S3VEM
Lead	Target	165		mg/kg	165		1	YES	S3VEM
Magnesium	Target	3670		mg/kg	3670	*	1	YES	S3VEM
Manganese	Target	1170		mg/kg	1170	*	1	YES	S3VEM
Nickel	Target	23.1		mg/kg	23.1		1	YES	S3VEM
Potassium	Target	2810		mg/kg	2810		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.20	J	mg/kg	0.20	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	71.6	J	1	YES	S3VEM
Thallium	Target	0.59	J	mg/kg	0.59	J	1	YES	S3VEM
Vanadium	Target	17.8		mg/kg	17.8		1	YES	S3VEM
Zinc	Target	202		mg/kg	202		1	YES	S3VEM
Tin	Target	65.8		mg/kg	65.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S002	pH:	Sample Date: 09/21/2017	Sample Time: 09:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9800		mg/kg	9800		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.73	J*	1	YES	S3VEM
Arsenic	Target	5.1		mg/kg	5.1		1	YES	S3VEM
Barium	Target	111		mg/kg	111	*	1	YES	S3VEM
Beryllium	Target	0.69		mg/kg	0.69		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.33	J*	1	YES	S3VEM
Calcium	Target	34600		mg/kg	34600	*	1	YES	S3VEM
Chromium	Target	16.9		mg/kg	16.9	*	1	YES	S3VEM
Cobalt	Target	5.8		mg/kg	5.8	*	1	YES	S3VEM
Copper	Target	22.0		mg/kg	22.0		1	YES	S3VEM
Iron	Target	14800		mg/kg	14800	*	1	YES	S3VEM
Lead	Target	101		mg/kg	101		1	YES	S3VEM
Magnesium	Target	4200		mg/kg	4200	*	1	YES	S3VEM
Manganese	Target	1150		mg/kg	1150	*	1	YES	S3VEM
Nickel	Target	18.2		mg/kg	18.2		1	YES	S3VEM
Potassium	Target	2680		mg/kg	2680		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.17	J	mg/kg	0.17	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	68.1	J	1	YES	S3VEM
Thallium	Target	0.58	J	mg/kg	0.58	J	1	YES	S3VEM
Vanadium	Target	15.6		mg/kg	15.6		1	YES	S3VEM
Zinc	Target	112		mg/kg	112		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	4.1	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11200		mg/kg	11200		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	12.7		mg/kg	12.7		1	YES	S3VEM
Barium	Target	114		mg/kg	114	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.49	J*	1	YES	S3VEM
Calcium	Target	7610		mg/kg	7610	*	1	YES	S3VEM
Chromium	Target	29.5		mg/kg	29.5	*	1	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4	*	1	YES	S3VEM
Copper	Target	55.0		mg/kg	55.0		1	YES	S3VEM
Iron	Target	18200		mg/kg	18200	*	1	YES	S3VEM
Lead	Target	172		mg/kg	172		1	YES	S3VEM
Magnesium	Target	3120		mg/kg	3120	*	1	YES	S3VEM
Manganese	Target	1120		mg/kg	1120	*	1	YES	S3VEM
Nickel	Target	24.8		mg/kg	24.8		1	YES	S3VEM
Potassium	Target	2640		mg/kg	2640		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	53.2	J	1	YES	S3VEM
Thallium	Target	0.54	J	mg/kg	0.54	J	1	YES	S3VEM
Vanadium	Target	20.3		mg/kg	20.3		1	YES	S3VEM
Zinc	Target	205		mg/kg	205		1	YES	S3VEM
Tin	Target	9.6	J	mg/kg	9.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12000		mg/kg	12000		1	YES	S3VEM
Antimony	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	14.1		mg/kg	14.1		1	YES	S3VEM
Barium	Target	125		mg/kg	125	*	1	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1	YES	S3VEM
Cadmium	Target	0.57		mg/kg	0.57	*	1	YES	S3VEM
Calcium	Target	7600		mg/kg	7600	*	1	YES	S3VEM
Chromium	Target	56.5		mg/kg	56.5	*	1	YES	S3VEM
Cobalt	Target	8.1		mg/kg	8.1	*	1	YES	S3VEM
Copper	Target	75.7		mg/kg	75.7		1	YES	S3VEM
Iron	Target	19700		mg/kg	19700	*	1	YES	S3VEM
Lead	Target	197		mg/kg	197		1	YES	S3VEM
Magnesium	Target	3050		mg/kg	3050	*	1	YES	S3VEM
Manganese	Target	1200		mg/kg	1200	*	1	YES	S3VEM
Nickel	Target	30.7		mg/kg	30.7		1	YES	S3VEM
Potassium	Target	2690		mg/kg	2690		1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.32	J	mg/kg	0.32	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	58.9	J	1	YES	S3VEM
Thallium	Target	0.57	J	mg/kg	0.57	J	1	YES	S3VEM
Vanadium	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Zinc	Target	239		mg/kg	239		1	YES	S3VEM
Tin	Target	16.7		mg/kg	16.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12400		mg/kg	12400		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	12.1		mg/kg	12.1		1	YES	S3VEM
Barium	Target	99.0		mg/kg	99.0	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.43	J*	1	YES	S3VEM
Calcium	Target	7760	J	mg/kg	7760	*	1	YES	S3VEM
Chromium	Target	53.8	J	mg/kg	53.8	*	1	YES	S3VEM
Cobalt	Target	7.5	J	mg/kg	7.5	*	1	YES	S3VEM
Copper	Target	57.9		mg/kg	57.9		1	YES	S3VEM
Iron	Target	19000	J	mg/kg	19000	*	1	YES	S3VEM
Lead	Target	137		mg/kg	137		1	YES	S3VEM
Magnesium	Target	2850		mg/kg	2850	*	1	YES	S3VEM
Manganese	Target	1220	J	mg/kg	1220	*	1	YES	S3VEM
Nickel	Target	25.8		mg/kg	25.8		1	YES	S3VEM
Potassium	Target	2890		mg/kg	2890		1	YES	S3VEM
Selenium	Target	1.7	J-	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.046	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	56.4	J	1	YES	S3VEM
Thallium	Target	0.31	J	mg/kg	0.31	J	1	YES	S3VEM
Vanadium	Target	21.0		mg/kg	21.0		1	YES	S3VEM
Zinc	Target	168		mg/kg	168		1	YES	S3VEM
Tin	Target	18.2	J-	mg/kg	18.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F5A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	9.3		mg/kg	9.3	*	1	YES	S3VEM
Selenium	Spike	6.2		mg/kg	6.2	*	1	YES	S3VEM
Tin	Spike	31.6		mg/kg	31.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F5D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11400		mg/kg	11400		1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Arsenic	Target	12.0		mg/kg	12.0		1	YES	S3VEM
Barium	Target	96.7		mg/kg	96.7		1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.43	J	mg/kg	0.43	J	1	YES	S3VEM
Calcium	Target	7740		mg/kg	7740		1	YES	S3VEM
Chromium	Target	51.9		mg/kg	51.9		1	YES	S3VEM
Cobalt	Target	7.5		mg/kg	7.5		1	YES	S3VEM
Copper	Target	57.5		mg/kg	57.5		1	YES	S3VEM
Iron	Target	18700		mg/kg	18700		1	YES	S3VEM
Lead	Target	132		mg/kg	132		1	YES	S3VEM
Magnesium	Target	2750		mg/kg	2750		1	YES	S3VEM
Manganese	Target	1210		mg/kg	1210		1	YES	S3VEM
Nickel	Target	25.2		mg/kg	25.2		1	YES	S3VEM
Potassium	Target	2510		mg/kg	2510		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J	1	YES	S3VEM
Silver	Target	0.069	J	mg/kg	0.069	J	1	YES	S3VEM
Sodium	Target	52.3	J	mg/kg	52.3	J	1	YES	S3VEM
Thallium	Target	0.29	J	mg/kg	0.29	J	1	YES	S3VEM
Vanadium	Target	19.7		mg/kg	19.7		1	YES	S3VEM
Zinc	Target	167		mg/kg	167		1	YES	S3VEM
Tin	Target	16.0		mg/kg	16.0		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F5L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13200		mg/kg	13200		5	YES	S3VEM
Antimony	Target	1.2	J	mg/kg	1.2	J	5	YES	S3VEM
Arsenic	Target	11.6		mg/kg	11.6		5	YES	S3VEM
Barium	Target	112		mg/kg	112	*	5	YES	S3VEM
Beryllium	Target	0.85	J	mg/kg	0.85	J	5	YES	S3VEM
Cadmium	Target	0.51	J	mg/kg	0.51	J*	5	YES	S3VEM
Calcium	Target	9220		mg/kg	9220	*	5	YES	S3VEM
Chromium	Target	62.3		mg/kg	62.3	*	5	YES	S3VEM
Cobalt	Target	9.0	J	mg/kg	9.0	J*	5	YES	S3VEM
Copper	Target	59.3		mg/kg	59.3		5	YES	S3VEM
Iron	Target	22300		mg/kg	22300	*	5	YES	S3VEM
Lead	Target	134		mg/kg	134		5	YES	S3VEM
Magnesium	Target	3270		mg/kg	3270	*	5	YES	S3VEM
Manganese	Target	1440		mg/kg	1440	*	5	YES	S3VEM
Nickel	Target	25.1		mg/kg	25.1		5	YES	S3VEM
Potassium	Target	2940		mg/kg	2940		5	YES	S3VEM
Selenium	Target	17.5	U	mg/kg	17.5	U	5	YES	S3VEM
Silver	Target	5.0	U	mg/kg	5.0	U	5	YES	S3VEM
Sodium	Target	57.4	J	mg/kg	57.4	J	5	YES	S3VEM
Thallium	Target	0.55	J	mg/kg	0.55	J	5	YES	S3VEM
Vanadium	Target	23.0	J	mg/kg	23.0	J	5	YES	S3VEM
Zinc	Target	169		mg/kg	169		5	YES	S3VEM
Tin	Target	19.2		mg/kg	19.2	J	5	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F5S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	4.4	J	mg/kg	4.4	J	1	YES	S3VEM
Arsenic	Spike	20.2		mg/kg	20.2		1	YES	S3VEM
Barium	Spike	431		mg/kg	431		1	YES	S3VEM
Beryllium	Spike	10.7		mg/kg	10.7		1	YES	S3VEM
Cadmium	Spike	8.3		mg/kg	8.3		1	YES	S3VEM
Chromium	Spike	88.0		mg/kg	88.0		1	YES	S3VEM
Cobalt	Spike	87.3		mg/kg	87.3		1	YES	S3VEM
Copper	Spike	110		mg/kg	110		1	YES	S3VEM
Lead	Spike	148		mg/kg	148		1	YES	S3VEM
Manganese	Spike	1320		mg/kg	1320		1	YES	S3VEM
Nickel	Spike	129		mg/kg	129		1	YES	S3VEM
Selenium	Spike	15.6		mg/kg	15.6		1	YES	S3VEM
Silver	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Thallium	Spike	9.9		mg/kg	9.9		1	YES	S3VEM
Vanadium	Spike	98.6		mg/kg	98.6		1	YES	S3VEM
Zinc	Spike	274		mg/kg	274		1	YES	S3VEM
Tin	Spike	86.3		mg/kg	86.3		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8760		mg/kg	8760		1	YES	S3VEM
Antimony	Target	0.77	J	mg/kg	0.77	J*	1	YES	S3VEM
Arsenic	Target	6.3		mg/kg	6.3		1	YES	S3VEM
Barium	Target	58.5		mg/kg	58.5	*	1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.24	J*	1	YES	S3VEM
Calcium	Target	10700		mg/kg	10700	*	1	YES	S3VEM
Chromium	Target	15.8		mg/kg	15.8	*	1	YES	S3VEM
Cobalt	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM
Copper	Target	25.6		mg/kg	25.6		1	YES	S3VEM
Iron	Target	14600		mg/kg	14600	*	1	YES	S3VEM
Lead	Target	51.8		mg/kg	51.8		1	YES	S3VEM
Magnesium	Target	2480		mg/kg	2480	*	1	YES	S3VEM
Manganese	Target	1060		mg/kg	1060	*	1	YES	S3VEM
Nickel	Target	16.5		mg/kg	16.5		1	YES	S3VEM
Potassium	Target	2280		mg/kg	2280		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.14	J	mg/kg	0.14	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	44.9	J	1	YES	S3VEM
Thallium	Target	0.59	J	mg/kg	0.59	J	1	YES	S3VEM
Vanadium	Target	15.1		mg/kg	15.1		1	YES	S3VEM
Zinc	Target	80.2		mg/kg	80.2		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.4	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9930		mg/kg	9930		1	YES	S3VEM
Antimony	Target	0.86	J	mg/kg	0.86	J*	1	YES	S3VEM
Arsenic	Target	8.4		mg/kg	8.4		1	YES	S3VEM
Barium	Target	84.1		mg/kg	84.1	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.22	J*	1	YES	S3VEM
Calcium	Target	28400		mg/kg	28400	*	1	YES	S3VEM
Chromium	Target	15.9		mg/kg	15.9	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	32.1		mg/kg	32.1		1	YES	S3VEM
Iron	Target	17500		mg/kg	17500	*	1	YES	S3VEM
Lead	Target	57.0		mg/kg	57.0		1	YES	S3VEM
Magnesium	Target	5080		mg/kg	5080	*	1	YES	S3VEM
Manganese	Target	1790		mg/kg	1790	D*	2	YES	S3VEM
Nickel	Target	19.5		mg/kg	19.5		1	YES	S3VEM
Potassium	Target	2540		mg/kg	2540		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.23	J	mg/kg	0.23	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	59.7	J	1	YES	S3VEM
Thallium	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Vanadium	Target	17.3		mg/kg	17.3		1	YES	S3VEM
Zinc	Target	82.8		mg/kg	82.8		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.2	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: MBE0F8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S004	pH:	Sample Date: 09/21/2017	Sample Time: 10:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11900		mg/kg	11900		1	YES	S3VEM
Antimony	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	16.7		mg/kg	16.7		1	YES	S3VEM
Barium	Target	109		mg/kg	109	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.44	J*	1	YES	S3VEM
Calcium	Target	8880		mg/kg	8880	*	1	YES	S3VEM
Chromium	Target	18.1		mg/kg	18.1	*	1	YES	S3VEM
Cobalt	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Copper	Target	43.0		mg/kg	43.0		1	YES	S3VEM
Iron	Target	18600		mg/kg	18600	*	1	YES	S3VEM
Lead	Target	114		mg/kg	114		1	YES	S3VEM
Magnesium	Target	3230		mg/kg	3230	*	1	YES	S3VEM
Manganese	Target	1570		mg/kg	1570	*	1	YES	S3VEM
Nickel	Target	25.7		mg/kg	25.7		1	YES	S3VEM
Potassium	Target	2660		mg/kg	2660		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	0.34	J	mg/kg	0.34	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	55.8	J	1	YES	S3VEM
Thallium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Vanadium	Target	21.3		mg/kg	21.3		1	YES	S3VEM
Zinc	Target	149		mg/kg	149		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	4.9	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: PBS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	3.3	J	mg/kg	3.3	J	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Beryllium	Target	0.0081	J	mg/kg	0.0081	J	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Calcium	Target	4.4	J	mg/kg	4.4	J	1	YES	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Iron	Target	2.1	J	mg/kg	2.1	J	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target	0.10	J	mg/kg	0.10	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	3.0	J	mg/kg	3.0	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Tin	Target	1.0		mg/kg	1.0	J	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON

Sample Number: PBS02	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.011	J	1	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target			mg/kg	-0.054	J	1	YES	S3VEM
Iron	Target	10.0	U	mg/kg	10.0	U	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	4.2	J	mg/kg	4.2	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Thallium	Target			mg/kg	-0.18	J	1	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Zinc	Target	0.052	J	mg/kg	0.052	J	1	YES	S3VEM
Tin	Target	1.0		mg/kg	1.0	J	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0B7

Lab Code: BON



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 20 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE0C8

Laboratory: Bonner Analytical Testing Co.

Sampling dates: 9/21/2017

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN 010-RICO 0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

Samples MBE0D1, MBE0J3 and MBE0F5 have analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentrations of soil **Aluminum, Iron, Lead, Manganese, Thallium, Arsenic and Cobalt** exceeded the project action levels for one or more samples.

Reviewer Name(s): Jianwei Huang

Approver's Signature:

Date: 10/19/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

The flowing samples are associated with the calibration which does not have at least one standard at or below the CRQL. Detected analytes with the results less than 2x CRQL are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0D1, MBE0D2, MBE0D7, MBE0F9, MBE0G0, MBE0G1, MBE0G2, MBE0G7

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.



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No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results less than or equal to CRQLs. The associated CCB analyte results are less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBE0C9, MBE0D1, MBE0G5, MBE0D7, MBE0D5, MBE0G1, MBE0F9, MBE0G2, MBE0G6, MBE0G3, MBE0G7, MBE0D6, MBE0D2, MBE0J3, MBE0G0, MBE0C8, MBE0G4, MBE0D3, MBE0D0, MBE0D4

Cadmium MBE0G1, MBE0D2, MBE0G0, MBE0D0, MBE0F9, MBE0J3, MBE0G6, MBE0D1, MBE0G2, MBE0G7

Sodium MBE0D5, MBE0G6, MBE0D7, MBE0F9, MBE0D4, MBE0D0, MBE0G3, MBE0D6, MBE0G0, MBE0C8, MBE0G2, MBE0D1, MBE0G7, MBE0C9, MBE0D3, MBE0D2, MBE0G1, MBE0G4, MBE0G5, MBE0J3

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated ICB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBE0G7, MBE0G3, MBE0D7, MBE0G0, MBE0G2, MBE0J3, MBE0D6, MBE0C8, MBE0G5, MBE0G1, MBE0D0, MBE0G6, MBE0D5, MBE0D4, MBE0C9, MBE0G4, MBE0D3, MBE0D2, MBE0F9

Cadmium MBE0G0, MBE0J3, MBE0D0, MBE0G6, MBE0G7, MBE0F9, MBE0G2, MBE0G1, MBE0D2

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated PB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Tin MBE0G2, MBE0D2, MBE0G1, MBE0G7, MBE0G0

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq MDL$ are observed for analytes that are not present in the ICS solution,



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is \geq MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is \geq 4x the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample is associated with Matrix Spike sample that has spike analyte %R within 30 - 74% and the post digestion spike is not required. Detects are qualified as J-. Non-detects are qualified as UJ.

Silver MBE0D1

The following sample is associated with a Matrix Spike with %R less than 30% and a Post-digestion spike with %R less than 75%. Detects are qualified as J-. Non-detects are qualified as R.

Antimony MBE0D1

The following sample is associated with Matrix Spike sample that has spike analyte %R within 30 - 74% and Post-digestion spike analyte %R less than 75%. Detects are qualified as J-. Non-detects are qualified as UJ.

Cadmium, Cobalt, Selenium and Vanadium MBE0D1

The following Matrix Spike sample has percent recoveries in the range of 30-74% and post-digestion spike sample has percent recoveries greater than or equal to 75%. Detected analytes are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0D1

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.



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REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

7. FIELD DUPLICATE (MBE0D1/MBE0J6, MBE0F5/MBE0J3)

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of 2x the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

The following Duplicate and original soil sample results are greater than or equal to 5x the CRQL and RPD is greater than 50%. Detected analytes are qualified J.

Chromium MBE0J3, MBE0F5 (In SDG MBE0B7).

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is $>$ 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following soil/sediment sample is associated with Serial Dilution (SD) sample that has analyte percent different %D greater than 15% but less than 120%. The original sample analyte concentrations are greater than 50xMDLs. Detects are qualified as estimated J. Non-detects are not qualified.

Cadmium, Cobalt, Copper, Iron and Lead MBE0D1

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	40.8		mg/kg	40.8		1	YES	S3VEM
Antimony	Spike	12.1		mg/kg	12.1		1	YES	S3VEM
Arsenic	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Barium	Spike	41.4		mg/kg	41.4		1	YES	S3VEM
Beryllium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Spike	1070		mg/kg	1070		1	YES	S3VEM
Chromium	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Cobalt	Spike	10.5		mg/kg	10.5		1	YES	S3VEM
Copper	Spike	5.2		mg/kg	5.2		1	YES	S3VEM
Iron	Spike	20.2		mg/kg	20.2		1	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Magnesium	Spike	1030		mg/kg	1030		1	YES	S3VEM
Manganese	Spike	3.2		mg/kg	3.2		1	YES	S3VEM
Nickel	Spike	8.4		mg/kg	8.4		1	YES	S3VEM
Potassium	Spike	1010		mg/kg	1010		1	YES	S3VEM
Selenium	Spike	6.8		mg/kg	6.8		1	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Sodium	Spike	1020		mg/kg	1020		1	YES	S3VEM
Thallium	Spike	5.0		mg/kg	5.0		1	YES	S3VEM
Vanadium	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Zinc	Spike	12.5		mg/kg	12.5		1	YES	S3VEM
Tin	Spike	10.9		mg/kg	10.9		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: LCS02	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	39.4		mg/kg	39.4		1	YES	S3VEM
Antimony	Spike	11.9		mg/kg	11.9		1	YES	S3VEM
Arsenic	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Barium	Spike	41.0		mg/kg	41.0		1	YES	S3VEM
Beryllium	Spike	0.97		mg/kg	0.97		1	YES	S3VEM
Cadmium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Spike	1050		mg/kg	1050		1	YES	S3VEM
Chromium	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Cobalt	Spike	10.4		mg/kg	10.4		1	YES	S3VEM
Copper	Spike	5.1		mg/kg	5.1		1	YES	S3VEM
Iron	Spike	20.9		mg/kg	20.9		1	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Magnesium	Spike	1020		mg/kg	1020		1	YES	S3VEM
Manganese	Spike	3.1		mg/kg	3.1		1	YES	S3VEM
Nickel	Spike	8.4		mg/kg	8.4		1	YES	S3VEM
Potassium	Spike	986		mg/kg	986		1	YES	S3VEM
Selenium	Spike	6.5		mg/kg	6.5		1	YES	S3VEM
Silver	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Sodium	Spike	1010		mg/kg	1010		1	YES	S3VEM
Thallium	Spike	4.8		mg/kg	4.8		1	YES	S3VEM
Vanadium	Spike	10.1		mg/kg	10.1		1	YES	S3VEM
Zinc	Spike	12.4		mg/kg	12.4		1	YES	S3VEM
Tin	Spike	11.2		mg/kg	11.2		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0C8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9740		mg/kg	9740		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	10.7		mg/kg	10.7	*	1	YES	S3VEM
Barium	Target	142		mg/kg	142	*	1	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1	YES	S3VEM
Cadmium	Target	0.79		mg/kg	0.79	*	1	YES	S3VEM
Calcium	Target	31200		mg/kg	31200		1	YES	S3VEM
Chromium	Target	22.1		mg/kg	22.1	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	59.7		mg/kg	59.7	*	1	YES	S3VEM
Iron	Target	18100		mg/kg	18100	*	1	YES	S3VEM
Lead	Target	367		mg/kg	367	*	1	YES	S3VEM
Magnesium	Target	9870		mg/kg	9870		1	YES	S3VEM
Manganese	Target	975		mg/kg	975		1	YES	S3VEM
Nickel	Target	25.4		mg/kg	25.4		1	YES	S3VEM
Potassium	Target	2070		mg/kg	2070		1	YES	S3VEM
Selenium	Target	1.9	J	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	152	J	1	YES	S3VEM
Thallium	Target	0.34	J	mg/kg	0.34	J	1	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Zinc	Target	429		mg/kg	429	*	1	YES	S3VEM
Tin	Target	12.0		mg/kg	12.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0C9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11300		mg/kg	11300		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.5	J*	1	YES	S3VEM
Arsenic	Target	12.7		mg/kg	12.7	*	1	YES	S3VEM
Barium	Target	255		mg/kg	255	*	1	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	33100		mg/kg	33100		1	YES	S3VEM
Chromium	Target	56.4		mg/kg	56.4	*	1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	95.9		mg/kg	95.9	*	1	YES	S3VEM
Iron	Target	18200		mg/kg	18200	*	1	YES	S3VEM
Lead	Target	572		mg/kg	572	*	1	YES	S3VEM
Magnesium	Target	8960		mg/kg	8960		1	YES	S3VEM
Manganese	Target	919		mg/kg	919		1	YES	S3VEM
Nickel	Target	29.6		mg/kg	29.6		1	YES	S3VEM
Potassium	Target	1830		mg/kg	1830		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.23	J	mg/kg	0.23	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	321	J	1	YES	S3VEM
Thallium	Target	0.28	J	mg/kg	0.28	J	1	YES	S3VEM
Vanadium	Target	22.3		mg/kg	22.3	*	1	YES	S3VEM
Zinc	Target	940		mg/kg	940	*	1	YES	S3VEM
Tin	Target	16.6		mg/kg	16.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12900		mg/kg	12900		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	13.8		mg/kg	13.8	*	1	YES	S3VEM
Barium	Target	190		mg/kg	190	*	1	YES	S3VEM
Beryllium	Target	0.93		mg/kg	0.93		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.49	J*	1	YES	S3VEM
Calcium	Target	29400		mg/kg	29400		1	YES	S3VEM
Chromium	Target	20.5		mg/kg	20.5	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	98.4		mg/kg	98.4	*	1	YES	S3VEM
Iron	Target	21500		mg/kg	21500	*	1	YES	S3VEM
Lead	Target	334		mg/kg	334	*	1	YES	S3VEM
Magnesium	Target	4180		mg/kg	4180		1	YES	S3VEM
Manganese	Target	1540		mg/kg	1540		1	YES	S3VEM
Nickel	Target	22.6		mg/kg	22.6		1	YES	S3VEM
Potassium	Target	2660		mg/kg	2660		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	171	J	1	YES	S3VEM
Thallium	Target	0.96	J	mg/kg	0.96	J	1	YES	S3VEM
Vanadium	Target	22.7		mg/kg	22.7	*	1	YES	S3VEM
Zinc	Target	366		mg/kg	366	*	1	YES	S3VEM
Tin	Target	15.2		mg/kg	15.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	16100		mg/kg	16100		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	11.3		mg/kg	11.3	*	1	YES	S3VEM
Barium	Target	131		mg/kg	131	*	1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.44	J*	1	YES	S3VEM
Calcium	Target	16000		mg/kg	16000		1	YES	S3VEM
Chromium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Cobalt	Target	8.5	J-	mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	43.1	J	mg/kg	43.1	*	1	YES	S3VEM
Iron	Target	23100	J	mg/kg	23100	*	1	YES	S3VEM
Lead	Target	130	J	mg/kg	130	*	1	YES	S3VEM
Magnesium	Target	3740		mg/kg	3740		1	YES	S3VEM
Manganese	Target	2250		mg/kg	2250	D	2	YES	S3VEM
Nickel	Target	22.9		mg/kg	22.9		1	YES	S3VEM
Potassium	Target	3150		mg/kg	3150		1	YES	S3VEM
Selenium	Target	1.5	J-	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	1.0	UJ	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	173	J	1	YES	S3VEM
Thallium	Target	0.78	J	mg/kg	0.78	J	1	YES	S3VEM
Vanadium	Target	25.8	J-	mg/kg	25.8	*	1	YES	S3VEM
Zinc	Target	206		mg/kg	206	*	1	YES	S3VEM
Tin	Target	6.2	J	mg/kg	6.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D1A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	10.0		mg/kg	10.0	*	1	YES	S3VEM
Cadmium	Spike	1.2		mg/kg	1.2	*	1	YES	S3VEM
Cobalt	Spike	20.6		mg/kg	20.6	*	1	YES	S3VEM
Selenium	Spike	6.2		mg/kg	6.2	*	1	YES	S3VEM
Vanadium	Spike	59.7		mg/kg	59.7	*	1	YES	S3VEM
Tin	Spike	19.5		mg/kg	19.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D1D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	15000		mg/kg	15000		1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Arsenic	Target	10.4		mg/kg	10.4		1	YES	S3VEM
Barium	Target	125		mg/kg	125		1	YES	S3VEM
Beryllium	Target	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Target	0.43	J	mg/kg	0.43	J	1	YES	S3VEM
Calcium	Target	13600		mg/kg	13600		1	YES	S3VEM
Chromium	Target	18.2		mg/kg	18.2		1	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4		1	YES	S3VEM
Copper	Target	35.6		mg/kg	35.6		1	YES	S3VEM
Iron	Target	21900		mg/kg	21900		1	YES	S3VEM
Lead	Target	106		mg/kg	106		1	YES	S3VEM
Magnesium	Target	3250		mg/kg	3250		1	YES	S3VEM
Manganese	Target	2230		mg/kg	2230	D	2	YES	S3VEM
Nickel	Target	21.0		mg/kg	21.0		1	YES	S3VEM
Potassium	Target	2650		mg/kg	2650		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	151	J	mg/kg	151	J	1	YES	S3VEM
Thallium	Target	0.90	J	mg/kg	0.90	J	1	YES	S3VEM
Vanadium	Target	24.2		mg/kg	24.2		1	YES	S3VEM
Zinc	Target	180		mg/kg	180		1	YES	S3VEM
Tin	Target	5.1		mg/kg	5.1		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D1L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	17700		mg/kg	17700		5	YES	S3VEM
Antimony	Target	30.0	U	mg/kg	30.0	U	5	YES	S3VEM
Arsenic	Target	9.8		mg/kg	9.8	*	5	YES	S3VEM
Barium	Target	148		mg/kg	148	*	5	YES	S3VEM
Beryllium	Target	1.0	J	mg/kg	1.0	J	5	YES	S3VEM
Cadmium	Target	0.53	J	mg/kg	0.53	J*	5	YES	S3VEM
Calcium	Target	16700		mg/kg	16700		5	YES	S3VEM
Chromium	Target	22.3		mg/kg	22.3	*	5	YES	S3VEM
Cobalt	Target	10.4	J	mg/kg	10.4	J*	5	YES	S3VEM
Copper	Target	35.9		mg/kg	35.9	*	5	YES	S3VEM
Iron	Target	26900		mg/kg	26900	*	5	YES	S3VEM
Lead	Target	105		mg/kg	105	*	5	YES	S3VEM
Magnesium	Target	4000		mg/kg	4000		5	YES	S3VEM
Manganese	Target	2370		mg/kg	2370	D	10	YES	S3VEM
Nickel	Target	20.6		mg/kg	20.6		5	YES	S3VEM
Potassium	Target	3150		mg/kg	3150		5	YES	S3VEM
Selenium	Target	1.9	J	mg/kg	1.9	J	5	YES	S3VEM
Silver	Target	5.0	U	mg/kg	5.0	U	5	YES	S3VEM
Sodium	Target	178	J	mg/kg	178	J	5	YES	S3VEM
Thallium	Target	1.1	J	mg/kg	1.1	J	5	YES	S3VEM
Vanadium	Target	29.0		mg/kg	29.0	*	5	YES	S3VEM
Zinc	Target	179		mg/kg	179	*	5	YES	S3VEM
Tin	Target	6.4		mg/kg	6.4	J	5	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D1S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	6.1		mg/kg	6.1		1	YES	S3VEM
Arsenic	Spike	18.6		mg/kg	18.6		1	YES	S3VEM
Barium	Spike	446		mg/kg	446		1	YES	S3VEM
Beryllium	Spike	10.7		mg/kg	10.7		1	YES	S3VEM
Cadmium	Spike	7.8		mg/kg	7.8		1	YES	S3VEM
Chromium	Spike	50.3		mg/kg	50.3		1	YES	S3VEM
Cobalt	Spike	83.0		mg/kg	83.0		1	YES	S3VEM
Copper	Spike	91.4		mg/kg	91.4		1	YES	S3VEM
Lead	Spike	130		mg/kg	130		1	YES	S3VEM
Manganese	Spike	2370		mg/kg	2370	D	2	YES	S3VEM
Nickel	Spike	124		mg/kg	124		1	YES	S3VEM
Selenium	Spike	15.2		mg/kg	15.2		1	YES	S3VEM
Silver	Spike	7.4		mg/kg	7.4		1	YES	S3VEM
Thallium	Spike	10.2		mg/kg	10.2		1	YES	S3VEM
Vanadium	Spike	98.9		mg/kg	98.9		1	YES	S3VEM
Zinc	Spike	300		mg/kg	300		1	YES	S3VEM
Tin	Spike	70.0		mg/kg	70.0		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14700		mg/kg	14700		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.3	J*	1	YES	S3VEM
Arsenic	Target	12.0		mg/kg	12.0	*	1	YES	S3VEM
Barium	Target	113		mg/kg	113	*	1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.38	J*	1	YES	S3VEM
Calcium	Target	13200		mg/kg	13200		1	YES	S3VEM
Chromium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Cobalt	Target	8.8		mg/kg	8.8	*	1	YES	S3VEM
Copper	Target	35.2		mg/kg	35.2	*	1	YES	S3VEM
Iron	Target	24100		mg/kg	24100	*	1	YES	S3VEM
Lead	Target	112		mg/kg	112	*	1	YES	S3VEM
Magnesium	Target	4170		mg/kg	4170		1	YES	S3VEM
Manganese	Target	2190		mg/kg	2190	D	2	YES	S3VEM
Nickel	Target	23.8		mg/kg	23.8		1	YES	S3VEM
Potassium	Target	2330		mg/kg	2330		1	YES	S3VEM
Selenium	Target	2.5	J	mg/kg	2.5	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	166	J	1	YES	S3VEM
Thallium	Target	1.4	J	mg/kg	1.4	J	1	YES	S3VEM
Vanadium	Target	24.6		mg/kg	24.6	*	1	YES	S3VEM
Zinc	Target	218		mg/kg	218	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	3.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S002	pH:	Sample Date: 09/21/2017	Sample Time: 16:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11900		mg/kg	11900		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.5	J*	1	YES	S3VEM
Arsenic	Target	13.9		mg/kg	13.9	*	1	YES	S3VEM
Barium	Target	254		mg/kg	254	*	1	YES	S3VEM
Beryllium	Target	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	22300		mg/kg	22300		1	YES	S3VEM
Chromium	Target	24.8		mg/kg	24.8	*	1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	156		mg/kg	156	*	1	YES	S3VEM
Iron	Target	20400		mg/kg	20400	*	1	YES	S3VEM
Lead	Target	608		mg/kg	608	*	1	YES	S3VEM
Magnesium	Target	5380		mg/kg	5380		1	YES	S3VEM
Manganese	Target	1060		mg/kg	1060		1	YES	S3VEM
Nickel	Target	28.7		mg/kg	28.7		1	YES	S3VEM
Potassium	Target	2440		mg/kg	2440		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	0.21	J	mg/kg	0.21	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	98.6	J	1	YES	S3VEM
Thallium	Target	0.42	J	mg/kg	0.42	J	1	YES	S3VEM
Vanadium	Target	23.3		mg/kg	23.3	*	1	YES	S3VEM
Zinc	Target	495		mg/kg	495	*	1	YES	S3VEM
Tin	Target	18.5		mg/kg	18.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S002	pH:	Sample Date: 09/21/2017	Sample Time: 16:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.7	J*	1	YES	S3VEM
Arsenic	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Barium	Target	297		mg/kg	297	*	1	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	21000		mg/kg	21000		1	YES	S3VEM
Chromium	Target	26.5		mg/kg	26.5	*	1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	200		mg/kg	200	*	1	YES	S3VEM
Iron	Target	21400		mg/kg	21400	*	1	YES	S3VEM
Lead	Target	705		mg/kg	705	*	1	YES	S3VEM
Magnesium	Target	4890		mg/kg	4890		1	YES	S3VEM
Manganese	Target	1090		mg/kg	1090		1	YES	S3VEM
Nickel	Target	27.8		mg/kg	27.8		1	YES	S3VEM
Potassium	Target	2310		mg/kg	2310		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	0.66	J	mg/kg	0.66	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	116	J	1	YES	S3VEM
Thallium	Target	0.42	J	mg/kg	0.42	J	1	YES	S3VEM
Vanadium	Target	25.6		mg/kg	25.6	*	1	YES	S3VEM
Zinc	Target	620		mg/kg	620	*	1	YES	S3VEM
Tin	Target	23.0		mg/kg	23.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S002	pH:	Sample Date: 09/21/2017	Sample Time: 16:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12900		mg/kg	12900		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.8	J*	1	YES	S3VEM
Arsenic	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Barium	Target	271		mg/kg	271	*	1	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1	YES	S3VEM
Cadmium	Target	0.78		mg/kg	0.78	*	1	YES	S3VEM
Calcium	Target	20600		mg/kg	20600		1	YES	S3VEM
Chromium	Target	25.7		mg/kg	25.7	*	1	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Copper	Target	268		mg/kg	268	*	1	YES	S3VEM
Iron	Target	21300		mg/kg	21300	*	1	YES	S3VEM
Lead	Target	583		mg/kg	583	*	1	YES	S3VEM
Magnesium	Target	4400		mg/kg	4400		1	YES	S3VEM
Manganese	Target	1250		mg/kg	1250		1	YES	S3VEM
Nickel	Target	24.3		mg/kg	24.3		1	YES	S3VEM
Potassium	Target	2330		mg/kg	2330		1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.37	J	mg/kg	0.37	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	113	J	1	YES	S3VEM
Thallium	Target	0.53	J	mg/kg	0.53	J	1	YES	S3VEM
Vanadium	Target	24.8		mg/kg	24.8	*	1	YES	S3VEM
Zinc	Target	505		mg/kg	505	*	1	YES	S3VEM
Tin	Target	20.0		mg/kg	20.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S002	pH:	Sample Date: 09/21/2017	Sample Time: 16:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	12.2		mg/kg	12.2	*	1	YES	S3VEM
Barium	Target	187		mg/kg	187	*	1	YES	S3VEM
Beryllium	Target	0.95		mg/kg	0.95		1	YES	S3VEM
Cadmium	Target	0.60		mg/kg	0.60	*	1	YES	S3VEM
Calcium	Target	38600		mg/kg	38600		1	YES	S3VEM
Chromium	Target	20.1		mg/kg	20.1	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	159		mg/kg	159	*	1	YES	S3VEM
Iron	Target	18700		mg/kg	18700	*	1	YES	S3VEM
Lead	Target	299		mg/kg	299	*	1	YES	S3VEM
Magnesium	Target	6590		mg/kg	6590		1	YES	S3VEM
Manganese	Target	1260		mg/kg	1260		1	YES	S3VEM
Nickel	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Potassium	Target	2460		mg/kg	2460		1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	91.8	J	1	YES	S3VEM
Thallium	Target	0.67	J	mg/kg	0.67	J	1	YES	S3VEM
Vanadium	Target	21.1		mg/kg	21.1	*	1	YES	S3VEM
Zinc	Target	312		mg/kg	312	*	1	YES	S3VEM
Tin	Target	12.5		mg/kg	12.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0D7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S002	pH:	Sample Date: 09/21/2017	Sample Time: 16:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12400		mg/kg	12400		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	10.1		mg/kg	10.1	*	1	YES	S3VEM
Barium	Target	194		mg/kg	194	*	1	YES	S3VEM
Beryllium	Target	0.92		mg/kg	0.92		1	YES	S3VEM
Cadmium	Target	0.60		mg/kg	0.60	*	1	YES	S3VEM
Calcium	Target	43400		mg/kg	43400	D	2	YES	S3VEM
Chromium	Target	19.6		mg/kg	19.6	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	76.6		mg/kg	76.6	*	1	YES	S3VEM
Iron	Target	18400		mg/kg	18400	*	1	YES	S3VEM
Lead	Target	227		mg/kg	227	*	1	YES	S3VEM
Magnesium	Target	5720		mg/kg	5720		1	YES	S3VEM
Manganese	Target	1770		mg/kg	1770	D	2	YES	S3VEM
Nickel	Target	21.2		mg/kg	21.2		1	YES	S3VEM
Potassium	Target	2390		mg/kg	2390		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.11	J	mg/kg	0.11	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	74.7	J	1	YES	S3VEM
Thallium	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Vanadium	Target	20.1		mg/kg	20.1	*	1	YES	S3VEM
Zinc	Target	229		mg/kg	229	*	1	YES	S3VEM
Tin	Target	7.9	J	mg/kg	7.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0F9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S004	pH:	Sample Date: 09/21/2017	Sample Time: 10:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12900		mg/kg	12900		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.9	J*	1	YES	S3VEM
Arsenic	Target	20.8		mg/kg	20.8	*	1	YES	S3VEM
Barium	Target	127		mg/kg	127	*	1	YES	S3VEM
Beryllium	Target	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.49	J*	1	YES	S3VEM
Calcium	Target	8140		mg/kg	8140		1	YES	S3VEM
Chromium	Target	19.4		mg/kg	19.4	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	46.5		mg/kg	46.5	*	1	YES	S3VEM
Iron	Target	20300		mg/kg	20300	*	1	YES	S3VEM
Lead	Target	120		mg/kg	120	*	1	YES	S3VEM
Magnesium	Target	3090		mg/kg	3090		1	YES	S3VEM
Manganese	Target	1900		mg/kg	1900	D	2	YES	S3VEM
Nickel	Target	26.4		mg/kg	26.4		1	YES	S3VEM
Potassium	Target	2590		mg/kg	2590		1	YES	S3VEM
Selenium	Target	2.5	J	mg/kg	2.5	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	57.7	J	1	YES	S3VEM
Thallium	Target	1.3	J	mg/kg	1.3	J	1	YES	S3VEM
Vanadium	Target	23.3		mg/kg	23.3	*	1	YES	S3VEM
Zinc	Target	158		mg/kg	158	*	1	YES	S3VEM
Tin	Target	5.6	J	mg/kg	5.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S004	pH:	Sample Date: 09/21/2017	Sample Time: 10:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12200		mg/kg	12200		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	2.7	J*	1	YES	S3VEM
Arsenic	Target	14.8		mg/kg	14.8	*	1	YES	S3VEM
Barium	Target	83.4		mg/kg	83.4	*	1	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.32	J*	1	YES	S3VEM
Calcium	Target	8980		mg/kg	8980		1	YES	S3VEM
Chromium	Target	17.3		mg/kg	17.3	*	1	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8	*	1	YES	S3VEM
Copper	Target	34.0		mg/kg	34.0	*	1	YES	S3VEM
Iron	Target	19800		mg/kg	19800	*	1	YES	S3VEM
Lead	Target	63.3		mg/kg	63.3	*	1	YES	S3VEM
Magnesium	Target	3270		mg/kg	3270		1	YES	S3VEM
Manganese	Target	1520		mg/kg	1520		1	YES	S3VEM
Nickel	Target	22.5		mg/kg	22.5		1	YES	S3VEM
Potassium	Target	2090		mg/kg	2090		1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	47.4	J	1	YES	S3VEM
Thallium	Target	0.89	J	mg/kg	0.89	J	1	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Zinc	Target	107		mg/kg	107	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	2.7	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S004	pH:	Sample Date: 09/21/2017	Sample Time: 10:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12000		mg/kg	12000		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.9	J*	1	YES	S3VEM
Arsenic	Target	13.2		mg/kg	13.2	*	1	YES	S3VEM
Barium	Target	75.2		mg/kg	75.2	*	1	YES	S3VEM
Beryllium	Target	0.81		mg/kg	0.81		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.27	J*	1	YES	S3VEM
Calcium	Target	13600		mg/kg	13600		1	YES	S3VEM
Chromium	Target	17.8		mg/kg	17.8	*	1	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8	*	1	YES	S3VEM
Copper	Target	32.8		mg/kg	32.8	*	1	YES	S3VEM
Iron	Target	19600		mg/kg	19600	*	1	YES	S3VEM
Lead	Target	59.9		mg/kg	59.9	*	1	YES	S3VEM
Magnesium	Target	4730		mg/kg	4730		1	YES	S3VEM
Manganese	Target	1510		mg/kg	1510		1	YES	S3VEM
Nickel	Target	23.2		mg/kg	23.2		1	YES	S3VEM
Potassium	Target	2490		mg/kg	2490		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	52.9	J	1	YES	S3VEM
Thallium	Target	0.89	J	mg/kg	0.89	J	1	YES	S3VEM
Vanadium	Target	19.6		mg/kg	19.6	*	1	YES	S3VEM
Zinc	Target	95.3		mg/kg	95.3	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	2.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S004	pH:	Sample Date: 09/21/2017	Sample Time: 10:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11600		mg/kg	11600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.3	J*	1	YES	S3VEM
Arsenic	Target	10.7		mg/kg	10.7	*	1	YES	S3VEM
Barium	Target	66.6		mg/kg	66.6	*	1	YES	S3VEM
Beryllium	Target	0.80		mg/kg	0.80		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.26	J*	1	YES	S3VEM
Calcium	Target	12000		mg/kg	12000		1	YES	S3VEM
Chromium	Target	15.5		mg/kg	15.5	*	1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	30.2		mg/kg	30.2	*	1	YES	S3VEM
Iron	Target	18200		mg/kg	18200	*	1	YES	S3VEM
Lead	Target	43.6		mg/kg	43.6	*	1	YES	S3VEM
Magnesium	Target	4590		mg/kg	4590		1	YES	S3VEM
Manganese	Target	1530		mg/kg	1530		1	YES	S3VEM
Nickel	Target	21.7		mg/kg	21.7		1	YES	S3VEM
Potassium	Target	2520		mg/kg	2520		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	48.7	J	1	YES	S3VEM
Thallium	Target	0.90	J	mg/kg	0.90	J	1	YES	S3VEM
Vanadium	Target	18.2		mg/kg	18.2	*	1	YES	S3VEM
Zinc	Target	84.1		mg/kg	84.1	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	2.2	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S005	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9770		mg/kg	9770	J*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	5.1	*	1	YES	S3VEM
Arsenic	Target	14.3		mg/kg	14.3	*	1	YES	S3VEM
Barium	Target	198		mg/kg	198	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	2.1		mg/kg	2.1	*	1	YES	S3VEM
Calcium	Target	24700		mg/kg	24700		1	YES	S3VEM
Chromium	Target	70.4		mg/kg	70.4	*	1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	101		mg/kg	101	*	1	YES	S3VEM
Iron	Target	21200		mg/kg	21200	*	1	YES	S3VEM
Lead	Target	457		mg/kg	457	*	1	YES	S3VEM
Magnesium	Target	10600		mg/kg	10600		1	YES	S3VEM
Manganese	Target	971		mg/kg	971		1	YES	S3VEM
Nickel	Target	39.5		mg/kg	39.5		1	YES	S3VEM
Potassium	Target	2030		mg/kg	2030		1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.060	J	mg/kg	0.060	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	78.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.6		mg/kg	21.6	*	1	YES	S3VEM
Zinc	Target	510		mg/kg	510	*	1	YES	S3VEM
Tin	Target	23.8		mg/kg	23.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S005	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10200		mg/kg	10200		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	4.8	J*	1	YES	S3VEM
Arsenic	Target	16.0		mg/kg	16.0	*	1	YES	S3VEM
Barium	Target	195		mg/kg	195	*	1	YES	S3VEM
Beryllium	Target	0.92		mg/kg	0.92		1	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1	YES	S3VEM
Calcium	Target	15500		mg/kg	15500		1	YES	S3VEM
Chromium	Target	78.3		mg/kg	78.3	*	1	YES	S3VEM
Cobalt	Target	8.7		mg/kg	8.7	*	1	YES	S3VEM
Copper	Target	108		mg/kg	108	*	1	YES	S3VEM
Iron	Target	21600		mg/kg	21600	*	1	YES	S3VEM
Lead	Target	390		mg/kg	390	*	1	YES	S3VEM
Magnesium	Target	5000		mg/kg	5000		1	YES	S3VEM
Manganese	Target	953		mg/kg	953		1	YES	S3VEM
Nickel	Target	38.2		mg/kg	38.2		1	YES	S3VEM
Potassium	Target	1940		mg/kg	1940		1	YES	S3VEM
Selenium	Target	2.3	J	mg/kg	2.3	J*	1	YES	S3VEM
Silver	Target	0.083	J	mg/kg	0.083	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	87.0	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.8		mg/kg	22.8	*	1	YES	S3VEM
Zinc	Target	448		mg/kg	448	*	1	YES	S3VEM
Tin	Target	26.2		mg/kg	26.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S005	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10500		mg/kg	10500		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	2.3	J*	1	YES	S3VEM
Arsenic	Target	12.3		mg/kg	12.3	*	1	YES	S3VEM
Barium	Target	137		mg/kg	137	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Cadmium	Target	0.54		mg/kg	0.54	*	1	YES	S3VEM
Calcium	Target	11600		mg/kg	11600		1	YES	S3VEM
Chromium	Target	42.9		mg/kg	42.9	*	1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	67.0		mg/kg	67.0	*	1	YES	S3VEM
Iron	Target	21000		mg/kg	21000	*	1	YES	S3VEM
Lead	Target	220		mg/kg	220	*	1	YES	S3VEM
Magnesium	Target	3300		mg/kg	3300		1	YES	S3VEM
Manganese	Target	1220		mg/kg	1220		1	YES	S3VEM
Nickel	Target	27.2		mg/kg	27.2		1	YES	S3VEM
Potassium	Target	1870		mg/kg	1870		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	58.4	J	1	YES	S3VEM
Thallium	Target	0.45	J	mg/kg	0.45	J	1	YES	S3VEM
Vanadium	Target	21.3		mg/kg	21.3	*	1	YES	S3VEM
Zinc	Target	235		mg/kg	235	*	1	YES	S3VEM
Tin	Target	13.5		mg/kg	13.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S005	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.7	J*	1	YES	S3VEM
Arsenic	Target	9.0		mg/kg	9.0	*	1	YES	S3VEM
Barium	Target	83.6		mg/kg	83.6	*	1	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.46	J*	1	YES	S3VEM
Calcium	Target	15600		mg/kg	15600		1	YES	S3VEM
Chromium	Target	48.0		mg/kg	48.0	*	1	YES	S3VEM
Cobalt	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Copper	Target	50.2		mg/kg	50.2	*	1	YES	S3VEM
Iron	Target	19500		mg/kg	19500	*	1	YES	S3VEM
Lead	Target	120		mg/kg	120	*	1	YES	S3VEM
Magnesium	Target	3710		mg/kg	3710		1	YES	S3VEM
Manganese	Target	1350		mg/kg	1350		1	YES	S3VEM
Nickel	Target	24.4		mg/kg	24.4		1	YES	S3VEM
Potassium	Target	2150		mg/kg	2150		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	49.6	J	1	YES	S3VEM
Thallium	Target	0.64	J	mg/kg	0.64	J	1	YES	S3VEM
Vanadium	Target	20.4		mg/kg	20.4	*	1	YES	S3VEM
Zinc	Target	179		mg/kg	179	*	1	YES	S3VEM
Tin	Target	11.4		mg/kg	11.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0G7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S005	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12600		mg/kg	12600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	2.0	J*	1	YES	S3VEM
Arsenic	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Barium	Target	77.7		mg/kg	77.7	*	1	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.28	J*	1	YES	S3VEM
Calcium	Target	20100		mg/kg	20100		1	YES	S3VEM
Chromium	Target	24.9		mg/kg	24.9	*	1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	32.3		mg/kg	32.3	*	1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	71.6		mg/kg	71.6	*	1	YES	S3VEM
Magnesium	Target	5570		mg/kg	5570		1	YES	S3VEM
Manganese	Target	1410		mg/kg	1410		1	YES	S3VEM
Nickel	Target	20.0		mg/kg	20.0		1	YES	S3VEM
Potassium	Target	2490		mg/kg	2490		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	55.6	J	1	YES	S3VEM
Thallium	Target	0.65	J	mg/kg	0.65	J	1	YES	S3VEM
Vanadium	Target	19.9		mg/kg	19.9	*	1	YES	S3VEM
Zinc	Target	117		mg/kg	117	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	4.4	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: MBE0J3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S003	pH:	Sample Date: 09/21/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11800		mg/kg	11800		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.3	J*	1	YES	S3VEM
Arsenic	Target	12.5		mg/kg	12.5	*	1	YES	S3VEM
Barium	Target	104		mg/kg	104	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.47	J*	1	YES	S3VEM
Calcium	Target	8120		mg/kg	8120		1	YES	S3VEM
Chromium	Target	99.7	J	mg/kg	99.7	*	1	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7	*	1	YES	S3VEM
Copper	Target	79.7		mg/kg	79.7	*	1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	186		mg/kg	186	*	1	YES	S3VEM
Magnesium	Target	3010		mg/kg	3010		1	YES	S3VEM
Manganese	Target	1310		mg/kg	1310		1	YES	S3VEM
Nickel	Target	29.5		mg/kg	29.5		1	YES	S3VEM
Potassium	Target	2570		mg/kg	2570		1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.12	J	mg/kg	0.12	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	51.9	J	1	YES	S3VEM
Thallium	Target	0.60	J	mg/kg	0.60	J	1	YES	S3VEM
Vanadium	Target	20.9		mg/kg	20.9	*	1	YES	S3VEM
Zinc	Target	194		mg/kg	194	*	1	YES	S3VEM
Tin	Target	27.8		mg/kg	27.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: PBS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target			mg/kg	-0.097	J	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.0093	J	1	YES	S3VEM
Calcium	Target			mg/kg	-2.6	J	1	YES	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Cobalt	Target			mg/kg	-0.043	J	1	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Iron	Target			mg/kg	-0.92	J	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	3.8	J	mg/kg	3.8	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Thallium	Target			mg/kg	-0.12	J	1	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Tin	Target	0.98		mg/kg	0.98	J	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON

Sample Number: PBS02	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	-1.1	J	mg/kg	-1.1	J	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target			mg/kg	-0.040	J	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.0077	J	1	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Iron	Target	10.0	U	mg/kg	10.0	U	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	2.7	J	mg/kg	2.7	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Thallium	Target			mg/kg	-0.20	J	1	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Zinc	Target	0.051	J	mg/kg	0.051	J	1	YES	S3VEM
Tin	Target	1.0		mg/kg	1.0	J	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0C8

Lab Code: BON



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REGION 2
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2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 17 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE0G8

Laboratory: Bonner Analytical Testing Co.

Sampling dates: 9/21/17

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

Samples MBE0H0, MBE0H1, MBE0H2, MBE0H3, MBE0H4, MBE0H5, MBE0H6, MBE0H7, MBE0H8, MBE0J0, MBE0J1, MBE0J2 and MBE0J6 have analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentration of **Aluminum, Iron, Manganese, Thallium, Arsenic and Cobalt** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/19/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

The following samples are associated with the calibration which does not have at least one standard at or below the CRQL. Detected analytes with the result $<2X$ CRQL are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0H0, MBE0H1, MBE0H2, MBE0H3, MBE0H4, MBE0H5, MBE0H6, MBE0H7, MBE0J0, MBE0J1, MBE0J2, MBE0J6.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s).

The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical



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REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

The following samples have analyte results less than or equal to CRQLs. The associated CCB analyte results are less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Antimony MBE0G8, MBE0G9, MBE0H0, MBE0H1, MBE0H2, MBE0H3, MBE0H4, MBE0H5, MBE0H6, MBE0H7.

Cadmium MBE0H0, MBE0H1, MBE0H2, MBE0H5, MBE0H6, MBE0H7, MBE0H9, MBE0J0, MBE0J1, MBE0J2, MBE0J6

Sodium MBE0G8, MBE0G9, MBE0H0, MBE0H1, MBE0H2, MBE0H3, MBE0H4, MBE0H5, MBE0H6, MBE0H7, MBE0H8, MBE0H9, MBE0J0, MBE0J1, MBE0J2, MBE0J5, MBE0J6.

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated PB analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Tin MBE0H2, MBE0H5, MBE0H6, MBE0H7, MBE0J1, MBE0J2.

Field Blanks: MBE0J4

No problems were found for this criterion.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm \text{CRQL}$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq \text{MDL}$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq \text{MDL}$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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REGION 2
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2890, Woodbridge Avenue, Edison, NJ 08837

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample has matrix spike recovery less than 30% and the post digestion spike sample has percent recovery less than 75%. Detected analytes are qualified J-. Non-detected analytes are qualified R.

Antimony MBE0H8.

The following sample has matrix spike recovery in the range of 30 – 74% and the post digestion spike sample has percent recovery less than 75%. Detected analytes are qualified J-. Non-detected analytes are qualified UJ.

Tin MBE0H8.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE: MBE0H8/MBE0J5, MBE0D1/MBE0JG

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the 2xCRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-AES Serial Dilution (SD) soil sample has percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The Detected analytes are qualified J.

Aluminum, Barium, Cadmium, Calcium, Chromium, Cobalt, Iron, Magnesium, Manganese, Potassium, Sodium, Vanadium, Tin MBE0H8.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	42.2		mg/kg	42.2		1	YES	S3VEM
Antimony	Spike	12.1		mg/kg	12.1		1	YES	S3VEM
Arsenic	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Barium	Spike	41.2		mg/kg	41.2		1	YES	S3VEM
Beryllium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Spike	1060		mg/kg	1060		1	YES	S3VEM
Chromium	Spike	2.2		mg/kg	2.2		1	YES	S3VEM
Cobalt	Spike	10.5		mg/kg	10.5		1	YES	S3VEM
Copper	Spike	5.2		mg/kg	5.2		1	YES	S3VEM
Iron	Spike	22.2		mg/kg	22.2		1	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Magnesium	Spike	1040		mg/kg	1040		1	YES	S3VEM
Manganese	Spike	3.3		mg/kg	3.3		1	YES	S3VEM
Nickel	Spike	8.5		mg/kg	8.5		1	YES	S3VEM
Potassium	Spike	1000		mg/kg	1000		1	YES	S3VEM
Selenium	Spike	6.9		mg/kg	6.9		1	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Sodium	Spike	1010		mg/kg	1010		1	YES	S3VEM
Thallium	Spike	5.0		mg/kg	5.0		1	YES	S3VEM
Vanadium	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Zinc	Spike	12.5		mg/kg	12.5		1	YES	S3VEM
Tin	Spike	11.0		mg/kg	11.0		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0G8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S006	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11600		mg/kg	11600	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	14.8		mg/kg	14.8		1	YES	S3VEM
Barium	Target	103		mg/kg	103	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Cadmium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Calcium	Target	4700		mg/kg	4700	*	1	YES	S3VEM
Chromium	Target	106		mg/kg	106	*	1	YES	S3VEM
Cobalt	Target	8.1		mg/kg	8.1	*	1	YES	S3VEM
Copper	Target	95.7		mg/kg	95.7		1	YES	S3VEM
Iron	Target	18500		mg/kg	18500	*	1	YES	S3VEM
Lead	Target	204		mg/kg	204		1	YES	S3VEM
Magnesium	Target	2320		mg/kg	2320	*	1	YES	S3VEM
Manganese	Target	1470		mg/kg	1470	*	1	YES	S3VEM
Nickel	Target	39.2		mg/kg	39.2		1	YES	S3VEM
Potassium	Target	2390		mg/kg	2390	*	1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J	1	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	44.0	J*	1	YES	S3VEM
Thallium	Target	1.0	J	mg/kg	1.0	J	1	YES	S3VEM
Vanadium	Target	21.7		mg/kg	21.7	*	1	YES	S3VEM
Zinc	Target	226		mg/kg	226		1	YES	S3VEM
Tin	Target	29.3		mg/kg	29.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0G9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S006	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12700		mg/kg	12700	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	19.0		mg/kg	19.0		1	YES	S3VEM
Barium	Target	113		mg/kg	113	*	1	YES	S3VEM
Beryllium	Target	0.93		mg/kg	0.93		1	YES	S3VEM
Cadmium	Target	0.51		mg/kg	0.51	*	1	YES	S3VEM
Calcium	Target	4320		mg/kg	4320	*	1	YES	S3VEM
Chromium	Target	100		mg/kg	100	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	94.8		mg/kg	94.8		1	YES	S3VEM
Iron	Target	19700		mg/kg	19700	*	1	YES	S3VEM
Lead	Target	206		mg/kg	206		1	YES	S3VEM
Magnesium	Target	2460		mg/kg	2460	*	1	YES	S3VEM
Manganese	Target	1530		mg/kg	1530	*	1	YES	S3VEM
Nickel	Target	36.7		mg/kg	36.7		1	YES	S3VEM
Potassium	Target	2410		mg/kg	2410	*	1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J	1	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	47.6	J*	1	YES	S3VEM
Thallium	Target	1.0	J	mg/kg	1.0	J	1	YES	S3VEM
Vanadium	Target	23.6		mg/kg	23.6	*	1	YES	S3VEM
Zinc	Target	219		mg/kg	219		1	YES	S3VEM
Tin	Target	28.5		mg/kg	28.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S006	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12200		mg/kg	12200	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.81	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0		1	YES	S3VEM
Barium	Target	80.1		mg/kg	80.1	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.28	J*	1	YES	S3VEM
Calcium	Target	3100		mg/kg	3100	*	1	YES	S3VEM
Chromium	Target	27.8		mg/kg	27.8	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	33.0		mg/kg	33.0		1	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1	YES	S3VEM
Lead	Target	66.6		mg/kg	66.6		1	YES	S3VEM
Magnesium	Target	2440		mg/kg	2440	*	1	YES	S3VEM
Manganese	Target	1760		mg/kg	1760	D*	2	YES	S3VEM
Nickel	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Potassium	Target	2200		mg/kg	2200	*	1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J	1	YES	S3VEM
Silver	Target	0.27	J	mg/kg	0.27	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	35.3	J*	1	YES	S3VEM
Thallium	Target	1.3	J	mg/kg	1.3	J	1	YES	S3VEM
Vanadium	Target	19.2		mg/kg	19.2	*	1	YES	S3VEM
Zinc	Target	106		mg/kg	106		1	YES	S3VEM
Tin	Target	5.7	J	mg/kg	5.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S006	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12700		mg/kg	12700	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.96	J*	1	YES	S3VEM
Arsenic	Target	11.5		mg/kg	11.5		1	YES	S3VEM
Barium	Target	84.8		mg/kg	84.8	*	1	YES	S3VEM
Beryllium	Target	0.86		mg/kg	0.86		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.32	J*	1	YES	S3VEM
Calcium	Target	12000		mg/kg	12000	*	1	YES	S3VEM
Chromium	Target	28.7		mg/kg	28.7	*	1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	36.4		mg/kg	36.4		1	YES	S3VEM
Iron	Target	18400		mg/kg	18400	*	1	YES	S3VEM
Lead	Target	55.2		mg/kg	55.2		1	YES	S3VEM
Magnesium	Target	3390		mg/kg	3390	*	1	YES	S3VEM
Manganese	Target	2400		mg/kg	2400	D*	2	YES	S3VEM
Nickel	Target	24.0		mg/kg	24.0		1	YES	S3VEM
Potassium	Target	2320		mg/kg	2320	*	1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J	1	YES	S3VEM
Silver	Target	0.37	J	mg/kg	0.37	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	40.1	J*	1	YES	S3VEM
Thallium	Target	1.9	J	mg/kg	1.9	J	1	YES	S3VEM
Vanadium	Target	20.0		mg/kg	20.0	*	1	YES	S3VEM
Zinc	Target	100		mg/kg	100		1	YES	S3VEM
Tin	Target	5.3	J	mg/kg	5.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S006	pH:	Sample Date: 09/21/2017	Sample Time: 12:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10800		mg/kg	10800	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.93	J*	1	YES	S3VEM
Arsenic	Target	9.0		mg/kg	9.0		1	YES	S3VEM
Barium	Target	61.9		mg/kg	61.9	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.24	J*	1	YES	S3VEM
Calcium	Target	23400		mg/kg	23400	*	1	YES	S3VEM
Chromium	Target	20.3		mg/kg	20.3	*	1	YES	S3VEM
Cobalt	Target	9.5		mg/kg	9.5	*	1	YES	S3VEM
Copper	Target	31.7		mg/kg	31.7		1	YES	S3VEM
Iron	Target	17600		mg/kg	17600	*	1	YES	S3VEM
Lead	Target	36.3		mg/kg	36.3		1	YES	S3VEM
Magnesium	Target	10400		mg/kg	10400	*	1	YES	S3VEM
Manganese	Target	1930		mg/kg	1930	D*	2	YES	S3VEM
Nickel	Target	28.4		mg/kg	28.4		1	YES	S3VEM
Potassium	Target	2230		mg/kg	2230	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Silver	Target	0.29	J	mg/kg	0.29	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	56.1	J*	1	YES	S3VEM
Thallium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Vanadium	Target	17.6		mg/kg	17.6	*	1	YES	S3VEM
Zinc	Target	75.8		mg/kg	75.8		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.1	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S007	pH:	Sample Date: 09/21/2017	Sample Time: 14:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12600		mg/kg	12600	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.6	J*	1	YES	S3VEM
Arsenic	Target	16.0		mg/kg	16.0		1	YES	S3VEM
Barium	Target	134		mg/kg	134	*	1	YES	S3VEM
Beryllium	Target	0.95		mg/kg	0.95		1	YES	S3VEM
Cadmium	Target	0.68		mg/kg	0.68	*	1	YES	S3VEM
Calcium	Target	9510		mg/kg	9510	*	1	YES	S3VEM
Chromium	Target	18.8		mg/kg	18.8	*	1	YES	S3VEM
Cobalt	Target	8.7		mg/kg	8.7	*	1	YES	S3VEM
Copper	Target	49.7		mg/kg	49.7		1	YES	S3VEM
Iron	Target	19600		mg/kg	19600	*	1	YES	S3VEM
Lead	Target	222		mg/kg	222		1	YES	S3VEM
Magnesium	Target	3190		mg/kg	3190	*	1	YES	S3VEM
Manganese	Target	1900		mg/kg	1900	D*	2	YES	S3VEM
Nickel	Target	27.1		mg/kg	27.1		1	YES	S3VEM
Potassium	Target	2820		mg/kg	2820	*	1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J	1	YES	S3VEM
Silver	Target	0.37	J	mg/kg	0.37	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	52.0	J*	1	YES	S3VEM
Thallium	Target	1.4	J	mg/kg	1.4	J	1	YES	S3VEM
Vanadium	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM
Zinc	Target	229		mg/kg	229		1	YES	S3VEM
Tin	Target	5.8	J	mg/kg	5.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S007	pH:	Sample Date: 09/21/2017	Sample Time: 14:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12400		mg/kg	12400	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.5	J*	1	YES	S3VEM
Arsenic	Target	16.7		mg/kg	16.7		1	YES	S3VEM
Barium	Target	137		mg/kg	137	*	1	YES	S3VEM
Beryllium	Target	0.94		mg/kg	0.94		1	YES	S3VEM
Cadmium	Target	0.67		mg/kg	0.67	*	1	YES	S3VEM
Calcium	Target	7430		mg/kg	7430	*	1	YES	S3VEM
Chromium	Target	18.2		mg/kg	18.2	*	1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	50.2		mg/kg	50.2		1	YES	S3VEM
Iron	Target	19400		mg/kg	19400	*	1	YES	S3VEM
Lead	Target	222		mg/kg	222		1	YES	S3VEM
Magnesium	Target	2800		mg/kg	2800	*	1	YES	S3VEM
Manganese	Target	1940		mg/kg	1940	D*	2	YES	S3VEM
Nickel	Target	26.4		mg/kg	26.4		1	YES	S3VEM
Potassium	Target	2640		mg/kg	2640	*	1	YES	S3VEM
Selenium	Target	2.5	J	mg/kg	2.5	J	1	YES	S3VEM
Silver	Target	0.35	J	mg/kg	0.35	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	50.6	J*	1	YES	S3VEM
Thallium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Vanadium	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Zinc	Target	234		mg/kg	234		1	YES	S3VEM
Tin	Target	6.2	J	mg/kg	6.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S007	pH:	Sample Date: 09/21/2017	Sample Time: 14:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13000		mg/kg	13000	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	14.0		mg/kg	14.0		1	YES	S3VEM
Barium	Target	103		mg/kg	103	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.41	J*	1	YES	S3VEM
Calcium	Target	13000		mg/kg	13000	*	1	YES	S3VEM
Chromium	Target	16.9		mg/kg	16.9	*	1	YES	S3VEM
Cobalt	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Copper	Target	37.3		mg/kg	37.3		1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	115		mg/kg	115		1	YES	S3VEM
Magnesium	Target	3660		mg/kg	3660	*	1	YES	S3VEM
Manganese	Target	1840		mg/kg	1840	D*	2	YES	S3VEM
Nickel	Target	22.4		mg/kg	22.4		1	YES	S3VEM
Potassium	Target	2470		mg/kg	2470	*	1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J	1	YES	S3VEM
Silver	Target	0.28	J	mg/kg	0.28	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	50.5	J*	1	YES	S3VEM
Thallium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Vanadium	Target	21.0		mg/kg	21.0	*	1	YES	S3VEM
Zinc	Target	149		mg/kg	149		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.5	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S007	pH:	Sample Date: 09/21/2017	Sample Time: 14:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.91	J*	1	YES	S3VEM
Arsenic	Target	9.4		mg/kg	9.4		1	YES	S3VEM
Barium	Target	67.4		mg/kg	67.4	*	1	YES	S3VEM
Beryllium	Target	0.80		mg/kg	0.80		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.24	J*	1	YES	S3VEM
Calcium	Target	35800		mg/kg	35800	*	1	YES	S3VEM
Chromium	Target	15.7		mg/kg	15.7	*	1	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1	YES	S3VEM
Copper	Target	30.7		mg/kg	30.7		1	YES	S3VEM
Iron	Target	17700		mg/kg	17700	*	1	YES	S3VEM
Lead	Target	64.0		mg/kg	64.0		1	YES	S3VEM
Magnesium	Target	5920		mg/kg	5920	*	1	YES	S3VEM
Manganese	Target	1210		mg/kg	1210	*	1	YES	S3VEM
Nickel	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Potassium	Target	2760		mg/kg	2760	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J	1	YES	S3VEM
Silver	Target	0.089	J	mg/kg	0.089	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	65.3	J*	1	YES	S3VEM
Thallium	Target	0.65	J	mg/kg	0.65	J	1	YES	S3VEM
Vanadium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Zinc	Target	97.5		mg/kg	97.5		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	2.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S007	pH:	Sample Date: 09/21/2017	Sample Time: 14:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.92	J*	1	YES	S3VEM
Arsenic	Target	8.8		mg/kg	8.8		1	YES	S3VEM
Barium	Target	60.4		mg/kg	60.4	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.18	J*	1	YES	S3VEM
Calcium	Target	48600		mg/kg	48600	D*	2	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	27.3		mg/kg	27.3		1	YES	S3VEM
Iron	Target	18000		mg/kg	18000	*	1	YES	S3VEM
Lead	Target	41.5		mg/kg	41.5		1	YES	S3VEM
Magnesium	Target	7030		mg/kg	7030	*	1	YES	S3VEM
Manganese	Target	1410		mg/kg	1410	*	1	YES	S3VEM
Nickel	Target	20.8		mg/kg	20.8		1	YES	S3VEM
Potassium	Target	3170		mg/kg	3170	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Silver	Target	0.22	J	mg/kg	0.22	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	72.2	J*	1	YES	S3VEM
Thallium	Target	0.84	J	mg/kg	0.84	J	1	YES	S3VEM
Vanadium	Target	18.7		mg/kg	18.7	*	1	YES	S3VEM
Zinc	Target	80.2		mg/kg	80.2		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	1.9	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13000	J	mg/kg	13000	*	1	YES	S3VEM
Antimony	Target	1.1	J-	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	21.7		mg/kg	21.7		1	YES	S3VEM
Barium	Target	124	J	mg/kg	124	*	1	YES	S3VEM
Beryllium	Target	0.97		mg/kg	0.97		1	YES	S3VEM
Cadmium	Target	0.56	J	mg/kg	0.56	*	1	YES	S3VEM
Calcium	Target	8420	J	mg/kg	8420	*	1	YES	S3VEM
Chromium	Target	39.0	J	mg/kg	39.0	*	1	YES	S3VEM
Cobalt	Target	8.6	J	mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	63.1		mg/kg	63.1		1	YES	S3VEM
Iron	Target	19800	J	mg/kg	19800	*	1	YES	S3VEM
Lead	Target	198		mg/kg	198		1	YES	S3VEM
Magnesium	Target	3770	J	mg/kg	3770	*	1	YES	S3VEM
Manganese	Target	1930	J	mg/kg	1930	D*	2	YES	S3VEM
Nickel	Target	31.2		mg/kg	31.2		1	YES	S3VEM
Potassium	Target	2980	J	mg/kg	2980	*	1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J	1	YES	S3VEM
Silver	Target	0.45	J	mg/kg	0.45	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	95.8	J*	1	YES	S3VEM
Thallium	Target	1.4	J	mg/kg	1.4	J	1	YES	S3VEM
Vanadium	Target	23.0	J	mg/kg	23.0	*	1	YES	S3VEM
Zinc	Target	217		mg/kg	217		1	YES	S3VEM
Tin	Target	10.9	J-	mg/kg	10.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H8A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	9.7		mg/kg	9.7	*	1	YES	S3VEM
Tin	Spike	25.5		mg/kg	25.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H8D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12400		mg/kg	12400		1	YES	S3VEM
Antimony	Target	1.0	J	mg/kg	1.0	J	1	YES	S3VEM
Arsenic	Target	21.0		mg/kg	21.0		1	YES	S3VEM
Barium	Target	120		mg/kg	120		1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Target	0.54		mg/kg	0.54		1	YES	S3VEM
Calcium	Target	8100		mg/kg	8100		1	YES	S3VEM
Chromium	Target	38.1		mg/kg	38.1		1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3		1	YES	S3VEM
Copper	Target	59.8		mg/kg	59.8		1	YES	S3VEM
Iron	Target	19100		mg/kg	19100		1	YES	S3VEM
Lead	Target	193		mg/kg	193		1	YES	S3VEM
Magnesium	Target	3630		mg/kg	3630		1	YES	S3VEM
Manganese	Target	1980		mg/kg	1980	D	2	YES	S3VEM
Nickel	Target	31.2		mg/kg	31.2		1	YES	S3VEM
Potassium	Target	2830		mg/kg	2830		1	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J	1	YES	S3VEM
Silver	Target	0.41	J	mg/kg	0.41	J	1	YES	S3VEM
Sodium	Target	48.4	J	mg/kg	48.4	J	1	YES	S3VEM
Thallium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Vanadium	Target	22.1		mg/kg	22.1		1	YES	S3VEM
Zinc	Target	204		mg/kg	204		1	YES	S3VEM
Tin	Target	10.7		mg/kg	10.7		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H8L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	15500		mg/kg	15500	*	5	YES	S3VEM
Antimony	Target	30.0	U	mg/kg	30.0	U	5	YES	S3VEM
Arsenic	Target	22.3		mg/kg	22.3		5	YES	S3VEM
Barium	Target	149		mg/kg	149	*	5	YES	S3VEM
Beryllium	Target	1.0	J	mg/kg	1.0	J	5	YES	S3VEM
Cadmium	Target	0.70	J	mg/kg	0.70	J*	5	YES	S3VEM
Calcium	Target	10400		mg/kg	10400	*	5	YES	S3VEM
Chromium	Target	48.5		mg/kg	48.5	*	5	YES	S3VEM
Cobalt	Target	10.9	J	mg/kg	10.9	J*	5	YES	S3VEM
Copper	Target	66.2		mg/kg	66.2		5	YES	S3VEM
Iron	Target	24500		mg/kg	24500	*	5	YES	S3VEM
Lead	Target	207		mg/kg	207		5	YES	S3VEM
Magnesium	Target	4670		mg/kg	4670	*	5	YES	S3VEM
Manganese	Target	2510		mg/kg	2510	D*	10	YES	S3VEM
Nickel	Target	31.6		mg/kg	31.6		5	YES	S3VEM
Potassium	Target	3570		mg/kg	3570	*	5	YES	S3VEM
Selenium	Target	2.7	J	mg/kg	2.7	J	5	YES	S3VEM
Silver	Target	0.56	J	mg/kg	0.56	J	5	YES	S3VEM
Sodium	Target	59.6	J	mg/kg	59.6	J*	5	YES	S3VEM
Thallium	Target	1.9	J	mg/kg	1.9	J	5	YES	S3VEM
Vanadium	Target	27.9		mg/kg	27.9	*	5	YES	S3VEM
Zinc	Target	224		mg/kg	224		5	YES	S3VEM
Tin	Target	13.5		mg/kg	13.5	J*	5	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H8S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	3.4	J	mg/kg	3.4	J	1	YES	S3VEM
Arsenic	Spike	29.7		mg/kg	29.7		1	YES	S3VEM
Barium	Spike	467		mg/kg	467		1	YES	S3VEM
Beryllium	Spike	11.1		mg/kg	11.1		1	YES	S3VEM
Cadmium	Spike	8.6		mg/kg	8.6		1	YES	S3VEM
Chromium	Spike	72.9		mg/kg	72.9		1	YES	S3VEM
Cobalt	Spike	89.9		mg/kg	89.9		1	YES	S3VEM
Copper	Spike	114		mg/kg	114		1	YES	S3VEM
Lead	Spike	204		mg/kg	204		1	YES	S3VEM
Manganese	Spike	1970		mg/kg	1970	D	2	YES	S3VEM
Nickel	Spike	136		mg/kg	136		1	YES	S3VEM
Selenium	Spike	17.5		mg/kg	17.5		1	YES	S3VEM
Silver	Spike	8.2		mg/kg	8.2		1	YES	S3VEM
Thallium	Spike	11.1		mg/kg	11.1		1	YES	S3VEM
Vanadium	Spike	102		mg/kg	102		1	YES	S3VEM
Zinc	Spike	314		mg/kg	314		1	YES	S3VEM
Tin	Spike	78.9		mg/kg	78.9		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0H9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13000		mg/kg	13000	*	1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	22.4		mg/kg	22.4		1	YES	S3VEM
Barium	Target	117		mg/kg	117	*	1	YES	S3VEM
Beryllium	Target	0.97		mg/kg	0.97		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.47	J*	1	YES	S3VEM
Calcium	Target	5760		mg/kg	5760	*	1	YES	S3VEM
Chromium	Target	37.4		mg/kg	37.4	*	1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	60.8		mg/kg	60.8		1	YES	S3VEM
Iron	Target	20100		mg/kg	20100	*	1	YES	S3VEM
Lead	Target	127		mg/kg	127		1	YES	S3VEM
Magnesium	Target	2720		mg/kg	2720	*	1	YES	S3VEM
Manganese	Target	2260		mg/kg	2260	D*	2	YES	S3VEM
Nickel	Target	28.3		mg/kg	28.3		1	YES	S3VEM
Potassium	Target	2810		mg/kg	2810	*	1	YES	S3VEM
Selenium	Target	2.5	J	mg/kg	2.5	J	1	YES	S3VEM
Silver	Target	0.43	J	mg/kg	0.43	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	45.4	J*	1	YES	S3VEM
Thallium	Target	1.7	J	mg/kg	1.7	J	1	YES	S3VEM
Vanadium	Target	22.9		mg/kg	22.9	*	1	YES	S3VEM
Zinc	Target	176		mg/kg	176		1	YES	S3VEM
Tin	Target	10.9		mg/kg	10.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0J0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12200		mg/kg	12200	*	1	YES	S3VEM
Antimony	Target	0.93	J	mg/kg	0.93	J*	1	YES	S3VEM
Arsenic	Target	14.3		mg/kg	14.3		1	YES	S3VEM
Barium	Target	95.3		mg/kg	95.3	*	1	YES	S3VEM
Beryllium	Target	0.80		mg/kg	0.80		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.30	J*	1	YES	S3VEM
Calcium	Target	11900		mg/kg	11900	*	1	YES	S3VEM
Chromium	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4	*	1	YES	S3VEM
Copper	Target	36.8		mg/kg	36.8		1	YES	S3VEM
Iron	Target	18300		mg/kg	18300	*	1	YES	S3VEM
Lead	Target	72.5		mg/kg	72.5		1	YES	S3VEM
Magnesium	Target	4940		mg/kg	4940	*	1	YES	S3VEM
Manganese	Target	2330		mg/kg	2330	D*	2	YES	S3VEM
Nickel	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Potassium	Target	2160		mg/kg	2160	*	1	YES	S3VEM
Selenium	Target	2.3	J	mg/kg	2.3	J	1	YES	S3VEM
Silver	Target	0.41	J	mg/kg	0.41	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	43.6	J*	1	YES	S3VEM
Thallium	Target	1.7	J	mg/kg	1.7	J	1	YES	S3VEM
Vanadium	Target	20.6		mg/kg	20.6	*	1	YES	S3VEM
Zinc	Target	100		mg/kg	100		1	YES	S3VEM
Tin	Target	6.9	J	mg/kg	6.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0J1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11900		mg/kg	11900	*	1	YES	S3VEM
Antimony	Target	0.84	J	mg/kg	0.84	J*	1	YES	S3VEM
Arsenic	Target	12.8		mg/kg	12.8		1	YES	S3VEM
Barium	Target	84.1		mg/kg	84.1	*	1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.21	J*	1	YES	S3VEM
Calcium	Target	29700		mg/kg	29700	*	1	YES	S3VEM
Chromium	Target	17.2		mg/kg	17.2	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	31.6		mg/kg	31.6		1	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1	YES	S3VEM
Lead	Target	50.6		mg/kg	50.6		1	YES	S3VEM
Magnesium	Target	8360		mg/kg	8360	*	1	YES	S3VEM
Manganese	Target	1950		mg/kg	1950	D*	2	YES	S3VEM
Nickel	Target	19.1		mg/kg	19.1		1	YES	S3VEM
Potassium	Target	2190		mg/kg	2190	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	0.33	J	mg/kg	0.33	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	57.7	J*	1	YES	S3VEM
Thallium	Target	1.3	J	mg/kg	1.3	J	1	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Zinc	Target	81.0		mg/kg	81.0		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	3.4	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0J2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10800		mg/kg	10800	*	1	YES	S3VEM
Antimony	Target	0.81	J	mg/kg	0.81	J*	1	YES	S3VEM
Arsenic	Target	11.3		mg/kg	11.3		1	YES	S3VEM
Barium	Target	80.4		mg/kg	80.4	*	1	YES	S3VEM
Beryllium	Target	0.71		mg/kg	0.71		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.21	J*	1	YES	S3VEM
Calcium	Target	56500		mg/kg	56500	D*	2	YES	S3VEM
Chromium	Target	14.8		mg/kg	14.8	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	35.1		mg/kg	35.1		1	YES	S3VEM
Iron	Target	16900		mg/kg	16900	*	1	YES	S3VEM
Lead	Target	47.6		mg/kg	47.6		1	YES	S3VEM
Magnesium	Target	10800		mg/kg	10800	*	1	YES	S3VEM
Manganese	Target	1910		mg/kg	1910	D*	2	YES	S3VEM
Nickel	Target	18.4		mg/kg	18.4		1	YES	S3VEM
Potassium	Target	2240		mg/kg	2240	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Silver	Target	0.31	J	mg/kg	0.31	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	68.8	J*	1	YES	S3VEM
Thallium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Vanadium	Target	18.0		mg/kg	18.0	*	1	YES	S3VEM
Zinc	Target	76.1		mg/kg	76.1		1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	2.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0J5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P033-S008	pH:	Sample Date: 09/21/2017	Sample Time: 14:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12200		mg/kg	12200	*	1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	18.4		mg/kg	18.4		1	YES	S3VEM
Barium	Target	122		mg/kg	122	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Target	0.52		mg/kg	0.52	*	1	YES	S3VEM
Calcium	Target	8750		mg/kg	8750	*	1	YES	S3VEM
Chromium	Target	38.1		mg/kg	38.1	*	1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	61.2		mg/kg	61.2		1	YES	S3VEM
Iron	Target	19200		mg/kg	19200	*	1	YES	S3VEM
Lead	Target	195		mg/kg	195		1	YES	S3VEM
Magnesium	Target	3810		mg/kg	3810	*	1	YES	S3VEM
Manganese	Target	2180		mg/kg	2180	D*	2	YES	S3VEM
Nickel	Target	29.8		mg/kg	29.8		1	YES	S3VEM
Potassium	Target	2800		mg/kg	2800	*	1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J	1	YES	S3VEM
Silver	Target	0.45	J	mg/kg	0.45	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	47.7	J*	1	YES	S3VEM
Thallium	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Vanadium	Target	22.0		mg/kg	22.0	*	1	YES	S3VEM
Zinc	Target	205		mg/kg	205		1	YES	S3VEM
Tin	Target	10.5		mg/kg	10.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: MBE0J6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P032-S001	pH:	Sample Date: 09/21/2017	Sample Time: 15:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14700		mg/kg	14700	*	1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	11.9		mg/kg	11.9		1	YES	S3VEM
Barium	Target	162		mg/kg	162	*	1	YES	S3VEM
Beryllium	Target	0.96		mg/kg	0.96		1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.43	J*	1	YES	S3VEM
Calcium	Target	21100		mg/kg	21100	*	1	YES	S3VEM
Chromium	Target	18.9		mg/kg	18.9	*	1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	42.3		mg/kg	42.3		1	YES	S3VEM
Iron	Target	21100		mg/kg	21100	*	1	YES	S3VEM
Lead	Target	149		mg/kg	149		1	YES	S3VEM
Magnesium	Target	3930		mg/kg	3930	*	1	YES	S3VEM
Manganese	Target	2150		mg/kg	2150	D*	2	YES	S3VEM
Nickel	Target	21.5		mg/kg	21.5		1	YES	S3VEM
Potassium	Target	2600		mg/kg	2600	*	1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J	1	YES	S3VEM
Silver	Target	0.39	J	mg/kg	0.39	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	170	J*	1	YES	S3VEM
Thallium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	234		mg/kg	234		1	YES	S3VEM
Tin	Target	7.1	J	mg/kg	7.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON

Sample Number: PBS01	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	1.5	J	mg/kg	1.5	J	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Beryllium	Target	0.0036	J	mg/kg	0.0036	J	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Chromium	Target	0.037	J	mg/kg	0.037	J	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Iron	Target	1.3	J	mg/kg	1.3	J	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target	0.076	J	mg/kg	0.076	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	2.8	J	mg/kg	2.8	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Tin	Target	1.0		mg/kg	1.0	J	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0G8

Lab Code: BON



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 1 (Water)

Analysis: Metals (ICP-AES)

SDG No.: MBE0J4

Laboratory: Bonner Analytical Testing Co.

Sampling dates: 9/21/17

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

None

Major Findings:

None.

Minor Findings:

None

COMMENT: None

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/19/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2731.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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REGION 2
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3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blanks: MBE0J4

No qualification required for the contamination due to field blanks.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq MDL$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq MDL$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

Spike analysis was not run.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

value is < 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

Duplicate analysis was not run.

7. FIELD DUPLICATE

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 20% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is < 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate

Not applicable.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is $>$ 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 10. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

Serial Dilution analysis was not run.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

Not applicable.

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0J4

Lab Code: BON

Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	391		ug/L	391		1	YES	S3VEM
Antimony	Spike	119		ug/L	119		1	YES	S3VEM
Arsenic	Spike	19.4		ug/L	19.4		1	YES	S3VEM
Barium	Spike	392		ug/L	392		1	YES	S3VEM
Beryllium	Spike	9.6		ug/L	9.6		1	YES	S3VEM
Cadmium	Spike	10.1		ug/L	10.1		1	YES	S3VEM
Calcium	Spike	10300		ug/L	10300		1	YES	S3VEM
Chromium	Spike	20.3		ug/L	20.3		1	YES	S3VEM
Cobalt	Spike	101		ug/L	101		1	YES	S3VEM
Copper	Spike	49.2		ug/L	49.2		1	YES	S3VEM
Iron	Spike	178		ug/L	178		1	YES	S3VEM
Lead	Spike	19.6		ug/L	19.6		1	YES	S3VEM
Magnesium	Spike	9930		ug/L	9930		1	YES	S3VEM
Manganese	Spike	30.0		ug/L	30.0		1	YES	S3VEM
Nickel	Spike	79.9		ug/L	79.9		1	YES	S3VEM
Potassium	Spike	9770		ug/L	9770		1	YES	S3VEM
Selenium	Spike	73.2		ug/L	73.2		1	YES	S3VEM
Silver	Spike	20.0		ug/L	20.0		1	YES	S3VEM
Sodium	Spike	9910		ug/L	9910		1	YES	S3VEM
Thallium	Spike	50.0		ug/L	50.0		1	YES	S3VEM
Vanadium	Spike	97.7		ug/L	97.7		1	YES	S3VEM
Zinc	Spike	119		ug/L	119		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0J4

Lab Code: BON

Sample Number: LCS02	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Tin	Spike	13.3		ug/L	13.3		1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0J4

Lab Code: BON

Sample Number: MBE0J4	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location: Rinsate	pH: 1.	Sample Date: 09/21/2017	Sample Time: 14:00:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	U	ug/L	200	U	1	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	YES	S3VEM
Arsenic	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Barium	Target	200	U	ug/L	200	U	1	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Calcium	Target	66.6	J	ug/L	66.6	J	1	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Iron	Target	100	U	ug/L	100	U	1	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	YES	S3VEM
Potassium	Target	5000	U	ug/L	5000	U	1	YES	S3VEM
Selenium	Target	35.0	U	ug/L	35.0	U	1	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Sodium	Target	5000	U	ug/L	5000	U	1	YES	S3VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	YES	S3VEM
Zinc	Target	4.3	J	ug/L	4.3	J	1	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0J4

Lab Code: BON

Sample Number: PBW01	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11.3	J	ug/L	11.3	J	1	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1	YES	S3VEM
Arsenic	Target			ug/L	-2.1	J	1	YES	S3VEM
Barium	Target			ug/L	-0.57	J	1	YES	S3VEM
Beryllium	Target			ug/L	-0.071	J	1	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1	YES	S3VEM
Calcium	Target	43.5	J	ug/L	43.5	J	1	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Iron	Target			ug/L	-12	J	1	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Magnesium	Target	16.6	J	ug/L	16.6	J	1	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	YES	S3VEM
Potassium	Target			ug/L	-74	J	1	YES	S3VEM
Selenium	Target	-1.5	J	ug/L	-1.5	J	1	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Sodium	Target	5000	U	ug/L	5000	U	1	YES	S3VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1	YES	S3VEM
Zinc	Target	60.0	U	ug/L	60.0	U	1	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14029

SDG: MBE0J4

Lab Code: BON



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EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 20 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE023

Laboratory: Chemtech Consulting Group

Sampling dates: 9/19/17

Validation SOP: HW-3a (Rev. 1)

QAPP

Contractor: LATA

Reference: DCN # 010-RICO 0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions. Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

Sample MBE040 has a non-detected analyte (Thallium) that has been qualified R due to matrix spike % recovery failure.

Major Findings:

Sample MBE040 has analytes that have been qualified J, J+ or J-;

Minor Findings:

None

COMMENT: The concentrations of Aluminum, Iron, Manganese, Arsenic, Barium and Cobalt exceeded their project action levels in one or more samples.

Reviewer Name(s): Israel Okwuonu

Approver's Signature:

Date: 10/17/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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REGION 2
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2890, Woodbridge Avenue, Edison, NJ 08837

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-3a (Revision 1) September, 2016 USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2, has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blank MBE079

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated field blank analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Sodium MBE023, MBE024, MBE025, MBE026, MBE027, MBE038, MBE039, MBE040, MBE041, MBE042, MBE063, MBE064, MBE065, MBE066, MBE067, MBE068, MBE069, MBE070, MBE071, MBE072

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are \geq MDL are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is \geq MDL, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample is associated with Matrix Spike sample that has spike analyte %R within 30 - 74% and Post-digestion spike analyte %R greater than or equal to 75%. Detects are qualified as J. Non-detects are qualified as UJ.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

Selenium MBE040

The following sample is associated with a Matrix Spike with %R less than 30% and a Post-digestion spike with %R less than 75%. Detects are qualified as J-. Non-detects are qualified as R.

Thallium MBE040

The following sample is associated with Matrix Spike sample that has Silver spike analyte %R less than 30% and the post digestion spike is not required. Detects are qualified as J-. Non-detects are qualified R.

Silver MBE040

The following sample is associated with Matrix Spike sample that has spike analyte %R less than 30% and Post-digestion spike analyte %R greater than or equal to 75%. Detects are qualified as J. Non-detects are qualified as UJ.

Antimony MBE040

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE MBE040/MBE073

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following soil/sediment samples are associated with Serial Dilution (SD) sample that has analyte percent difference (%D) greater than 15% but less than 120%. The original sample analyte concentrations are greater than 50x MDLs. Detects are qualified as estimated J. Non-detects are not qualified.

Chromium MBE040

Iron MBE040

Manganese MBE040

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: LCS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	34.3		mg/kg	34.3		1.0	YES	S3VEM
Antimony	Spike	12.2		mg/kg	12.2		1.0	YES	S3VEM
Arsenic	Spike	2.2		mg/kg	2.2		1.0	YES	S3VEM
Barium	Spike	30.5		mg/kg	30.5		1.0	YES	S3VEM
Beryllium	Spike	1.1	J	mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Spike	896		mg/kg	896		1.0	YES	S3VEM
Chromium	Spike	2.3	J	mg/kg	2.3		1.0	YES	S3VEM
Cobalt	Spike	9.8		mg/kg	9.8		1.0	YES	S3VEM
Copper	Spike	4.7		mg/kg	4.7		1.0	YES	S3VEM
Iron	Spike	19.9		mg/kg	19.9		1.0	YES	S3VEM
Lead	Spike	1.9		mg/kg	1.9		1.0	YES	S3VEM
Magnesium	Spike	1040		mg/kg	1040		1.0	YES	S3VEM
Manganese	Spike	2.8		mg/kg	2.8		1.0	YES	S3VEM
Nickel	Spike	8.3		mg/kg	8.3		1.0	YES	S3VEM
Potassium	Spike	972		mg/kg	972		1.0	YES	S3VEM
Selenium	Spike	7.6		mg/kg	7.6		1.0	YES	S3VEM
Silver	Spike	1.9		mg/kg	1.9		1.0	YES	S3VEM
Sodium	Spike	933		mg/kg	933		1.0	YES	S3VEM
Thallium	Spike	5.8	J	mg/kg	5.8		1.0	YES	S3VEM
Vanadium	Spike	10.4	J	mg/kg	10.4		1.0	YES	S3VEM
Zinc	Spike	10.6		mg/kg	10.6		1.0	YES	S3VEM
Tin	Spike	10.3		mg/kg	10.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE023	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S001	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5660		mg/kg	5660		1.0	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1.0	YES	S3VEM
Arsenic	Target	18.5		mg/kg	18.5		1.0	YES	S3VEM
Barium	Target	462		mg/kg	462		1.0	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1.0	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4		1.0	YES	S3VEM
Calcium	Target	11200		mg/kg	11200		1.0	YES	S3VEM
Chromium	Target	37.0		mg/kg	37.0	*	1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM
Copper	Target	159		mg/kg	159		1.0	YES	S3VEM
Iron	Target	15900		mg/kg	15900	*	1.0	YES	S3VEM
Lead	Target	564		mg/kg	564		1.0	YES	S3VEM
Magnesium	Target	4100		mg/kg	4100	*	1.0	YES	S3VEM
Manganese	Target	447		mg/kg	447	*	1.0	YES	S3VEM
Nickel	Target	29.2		mg/kg	29.2		1.0	YES	S3VEM
Potassium	Target	813		mg/kg	813		1.0	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1.0	YES	S3VEM
Silver	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Sodium	Target	379	U	mg/kg	150	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	22.8		mg/kg	22.8		1.0	YES	S3VEM
Zinc	Target	710		mg/kg	710		1.0	YES	S3VEM
Tin	Target	20.6		mg/kg	20.6		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE024	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S001	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5060		mg/kg	5060		1.0	YES	S3VEM
Antimony	Target	1.3	J	mg/kg	1.3	J*	1.0	YES	S3VEM
Arsenic	Target	32.7		mg/kg	32.7		1.0	YES	S3VEM
Barium	Target	388		mg/kg	388		1.0	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Cadmium	Target	3.0		mg/kg	3.0		1.0	YES	S3VEM
Calcium	Target	15600		mg/kg	15600		1.0	YES	S3VEM
Chromium	Target	27.4		mg/kg	27.4	*	1.0	YES	S3VEM
Cobalt	Target	10.2		mg/kg	10.2		1.0	YES	S3VEM
Copper	Target	176		mg/kg	176		1.0	YES	S3VEM
Iron	Target	26800		mg/kg	26800	*	1.0	YES	S3VEM
Lead	Target	487		mg/kg	487		1.0	YES	S3VEM
Magnesium	Target	7120		mg/kg	7120	*	1.0	YES	S3VEM
Manganese	Target	385		mg/kg	385	*	1.0	YES	S3VEM
Nickel	Target	36.4		mg/kg	36.4		1.0	YES	S3VEM
Potassium	Target	774		mg/kg	774		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U*	1.0	YES	S3VEM
Silver	Target	1.4		mg/kg	1.4	*	1.0	YES	S3VEM
Sodium	Target	365	U	mg/kg	205	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	28.5		mg/kg	28.5		1.0	YES	S3VEM
Zinc	Target	608		mg/kg	608		1.0	YES	S3VEM
Tin	Target	28.5		mg/kg	28.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE025	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S001	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4480		mg/kg	4480		1.0	YES	S3VEM
Antimony	Target	1.2	J	mg/kg	1.2	J*	1.0	YES	S3VEM
Arsenic	Target	31.1		mg/kg	31.1		1.0	YES	S3VEM
Barium	Target	216		mg/kg	216		1.0	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Target	2.5		mg/kg	2.5		1.0	YES	S3VEM
Calcium	Target	7490		mg/kg	7490		1.0	YES	S3VEM
Chromium	Target	15.2		mg/kg	15.2	*	1.0	YES	S3VEM
Cobalt	Target	13.1		mg/kg	13.1		1.0	YES	S3VEM
Copper	Target	97.0		mg/kg	97.0		1.0	YES	S3VEM
Iron	Target	34700		mg/kg	34700	*	1.0	YES	S3VEM
Lead	Target	205		mg/kg	205		1.0	YES	S3VEM
Magnesium	Target	2810		mg/kg	2810	*	1.0	YES	S3VEM
Manganese	Target	390		mg/kg	390	*	1.0	YES	S3VEM
Nickel	Target	31.1		mg/kg	31.1		1.0	YES	S3VEM
Potassium	Target	852		mg/kg	852		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	1.4		mg/kg	1.4	*	1.0	YES	S3VEM
Sodium	Target	362	U	mg/kg	201	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	25.6		mg/kg	25.6		1.0	YES	S3VEM
Zinc	Target	273		mg/kg	273		1.0	YES	S3VEM
Tin	Target	14.0		mg/kg	14.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE026	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S001	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5700		mg/kg	5700		1.0	YES	S3VEM
Antimony	Target	0.88	J	mg/kg	0.88	J*	1.0	YES	S3VEM
Arsenic	Target	19.8		mg/kg	19.8		1.0	YES	S3VEM
Barium	Target	412		mg/kg	412		1.0	YES	S3VEM
Beryllium	Target	0.97		mg/kg	0.97		1.0	YES	S3VEM
Cadmium	Target	2.3		mg/kg	2.3		1.0	YES	S3VEM
Calcium	Target	14100		mg/kg	14100		1.0	YES	S3VEM
Chromium	Target	18.9		mg/kg	18.9	*	1.0	YES	S3VEM
Cobalt	Target	12.1		mg/kg	12.1		1.0	YES	S3VEM
Copper	Target	99.0		mg/kg	99.0		1.0	YES	S3VEM
Iron	Target	26700		mg/kg	26700	*	1.0	YES	S3VEM
Lead	Target	199		mg/kg	199		1.0	YES	S3VEM
Magnesium	Target	3320		mg/kg	3320	*	1.0	YES	S3VEM
Manganese	Target	765		mg/kg	765	*	1.0	YES	S3VEM
Nickel	Target	31.2		mg/kg	31.2		1.0	YES	S3VEM
Potassium	Target	899		mg/kg	899		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	1.2		mg/kg	1.2	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	166	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	22.2		mg/kg	22.2		1.0	YES	S3VEM
Zinc	Target	422		mg/kg	422		1.0	YES	S3VEM
Tin	Target	13.7		mg/kg	13.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE027	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S001	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5800		mg/kg	5800		1.0	YES	S3VEM
Antimony	Target	0.74	J	mg/kg	0.74	J*	1.0	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7		1.0	YES	S3VEM
Barium	Target	144		mg/kg	144		1.0	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75		1.0	YES	S3VEM
Cadmium	Target	2.5		mg/kg	2.5		1.0	YES	S3VEM
Calcium	Target	35200		mg/kg	35200		1.0	YES	S3VEM
Chromium	Target	13.4		mg/kg	13.4	*	1.0	YES	S3VEM
Cobalt	Target	9.7		mg/kg	9.7		1.0	YES	S3VEM
Copper	Target	48.4		mg/kg	48.4		1.0	YES	S3VEM
Iron	Target	28300		mg/kg	28300	*	1.0	YES	S3VEM
Lead	Target	82.0		mg/kg	82.0		1.0	YES	S3VEM
Magnesium	Target	5520		mg/kg	5520	*	1.0	YES	S3VEM
Manganese	Target	942		mg/kg	942	*	1.0	YES	S3VEM
Nickel	Target	22.0		mg/kg	22.0		1.0	YES	S3VEM
Potassium	Target	866		mg/kg	866		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	1.2		mg/kg	1.2	*	1.0	YES	S3VEM
Sodium	Target	350	U	mg/kg	166	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.4		mg/kg	16.4		1.0	YES	S3VEM
Zinc	Target	189		mg/kg	189		1.0	YES	S3VEM
Tin	Target	5.5		mg/kg	5.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE038	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4960		mg/kg	4960		1.0	YES	S3VEM
Antimony	Target	0.71	J	mg/kg	0.71	J*	1.0	YES	S3VEM
Arsenic	Target	7.9		mg/kg	7.9		1.0	YES	S3VEM
Barium	Target	115		mg/kg	115		1.0	YES	S3VEM
Beryllium	Target	0.58		mg/kg	0.58		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7		1.0	YES	S3VEM
Calcium	Target	35400		mg/kg	35400		1.0	YES	S3VEM
Chromium	Target	11.0		mg/kg	11.0	*	1.0	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1		1.0	YES	S3VEM
Copper	Target	52.2		mg/kg	52.2		1.0	YES	S3VEM
Iron	Target	15000		mg/kg	15000	*	1.0	YES	S3VEM
Lead	Target	165		mg/kg	165		1.0	YES	S3VEM
Magnesium	Target	18100		mg/kg	18100	*	1.0	YES	S3VEM
Manganese	Target	623		mg/kg	623	*	1.0	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1.0	YES	S3VEM
Potassium	Target	709		mg/kg	709		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U*	1.0	YES	S3VEM
Silver	Target	0.71	J	mg/kg	0.71	J*	1.0	YES	S3VEM
Sodium	Target	368	U	mg/kg	126	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.1		mg/kg	14.1		1.0	YES	S3VEM
Zinc	Target	178		mg/kg	178		1.0	YES	S3VEM
Tin	Target	8.8		mg/kg	8.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE039	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4930		mg/kg	4930		1.0	YES	S3VEM
Antimony	Target	0.78	J	mg/kg	0.78	J*	1.0	YES	S3VEM
Arsenic	Target	15.6		mg/kg	15.6		1.0	YES	S3VEM
Barium	Target	175		mg/kg	175		1.0	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1.0	YES	S3VEM
Cadmium	Target	2.2		mg/kg	2.2		1.0	YES	S3VEM
Calcium	Target	36600		mg/kg	36600		1.0	YES	S3VEM
Chromium	Target	12.7		mg/kg	12.7	*	1.0	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7		1.0	YES	S3VEM
Copper	Target	85.0		mg/kg	85.0		1.0	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1.0	YES	S3VEM
Lead	Target	350		mg/kg	350		1.0	YES	S3VEM
Magnesium	Target	13700		mg/kg	13700	*	1.0	YES	S3VEM
Manganese	Target	520		mg/kg	520	*	1.0	YES	S3VEM
Nickel	Target	22.4		mg/kg	22.4		1.0	YES	S3VEM
Potassium	Target	900		mg/kg	900		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.87		mg/kg	0.87	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	165	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Zinc	Target	329		mg/kg	329		1.0	YES	S3VEM
Tin	Target	22.4		mg/kg	22.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE040	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4980		mg/kg	4980		1.0	YES	S3VEM
Antimony	Target	1.0	J	mg/kg	1.0	J*	1.0	YES	S3VEM
Arsenic	Target	22.6		mg/kg	22.6		1.0	YES	S3VEM
Barium	Target	138		mg/kg	138		1.0	YES	S3VEM
Beryllium	Target	0.92		mg/kg	0.92		1.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0		1.0	YES	S3VEM
Calcium	Target	26500		mg/kg	26500		1.0	YES	S3VEM
Chromium	Target	12.4	J	mg/kg	12.4	*	1.0	YES	S3VEM
Cobalt	Target	9.2		mg/kg	9.2		1.0	YES	S3VEM
Copper	Target	157		mg/kg	157		1.0	YES	S3VEM
Iron	Target	20300	J	mg/kg	20300	*	1.0	YES	S3VEM
Lead	Target	271		mg/kg	271		1.0	YES	S3VEM
Magnesium	Target	8190		mg/kg	8190	*	1.0	YES	S3VEM
Manganese	Target	455	J	mg/kg	455	*	1.0	YES	S3VEM
Nickel	Target	23.5		mg/kg	23.5		1.0	YES	S3VEM
Potassium	Target	776		mg/kg	776		1.0	YES	S3VEM
Selenium	Target	2.5	UJ	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.96	J-	mg/kg	0.96	*	1.0	YES	S3VEM
Sodium	Target	357	U	mg/kg	187	J	1.0	YES	S3VEM
Thallium	Target	1.8	R	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.1		mg/kg	17.1		1.0	YES	S3VEM
Zinc	Target	286		mg/kg	286		1.0	YES	S3VEM
Tin	Target	22.3		mg/kg	22.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE040A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	11.3		mg/kg	11.3		1.0	YES	S3VEM
Selenium	Spike	5.9		mg/kg	5.9		1.0	YES	S3VEM
Thallium	Spike	1.8	UJ	mg/kg	1.8	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE040D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5010		mg/kg	5010		1.0	YES	S3VEM
Antimony	Target	0.89	J	mg/kg	0.89	J	1.0	YES	S3VEM
Arsenic	Target	22.4		mg/kg	22.4		1.0	YES	S3VEM
Barium	Target	139		mg/kg	139		1.0	YES	S3VEM
Beryllium	Target	0.92	J	mg/kg	0.92		1.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0		1.0	YES	S3VEM
Calcium	Target	26900		mg/kg	26900		1.0	YES	S3VEM
Chromium	Target	12.4	J	mg/kg	12.4		1.0	YES	S3VEM
Cobalt	Target	9.2		mg/kg	9.2		1.0	YES	S3VEM
Copper	Target	158		mg/kg	158		1.0	YES	S3VEM
Iron	Target	20400		mg/kg	20400		1.0	YES	S3VEM
Lead	Target	272		mg/kg	272		1.0	YES	S3VEM
Magnesium	Target	8230		mg/kg	8230		1.0	YES	S3VEM
Manganese	Target	459		mg/kg	459		1.0	YES	S3VEM
Nickel	Target	23.7		mg/kg	23.7		1.0	YES	S3VEM
Potassium	Target	775		mg/kg	775		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.96		mg/kg	0.96		1.0	YES	S3VEM
Sodium	Target	186	J	mg/kg	186	J	1.0	YES	S3VEM
Thallium	Target	1.8	UJ	mg/kg	1.8	U	1.0	YES	S3VEM
Vanadium	Target	17.4	J	mg/kg	17.4		1.0	YES	S3VEM
Zinc	Target	286		mg/kg	286		1.0	YES	S3VEM
Tin	Target	22.5		mg/kg	22.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE040L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5470		mg/kg	5470		5.0	YES	S3VEM
Antimony	Target	21.5	U	mg/kg	21.5	U	5.0	YES	S3VEM
Arsenic	Target	24.8		mg/kg	24.8		5.0	YES	S3VEM
Barium	Target	151		mg/kg	151		5.0	YES	S3VEM
Beryllium	Target	1.1	J	mg/kg	1.1	J	5.0	YES	S3VEM
Cadmium	Target	1.7	J	mg/kg	1.7	J	5.0	YES	S3VEM
Calcium	Target	29200		mg/kg	29200		5.0	YES	S3VEM
Chromium	Target	15.3	J	mg/kg	15.3	*	5.0	YES	S3VEM
Cobalt	Target	8.7	J	mg/kg	8.7	J	5.0	YES	S3VEM
Copper	Target	169		mg/kg	169		5.0	YES	S3VEM
Iron	Target	24100		mg/kg	24100	*	5.0	YES	S3VEM
Lead	Target	293		mg/kg	293		5.0	YES	S3VEM
Magnesium	Target	9380		mg/kg	9380	*	5.0	YES	S3VEM
Manganese	Target	535		mg/kg	535	*	5.0	YES	S3VEM
Nickel	Target	24.3		mg/kg	24.3		5.0	YES	S3VEM
Potassium	Target	817	J	mg/kg	817	J	5.0	YES	S3VEM
Selenium	Target	12.5	U	mg/kg	12.5	U	5.0	YES	S3VEM
Silver	Target	1.2	J	mg/kg	1.2	J	5.0	YES	S3VEM
Sodium	Target	192	J	mg/kg	192	J	5.0	YES	S3VEM
Thallium	Target	9.0	UJ	mg/kg	9.0	U	5.0	YES	S3VEM
Vanadium	Target	19.9	J	mg/kg	19.9		5.0	YES	S3VEM
Zinc	Target	304		mg/kg	304		5.0	YES	S3VEM
Tin	Target	23.0		mg/kg	23.0		5.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE040S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	3.4	J	mg/kg	3.4	J*	1.0	YES	S3VEM
Arsenic	Spike	27.7		mg/kg	27.7		1.0	YES	S3VEM
Barium	Spike	403		mg/kg	403		1.0	YES	S3VEM
Beryllium	Spike	6.6	J	mg/kg	6.6		1.0	YES	S3VEM
Cadmium	Spike	8.7		mg/kg	8.7		1.0	YES	S3VEM
Chromium	Spike	36.3	J	mg/kg	36.3		1.0	YES	S3VEM
Cobalt	Spike	78.2		mg/kg	78.2		1.0	YES	S3VEM
Copper	Spike	190		mg/kg	190		1.0	YES	S3VEM
Lead	Spike	274		mg/kg	274		1.0	YES	S3VEM
Manganese	Spike	524		mg/kg	524		1.0	YES	S3VEM
Nickel	Spike	93.6		mg/kg	93.6		1.0	YES	S3VEM
Selenium	Spike	5.2		mg/kg	5.2	*	1.0	YES	S3VEM
Silver	Spike	1.3		mg/kg	1.3	*	1.0	YES	S3VEM
Thallium	Spike	0.50	J	mg/kg	0.50	J*	1.0	YES	S3VEM
Vanadium	Spike	79.6	J	mg/kg	79.6		1.0	YES	S3VEM
Zinc	Spike	351		mg/kg	351		1.0	YES	S3VEM
Tin	Spike	103		mg/kg	103		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE041	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4800		mg/kg	4800		1.0	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1.0	YES	S3VEM
Arsenic	Target	19.2		mg/kg	19.2		1.0	YES	S3VEM
Barium	Target	141		mg/kg	141		1.0	YES	S3VEM
Beryllium	Target	0.86		mg/kg	0.86		1.0	YES	S3VEM
Cadmium	Target	2.3		mg/kg	2.3		1.0	YES	S3VEM
Calcium	Target	32400		mg/kg	32400		1.0	YES	S3VEM
Chromium	Target	21.7		mg/kg	21.7	*	1.0	YES	S3VEM
Cobalt	Target	9.4		mg/kg	9.4		1.0	YES	S3VEM
Copper	Target	207		mg/kg	207		1.0	YES	S3VEM
Iron	Target	22200		mg/kg	22200	*	1.0	YES	S3VEM
Lead	Target	205		mg/kg	205		1.0	YES	S3VEM
Magnesium	Target	6960		mg/kg	6960	*	1.0	YES	S3VEM
Manganese	Target	538		mg/kg	538	*	1.0	YES	S3VEM
Nickel	Target	27.1		mg/kg	27.1		1.0	YES	S3VEM
Potassium	Target	796		mg/kg	796		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U*	1.0	YES	S3VEM
Silver	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Sodium	Target	373	U	mg/kg	177	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Zinc	Target	384		mg/kg	384		1.0	YES	S3VEM
Tin	Target	14.8		mg/kg	14.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE042	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5030		mg/kg	5030		1.0	YES	S3VEM
Antimony	Target	1.2	J	mg/kg	1.2	J*	1.0	YES	S3VEM
Arsenic	Target	18.8		mg/kg	18.8		1.0	YES	S3VEM
Barium	Target	172		mg/kg	172		1.0	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1.0	YES	S3VEM
Cadmium	Target	2.3		mg/kg	2.3		1.0	YES	S3VEM
Calcium	Target	42100		mg/kg	42100		1.0	YES	S3VEM
Chromium	Target	27.3		mg/kg	27.3	*	1.0	YES	S3VEM
Cobalt	Target	9.7		mg/kg	9.7		1.0	YES	S3VEM
Copper	Target	137		mg/kg	137		1.0	YES	S3VEM
Iron	Target	21700		mg/kg	21700	*	1.0	YES	S3VEM
Lead	Target	187		mg/kg	187		1.0	YES	S3VEM
Magnesium	Target	8670		mg/kg	8670	*	1.0	YES	S3VEM
Manganese	Target	721		mg/kg	721	*	1.0	YES	S3VEM
Nickel	Target	25.8		mg/kg	25.8		1.0	YES	S3VEM
Potassium	Target	846		mg/kg	846		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U*	1.0	YES	S3VEM
Silver	Target	1.1		mg/kg	1.1	*	1.0	YES	S3VEM
Sodium	Target	368	U	mg/kg	169	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.1		mg/kg	16.1		1.0	YES	S3VEM
Zinc	Target	308		mg/kg	308		1.0	YES	S3VEM
Tin	Target	28.2		mg/kg	28.2		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE063	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S005	pH:	Sample Date: 09/19/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4060		mg/kg	4060		1.0	YES	S3VEM
Antimony	Target	6.2		mg/kg	6.2	*	1.0	YES	S3VEM
Arsenic	Target	10.1		mg/kg	10.1		1.0	YES	S3VEM
Barium	Target	228		mg/kg	228		1.0	YES	S3VEM
Beryllium	Target	0.45		mg/kg	0.45		1.0	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9		1.0	YES	S3VEM
Calcium	Target	26900		mg/kg	26900		1.0	YES	S3VEM
Chromium	Target	25.8		mg/kg	25.8	*	1.0	YES	S3VEM
Cobalt	Target	4.9		mg/kg	4.9		1.0	YES	S3VEM
Copper	Target	74.5		mg/kg	74.5		1.0	YES	S3VEM
Iron	Target	11100		mg/kg	11100	*	1.0	YES	S3VEM
Lead	Target	534		mg/kg	534		1.0	YES	S3VEM
Magnesium	Target	11800		mg/kg	11800	*	1.0	YES	S3VEM
Manganese	Target	277		mg/kg	277	*	1.0	YES	S3VEM
Nickel	Target	17.3		mg/kg	17.3		1.0	YES	S3VEM
Potassium	Target	713		mg/kg	713		1.0	YES	S3VEM
Selenium	Target	0.62	J	mg/kg	0.62	J*	1.0	YES	S3VEM
Silver	Target	0.74		mg/kg	0.74	*	1.0	YES	S3VEM
Sodium	Target	370	U	mg/kg	116	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	13.3		mg/kg	13.3		1.0	YES	S3VEM
Zinc	Target	410		mg/kg	410		1.0	YES	S3VEM
Tin	Target	10.1		mg/kg	10.1		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE064	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S005	pH:	Sample Date: 09/19/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5600		mg/kg	5600		1.0	YES	S3VEM
Antimony	Target	6.5		mg/kg	6.5	*	1.0	YES	S3VEM
Arsenic	Target	16.9		mg/kg	16.9		1.0	YES	S3VEM
Barium	Target	319		mg/kg	319		1.0	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64		1.0	YES	S3VEM
Cadmium	Target	2.9		mg/kg	2.9		1.0	YES	S3VEM
Calcium	Target	22400		mg/kg	22400		1.0	YES	S3VEM
Chromium	Target	39.3		mg/kg	39.3	*	1.0	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1		1.0	YES	S3VEM
Copper	Target	113		mg/kg	113		1.0	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1.0	YES	S3VEM
Lead	Target	801		mg/kg	801		1.0	YES	S3VEM
Magnesium	Target	6990		mg/kg	6990	*	1.0	YES	S3VEM
Manganese	Target	370		mg/kg	370	*	1.0	YES	S3VEM
Nickel	Target	23.7		mg/kg	23.7		1.0	YES	S3VEM
Potassium	Target	960		mg/kg	960		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U*	1.0	YES	S3VEM
Silver	Target	1.1		mg/kg	1.1	*	1.0	YES	S3VEM
Sodium	Target	376	U	mg/kg	132	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	17.3		mg/kg	17.3		1.0	YES	S3VEM
Zinc	Target	578		mg/kg	578		1.0	YES	S3VEM
Tin	Target	20.3		mg/kg	20.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE065	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S005	pH:	Sample Date: 09/19/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6090		mg/kg	6090		1.0	YES	S3VEM
Antimony	Target	2.4	J	mg/kg	2.4	J*	1.0	YES	S3VEM
Arsenic	Target	14.6		mg/kg	14.6		1.0	YES	S3VEM
Barium	Target	247		mg/kg	247		1.0	YES	S3VEM
Beryllium	Target	0.66		mg/kg	0.66		1.0	YES	S3VEM
Cadmium	Target	2.3		mg/kg	2.3		1.0	YES	S3VEM
Calcium	Target	23400		mg/kg	23400		1.0	YES	S3VEM
Chromium	Target	22.4		mg/kg	22.4	*	1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	81.4		mg/kg	81.4		1.0	YES	S3VEM
Iron	Target	15700		mg/kg	15700	*	1.0	YES	S3VEM
Lead	Target	614		mg/kg	614		1.0	YES	S3VEM
Magnesium	Target	7380		mg/kg	7380	*	1.0	YES	S3VEM
Manganese	Target	406		mg/kg	406	*	1.0	YES	S3VEM
Nickel	Target	22.9		mg/kg	22.9		1.0	YES	S3VEM
Potassium	Target	987		mg/kg	987		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.97		mg/kg	0.97	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	145	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.3		mg/kg	17.3		1.0	YES	S3VEM
Zinc	Target	366		mg/kg	366		1.0	YES	S3VEM
Tin	Target	20.7		mg/kg	20.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE066	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S005	pH:	Sample Date: 09/19/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4470		mg/kg	4470		1.0	YES	S3VEM
Antimony	Target	0.64	J	mg/kg	0.64	J*	1.0	YES	S3VEM
Arsenic	Target	5.4		mg/kg	5.4		1.0	YES	S3VEM
Barium	Target	100		mg/kg	100		1.0	YES	S3VEM
Beryllium	Target	0.41		mg/kg	0.41		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Calcium	Target	79100		mg/kg	79100	D	10.0	YES	S3VEM
Chromium	Target	9.7		mg/kg	9.7	*	1.0	YES	S3VEM
Cobalt	Target	5.0		mg/kg	5.0		1.0	YES	S3VEM
Copper	Target	32.4		mg/kg	32.4		1.0	YES	S3VEM
Iron	Target	10100		mg/kg	10100	*	1.0	YES	S3VEM
Lead	Target	104		mg/kg	104		1.0	YES	S3VEM
Magnesium	Target	16000		mg/kg	16000	*	1.0	YES	S3VEM
Manganese	Target	458		mg/kg	458	*	1.0	YES	S3VEM
Nickel	Target	11.8		mg/kg	11.8		1.0	YES	S3VEM
Potassium	Target	671		mg/kg	671		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.55	J	mg/kg	0.55	J*	1.0	YES	S3VEM
Sodium	Target	362	U	mg/kg	107	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	10.4		mg/kg	10.4		1.0	YES	S3VEM
Zinc	Target	89.1		mg/kg	89.1		1.0	YES	S3VEM
Tin	Target	4.7		mg/kg	4.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE067	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S005	pH:	Sample Date: 09/19/2017	Sample Time: 10:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4270		mg/kg	4270		1.0	YES	S3VEM
Antimony	Target	0.56	J	mg/kg	0.56	J*	1.0	YES	S3VEM
Arsenic	Target	3.8		mg/kg	3.8		1.0	YES	S3VEM
Barium	Target	82.6		mg/kg	82.6		1.0	YES	S3VEM
Beryllium	Target	0.38		mg/kg	0.38		1.0	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3		1.0	YES	S3VEM
Calcium	Target	91700		mg/kg	91700	D	10.0	YES	S3VEM
Chromium	Target	7.4		mg/kg	7.4	*	1.0	YES	S3VEM
Cobalt	Target	5.7		mg/kg	5.7		1.0	YES	S3VEM
Copper	Target	29.6		mg/kg	29.6		1.0	YES	S3VEM
Iron	Target	11300		mg/kg	11300	*	1.0	YES	S3VEM
Lead	Target	70.9		mg/kg	70.9		1.0	YES	S3VEM
Magnesium	Target	18200		mg/kg	18200	*	1.0	YES	S3VEM
Manganese	Target	554		mg/kg	554	*	1.0	YES	S3VEM
Nickel	Target	11.7		mg/kg	11.7		1.0	YES	S3VEM
Potassium	Target	720		mg/kg	720		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.52	J	mg/kg	0.52	J*	1.0	YES	S3VEM
Sodium	Target	357	U	mg/kg	113	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	10.5		mg/kg	10.5		1.0	YES	S3VEM
Zinc	Target	85.5		mg/kg	85.5		1.0	YES	S3VEM
Tin	Target	2.6		mg/kg	2.6	J	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE068	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S006	pH:	Sample Date: 09/19/2017	Sample Time: 11:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5680		mg/kg	5680		1.0	YES	S3VEM
Antimony	Target	0.99	J	mg/kg	0.99	J*	1.0	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5		1.0	YES	S3VEM
Barium	Target	148		mg/kg	148		1.0	YES	S3VEM
Beryllium	Target	0.57		mg/kg	0.57		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8		1.0	YES	S3VEM
Calcium	Target	13800		mg/kg	13800		1.0	YES	S3VEM
Chromium	Target	11.8		mg/kg	11.8	*	1.0	YES	S3VEM
Cobalt	Target	6.3		mg/kg	6.3		1.0	YES	S3VEM
Copper	Target	72.8		mg/kg	72.8		1.0	YES	S3VEM
Iron	Target	13800		mg/kg	13800	*	1.0	YES	S3VEM
Lead	Target	597		mg/kg	597		1.0	YES	S3VEM
Magnesium	Target	5420		mg/kg	5420	*	1.0	YES	S3VEM
Manganese	Target	376		mg/kg	376	*	1.0	YES	S3VEM
Nickel	Target	19.5		mg/kg	19.5		1.0	YES	S3VEM
Potassium	Target	887		mg/kg	887		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.82		mg/kg	0.82	*	1.0	YES	S3VEM
Sodium	Target	350	U	mg/kg	99.1	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.6		mg/kg	16.6		1.0	YES	S3VEM
Zinc	Target	305		mg/kg	305		1.0	YES	S3VEM
Tin	Target	13.5		mg/kg	13.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE069	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S006	pH:	Sample Date: 09/19/2017	Sample Time: 11:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6190		mg/kg	6190		1.0	YES	S3VEM
Antimony	Target	0.83	J	mg/kg	0.83	J*	1.0	YES	S3VEM
Arsenic	Target	12.2		mg/kg	12.2		1.0	YES	S3VEM
Barium	Target	299		mg/kg	299		1.0	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1.0	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9		1.0	YES	S3VEM
Calcium	Target	15500		mg/kg	15500		1.0	YES	S3VEM
Chromium	Target	14.4		mg/kg	14.4	*	1.0	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7		1.0	YES	S3VEM
Copper	Target	98.6		mg/kg	98.6		1.0	YES	S3VEM
Iron	Target	14300		mg/kg	14300	*	1.0	YES	S3VEM
Lead	Target	668		mg/kg	668		1.0	YES	S3VEM
Magnesium	Target	5440		mg/kg	5440	*	1.0	YES	S3VEM
Manganese	Target	413		mg/kg	413	*	1.0	YES	S3VEM
Nickel	Target	22.9		mg/kg	22.9		1.0	YES	S3VEM
Potassium	Target	931		mg/kg	931		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	1.4		mg/kg	1.4	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	132	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8		1.0	YES	S3VEM
Zinc	Target	311		mg/kg	311		1.0	YES	S3VEM
Tin	Target	16.4		mg/kg	16.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE070	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S006	pH:	Sample Date: 09/19/2017	Sample Time: 11:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5960		mg/kg	5960		1.0	YES	S3VEM
Antimony	Target	0.60	J	mg/kg	0.60	J*	1.0	YES	S3VEM
Arsenic	Target	11.9		mg/kg	11.9		1.0	YES	S3VEM
Barium	Target	207		mg/kg	207		1.0	YES	S3VEM
Beryllium	Target	0.65		mg/kg	0.65		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7		1.0	YES	S3VEM
Calcium	Target	33700		mg/kg	33700		1.0	YES	S3VEM
Chromium	Target	11.6		mg/kg	11.6	*	1.0	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7		1.0	YES	S3VEM
Copper	Target	82.8		mg/kg	82.8		1.0	YES	S3VEM
Iron	Target	15400		mg/kg	15400	*	1.0	YES	S3VEM
Lead	Target	527		mg/kg	527		1.0	YES	S3VEM
Magnesium	Target	6790		mg/kg	6790	*	1.0	YES	S3VEM
Manganese	Target	511		mg/kg	511	*	1.0	YES	S3VEM
Nickel	Target	17.2		mg/kg	17.2		1.0	YES	S3VEM
Potassium	Target	871		mg/kg	871		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.86		mg/kg	0.86	*	1.0	YES	S3VEM
Sodium	Target	362	U	mg/kg	122	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.9		mg/kg	17.9		1.0	YES	S3VEM
Zinc	Target	293		mg/kg	293		1.0	YES	S3VEM
Tin	Target	15.7		mg/kg	15.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE071	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S006	pH:	Sample Date: 09/19/2017	Sample Time: 11:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5840		mg/kg	5840		1.0	YES	S3VEM
Antimony	Target	0.53	J	mg/kg	0.53	J*	1.0	YES	S3VEM
Arsenic	Target	10.5		mg/kg	10.5		1.0	YES	S3VEM
Barium	Target	159		mg/kg	159		1.0	YES	S3VEM
Beryllium	Target	0.60		mg/kg	0.60		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6		1.0	YES	S3VEM
Calcium	Target	44700		mg/kg	44700		1.0	YES	S3VEM
Chromium	Target	12.8		mg/kg	12.8	*	1.0	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9		1.0	YES	S3VEM
Copper	Target	118		mg/kg	118		1.0	YES	S3VEM
Iron	Target	14200		mg/kg	14200	*	1.0	YES	S3VEM
Lead	Target	387		mg/kg	387		1.0	YES	S3VEM
Magnesium	Target	8590		mg/kg	8590	*	1.0	YES	S3VEM
Manganese	Target	469		mg/kg	469	*	1.0	YES	S3VEM
Nickel	Target	16.9		mg/kg	16.9		1.0	YES	S3VEM
Potassium	Target	872		mg/kg	872		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.82		mg/kg	0.82	*	1.0	YES	S3VEM
Sodium	Target	352	U	mg/kg	111	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.0		mg/kg	16.0		1.0	YES	S3VEM
Zinc	Target	199		mg/kg	199		1.0	YES	S3VEM
Tin	Target	11.0		mg/kg	11.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: MBE072	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S006	pH:	Sample Date: 09/19/2017	Sample Time: 11:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5890		mg/kg	5890		1.0	YES	S3VEM
Antimony	Target	0.49	J	mg/kg	0.49	J*	1.0	YES	S3VEM
Arsenic	Target	6.7		mg/kg	6.7		1.0	YES	S3VEM
Barium	Target	139		mg/kg	139		1.0	YES	S3VEM
Beryllium	Target	0.56		mg/kg	0.56		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7		1.0	YES	S3VEM
Calcium	Target	33000		mg/kg	33000		1.0	YES	S3VEM
Chromium	Target	10.5		mg/kg	10.5	*	1.0	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9		1.0	YES	S3VEM
Copper	Target	66.4		mg/kg	66.4		1.0	YES	S3VEM
Iron	Target	15400		mg/kg	15400	*	1.0	YES	S3VEM
Lead	Target	312		mg/kg	312		1.0	YES	S3VEM
Magnesium	Target	7820		mg/kg	7820	*	1.0	YES	S3VEM
Manganese	Target	472		mg/kg	472	*	1.0	YES	S3VEM
Nickel	Target	14.7		mg/kg	14.7		1.0	YES	S3VEM
Potassium	Target	760		mg/kg	760		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U*	1.0	YES	S3VEM
Silver	Target	0.82		mg/kg	0.82	*	1.0	YES	S3VEM
Sodium	Target	350	U	mg/kg	103	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.4		mg/kg	14.4		1.0	YES	S3VEM
Zinc	Target	187		mg/kg	187		1.0	YES	S3VEM
Tin	Target	6.9		mg/kg	6.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM

Sample Number: PBS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target			mg/kg	-2.6	J	1.0	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Beryllium	Target	0.50	UJ	mg/kg	0.50	U	1.0	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Chromium	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Iron	Target			mg/kg	-3.1	J	1.0	YES	S3VEM
Lead	Target			mg/kg	-0.40	J	1.0	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Manganese	Target			mg/kg	-0.34	J	1.0	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1.0	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1.0	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U	1.0	YES	S3VEM
Vanadium	Target	5.0	UJ	mg/kg	5.0	U	1.0	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Tin	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE023

Lab Code: CHM



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
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2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 20 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE028

Laboratory: Chemtech Consulting Group

Sampling dates: 9/19/17

Validation SOP: HW-3a (Rev. 1)

QAPP

Contractor: LATA

Reference: DCN # 010-RICO 0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.

Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

Sample MBE033 has a non-detected analyte (Thallium) that has been qualified R due to matrix spike % recovery failure.

Major Findings:

Sample MBE033 has analytes that have been qualified J, J+ or J-;

Minor Findings:

None

COMMENT: The concentrations of Iron, Manganese, Arsenic, Cobalt, Cadmium, Vanadium and Barium exceeded their project action levels in one or more samples.

Reviewer Name(s): Israel Okwuonu

Approver's Signature:

Date: 1017/17

Name: Russell Arnone

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES

The current SOP HW-3a (Revision 1) September, 2016 USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2, has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blank MBE079

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated field blank analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Sodium MBE028, MBE029, MBE030, MBE031, MBE032, MBE033, MBE034, MBE035, MBE036, MBE037, MBE073, MBE074, MBE075, MBE076, MBE080, MBE081, MBE082, MBE083, MBE084, MBE085

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm \text{CRQL}$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq \text{MDL}$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq \text{MDL}$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample is associated with a Matrix Spike with %R less than 30% and a Post-digestion spike with %R less than 75%. Detects are qualified as J-. Non-detects are qualified as R.



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Thallium MBE033

The following sample is associated with Matrix Spike sample that has Silver spike analyte %R less than 30% and the post digestion spike is not required. Detects are qualified as J-. Non-detects are qualified as R.

Silver MBE033

The following sample is associated with Matrix Spike sample that has spike analyte %R less than 30% and Post-digestion spike analyte %R greater than or equal to 75%. Detects are qualified as J. Non-detects are qualified as UJ.

Antimony MBE033

The following sample is associated with Matrix Spike sample that has spike analyte %R within 30 - 74% and Post-digestion spike analyte %R greater than or equal to 75%. Detects are qualified as J. Non-detects are qualified as UJ.

Arsenic MBE033

Copper MBE033

Zinc MBE033

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE MBE033/MBE085

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and its duplicate.

No problems were found for this criterion.

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which



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must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

No problems were found for this criterion.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: LCS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	32.6		mg/kg	32.6		1.0	YES	S3VEM
Antimony	Spike	12.6		mg/kg	12.6		1.0	YES	S3VEM
Arsenic	Spike	1.7		mg/kg	1.7		1.0	YES	S3VEM
Barium	Spike	31.0		mg/kg	31.0		1.0	YES	S3VEM
Beryllium	Spike	1.1	J	mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Spike	824		mg/kg	824		1.0	YES	S3VEM
Chromium	Spike	2.3	J	mg/kg	2.3		1.0	YES	S3VEM
Cobalt	Spike	9.9		mg/kg	9.9		1.0	YES	S3VEM
Copper	Spike	4.3		mg/kg	4.3		1.0	YES	S3VEM
Iron	Spike	18.9		mg/kg	18.9		1.0	YES	S3VEM
Lead	Spike	1.9		mg/kg	1.9		1.0	YES	S3VEM
Magnesium	Spike	999		mg/kg	999		1.0	YES	S3VEM
Manganese	Spike	2.6		mg/kg	2.6		1.0	YES	S3VEM
Nickel	Spike	8.3		mg/kg	8.3		1.0	YES	S3VEM
Potassium	Spike	919		mg/kg	919		1.0	YES	S3VEM
Selenium	Spike	7.5		mg/kg	7.5		1.0	YES	S3VEM
Silver	Spike	1.9		mg/kg	1.9		1.0	YES	S3VEM
Sodium	Spike	889		mg/kg	889		1.0	YES	S3VEM
Thallium	Spike	5.7	J	mg/kg	5.7		1.0	YES	S3VEM
Vanadium	Spike	9.9	J	mg/kg	9.9		1.0	YES	S3VEM
Zinc	Spike	10.4		mg/kg	10.4		1.0	YES	S3VEM
Tin	Spike	10.4		mg/kg	10.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE028	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S002	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5580		mg/kg	5580		1.0	YES	S3VEM
Antimony	Target	0.73	J	mg/kg	0.73	J*	1.0	YES	S3VEM
Arsenic	Target	8.3		mg/kg	8.3	*	1.0	YES	S3VEM
Barium	Target	164		mg/kg	164		1.0	YES	S3VEM
Beryllium	Target	0.61		mg/kg	0.61		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8		1.0	YES	S3VEM
Calcium	Target	18600		mg/kg	18600		1.0	YES	S3VEM
Chromium	Target	14.6		mg/kg	14.6	*	1.0	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0		1.0	YES	S3VEM
Copper	Target	66.2		mg/kg	66.2	*	1.0	YES	S3VEM
Iron	Target	14300		mg/kg	14300	*	1.0	YES	S3VEM
Lead	Target	226		mg/kg	226		1.0	YES	S3VEM
Magnesium	Target	6240		mg/kg	6240		1.0	YES	S3VEM
Manganese	Target	422		mg/kg	422		1.0	YES	S3VEM
Nickel	Target	28.1		mg/kg	28.1		1.0	YES	S3VEM
Potassium	Target	977		mg/kg	977		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.73	J	mg/kg	0.73	J*	1.0	YES	S3VEM
Sodium	Target	373	U	mg/kg	119	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	17.5		mg/kg	17.5		1.0	YES	S3VEM
Zinc	Target	209		mg/kg	209	*	1.0	YES	S3VEM
Tin	Target	12.0		mg/kg	12.0	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE029	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S002	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5890		mg/kg	5890		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J*	1.0	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7	*	1.0	YES	S3VEM
Barium	Target	168		mg/kg	168		1.0	YES	S3VEM
Beryllium	Target	0.66		mg/kg	0.66		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6		1.0	YES	S3VEM
Calcium	Target	11200		mg/kg	11200		1.0	YES	S3VEM
Chromium	Target	14.1		mg/kg	14.1	*	1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	67.9		mg/kg	67.9	*	1.0	YES	S3VEM
Iron	Target	16300		mg/kg	16300	*	1.0	YES	S3VEM
Lead	Target	236		mg/kg	236		1.0	YES	S3VEM
Magnesium	Target	3620		mg/kg	3620		1.0	YES	S3VEM
Manganese	Target	385		mg/kg	385		1.0	YES	S3VEM
Nickel	Target	22.7		mg/kg	22.7		1.0	YES	S3VEM
Potassium	Target	942		mg/kg	942		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.92		mg/kg	0.92	*	1.0	YES	S3VEM
Sodium	Target	368	U	mg/kg	111	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	18.4		mg/kg	18.4		1.0	YES	S3VEM
Zinc	Target	162		mg/kg	162	*	1.0	YES	S3VEM
Tin	Target	15.5		mg/kg	15.5	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE030	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S002	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5440		mg/kg	5440		1.0	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1.0	YES	S3VEM
Arsenic	Target	18.9		mg/kg	18.9	*	1.0	YES	S3VEM
Barium	Target	236		mg/kg	236		1.0	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Cadmium	Target	2.3		mg/kg	2.3		1.0	YES	S3VEM
Calcium	Target	13400		mg/kg	13400		1.0	YES	S3VEM
Chromium	Target	17.6		mg/kg	17.6	*	1.0	YES	S3VEM
Cobalt	Target	11.3		mg/kg	11.3		1.0	YES	S3VEM
Copper	Target	92.9		mg/kg	92.9	*	1.0	YES	S3VEM
Iron	Target	24500		mg/kg	24500	*	1.0	YES	S3VEM
Lead	Target	298		mg/kg	298		1.0	YES	S3VEM
Magnesium	Target	3750		mg/kg	3750		1.0	YES	S3VEM
Manganese	Target	373		mg/kg	373		1.0	YES	S3VEM
Nickel	Target	33.1		mg/kg	33.1		1.0	YES	S3VEM
Potassium	Target	832		mg/kg	832		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.3		mg/kg	1.3	*	1.0	YES	S3VEM
Sodium	Target	368	U	mg/kg	168	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	25.3		mg/kg	25.3		1.0	YES	S3VEM
Zinc	Target	270		mg/kg	270	*	1.0	YES	S3VEM
Tin	Target	17.7		mg/kg	17.7	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE031	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S002	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6280		mg/kg	6280		1.0	YES	S3VEM
Antimony	Target	1.6	J	mg/kg	1.6	J*	1.0	YES	S3VEM
Arsenic	Target	17.1		mg/kg	17.1	*	1.0	YES	S3VEM
Barium	Target	565		mg/kg	565		1.0	YES	S3VEM
Beryllium	Target	0.87		mg/kg	0.87		1.0	YES	S3VEM
Cadmium	Target	4.5		mg/kg	4.5		1.0	YES	S3VEM
Calcium	Target	17600		mg/kg	17600		1.0	YES	S3VEM
Chromium	Target	27.0		mg/kg	27.0	*	1.0	YES	S3VEM
Cobalt	Target	10.8		mg/kg	10.8		1.0	YES	S3VEM
Copper	Target	151		mg/kg	151	*	1.0	YES	S3VEM
Iron	Target	20700		mg/kg	20700	*	1.0	YES	S3VEM
Lead	Target	741		mg/kg	741		1.0	YES	S3VEM
Magnesium	Target	4360		mg/kg	4360		1.0	YES	S3VEM
Manganese	Target	579		mg/kg	579		1.0	YES	S3VEM
Nickel	Target	32.7		mg/kg	32.7		1.0	YES	S3VEM
Potassium	Target	1030		mg/kg	1030		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.3		mg/kg	1.3	*	1.0	YES	S3VEM
Sodium	Target	376	U	mg/kg	227	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	26.2		mg/kg	26.2		1.0	YES	S3VEM
Zinc	Target	601		mg/kg	601	*	1.0	YES	S3VEM
Tin	Target	83.5		mg/kg	83.5	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE032	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S002	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6010		mg/kg	6010		1.0	YES	S3VEM
Antimony	Target	0.96	J	mg/kg	0.96	J*	1.0	YES	S3VEM
Arsenic	Target	18.3		mg/kg	18.3	*	1.0	YES	S3VEM
Barium	Target	332		mg/kg	332		1.0	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1.0	YES	S3VEM
Cadmium	Target	2.6		mg/kg	2.6		1.0	YES	S3VEM
Calcium	Target	22600		mg/kg	22600		1.0	YES	S3VEM
Chromium	Target	17.9		mg/kg	17.9	*	1.0	YES	S3VEM
Cobalt	Target	10.4		mg/kg	10.4		1.0	YES	S3VEM
Copper	Target	99.1		mg/kg	99.1	*	1.0	YES	S3VEM
Iron	Target	19400		mg/kg	19400	*	1.0	YES	S3VEM
Lead	Target	389		mg/kg	389		1.0	YES	S3VEM
Magnesium	Target	4070		mg/kg	4070		1.0	YES	S3VEM
Manganese	Target	484		mg/kg	484		1.0	YES	S3VEM
Nickel	Target	26.1		mg/kg	26.1		1.0	YES	S3VEM
Potassium	Target	961		mg/kg	961		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Sodium	Target	368	U	mg/kg	184	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	24.7	J	mg/kg	24.7		1.0	YES	S3VEM
Zinc	Target	321		mg/kg	321	*	1.0	YES	S3VEM
Tin	Target	38.5		mg/kg	38.5	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE033	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4960		mg/kg	4960		1.0	YES	S3VEM
Antimony	Target	1.0	J	mg/kg	1.0	J*	1.0	YES	S3VEM
Arsenic	Target	15.6	J	mg/kg	15.6	*	1.0	YES	S3VEM
Barium	Target	195		mg/kg	195		1.0	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72		1.0	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9		1.0	YES	S3VEM
Calcium	Target	29300		mg/kg	29300		1.0	YES	S3VEM
Chromium	Target	13.1		mg/kg	13.1	*	1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM
Copper	Target	71.7	J	mg/kg	71.7	*	1.0	YES	S3VEM
Iron	Target	16900		mg/kg	16900	*	1.0	YES	S3VEM
Lead	Target	194		mg/kg	194		1.0	YES	S3VEM
Magnesium	Target	15000		mg/kg	15000		1.0	YES	S3VEM
Manganese	Target	439		mg/kg	439		1.0	YES	S3VEM
Nickel	Target	30.2		mg/kg	30.2		1.0	YES	S3VEM
Potassium	Target	912		mg/kg	912		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.83	J-	mg/kg	0.83	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	146	J	1.0	YES	S3VEM
Thallium	Target	1.8	R	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Zinc	Target	187	J	mg/kg	187	*	1.0	YES	S3VEM
Tin	Target	10.1		mg/kg	10.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE033A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	9.5		mg/kg	9.5		1.0	YES	S3VEM
Arsenic	Spike	39.9		mg/kg	39.9		1.0	YES	S3VEM
Copper	Spike	206		mg/kg	206		1.0	YES	S3VEM
Thallium	Spike	0.74	J	mg/kg	0.74	J	1.0	YES	S3VEM
Zinc	Spike	518		mg/kg	518		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE033D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4840		mg/kg	4840		1.0	YES	S3VEM
Antimony	Target	0.81	J	mg/kg	0.81	J	1.0	YES	S3VEM
Arsenic	Target	15.0		mg/kg	15.0		1.0	YES	S3VEM
Barium	Target	191		mg/kg	191		1.0	YES	S3VEM
Beryllium	Target	0.70	J	mg/kg	0.70		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8		1.0	YES	S3VEM
Calcium	Target	28900		mg/kg	28900		1.0	YES	S3VEM
Chromium	Target	12.6	J	mg/kg	12.6		1.0	YES	S3VEM
Cobalt	Target	7.3		mg/kg	7.3		1.0	YES	S3VEM
Copper	Target	69.9		mg/kg	69.9		1.0	YES	S3VEM
Iron	Target	16500		mg/kg	16500		1.0	YES	S3VEM
Lead	Target	184		mg/kg	184		1.0	YES	S3VEM
Magnesium	Target	14700		mg/kg	14700		1.0	YES	S3VEM
Manganese	Target	428		mg/kg	428		1.0	YES	S3VEM
Nickel	Target	28.7		mg/kg	28.7		1.0	YES	S3VEM
Potassium	Target	882		mg/kg	882		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.84		mg/kg	0.84		1.0	YES	S3VEM
Sodium	Target	140	J	mg/kg	140	J	1.0	YES	S3VEM
Thallium	Target	1.8	UJ	mg/kg	1.8	U	1.0	YES	S3VEM
Vanadium	Target	16.0	J	mg/kg	16.0		1.0	YES	S3VEM
Zinc	Target	182		mg/kg	182		1.0	YES	S3VEM
Tin	Target	9.3		mg/kg	9.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE033L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5000		mg/kg	5000		5.0	YES	S3VEM
Antimony	Target	21.5	U	mg/kg	21.5	U	5.0	YES	S3VEM
Arsenic	Target	17.3		mg/kg	17.3	*	5.0	YES	S3VEM
Barium	Target	198		mg/kg	198		5.0	YES	S3VEM
Beryllium	Target	0.83	J	mg/kg	0.83	J	5.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0		5.0	YES	S3VEM
Calcium	Target	30500		mg/kg	30500		5.0	YES	S3VEM
Chromium	Target	15.1	J	mg/kg	15.1	*	5.0	YES	S3VEM
Cobalt	Target	6.7	J	mg/kg	6.7	J	5.0	YES	S3VEM
Copper	Target	71.5		mg/kg	71.5		5.0	YES	S3VEM
Iron	Target	18800		mg/kg	18800	*	5.0	YES	S3VEM
Lead	Target	199		mg/kg	199		5.0	YES	S3VEM
Magnesium	Target	16000		mg/kg	16000		5.0	YES	S3VEM
Manganese	Target	481		mg/kg	481		5.0	YES	S3VEM
Nickel	Target	29.1		mg/kg	29.1		5.0	YES	S3VEM
Potassium	Target	894	J	mg/kg	894	J	5.0	YES	S3VEM
Selenium	Target	12.5	U	mg/kg	12.5	U	5.0	YES	S3VEM
Silver	Target	1.1	J	mg/kg	1.1	J	5.0	YES	S3VEM
Sodium	Target	133	J	mg/kg	133	J	5.0	YES	S3VEM
Thallium	Target	9.0	UJ	mg/kg	9.0	U	5.0	YES	S3VEM
Vanadium	Target	17.4	J	mg/kg	17.4	J	5.0	YES	S3VEM
Zinc	Target	188		mg/kg	188		5.0	YES	S3VEM
Tin	Target	8.6		mg/kg	8.6	J*	5.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE033S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	5.0		mg/kg	5.0	*	1.0	YES	S3VEM
Arsenic	Spike	19.7		mg/kg	19.7	*	1.0	YES	S3VEM
Barium	Spike	436		mg/kg	436		1.0	YES	S3VEM
Beryllium	Spike	6.3	J	mg/kg	6.3		1.0	YES	S3VEM
Cadmium	Spike	8.2		mg/kg	8.2		1.0	YES	S3VEM
Chromium	Spike	35.0	J	mg/kg	35.0		1.0	YES	S3VEM
Cobalt	Spike	74.0		mg/kg	74.0		1.0	YES	S3VEM
Copper	Spike	97.8		mg/kg	97.8	*	1.0	YES	S3VEM
Lead	Spike	184		mg/kg	184		1.0	YES	S3VEM
Manganese	Spike	473		mg/kg	473		1.0	YES	S3VEM
Nickel	Spike	94.7		mg/kg	94.7		1.0	YES	S3VEM
Selenium	Spike	6.7		mg/kg	6.7		1.0	YES	S3VEM
Silver	Spike	1.1		mg/kg	1.1	*	1.0	YES	S3VEM
Thallium	Spike	1.9	J	mg/kg	1.9	*	1.0	YES	S3VEM
Vanadium	Spike	76.9	J	mg/kg	76.9		1.0	YES	S3VEM
Zinc	Spike	234		mg/kg	234	*	1.0	YES	S3VEM
Tin	Spike	88.1		mg/kg	88.1		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE034	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4330		mg/kg	4330		1.0	YES	S3VEM
Antimony	Target	0.98	J	mg/kg	0.98	J*	1.0	YES	S3VEM
Arsenic	Target	18.1		mg/kg	18.1	*	1.0	YES	S3VEM
Barium	Target	270		mg/kg	270		1.0	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1.0	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9		1.0	YES	S3VEM
Calcium	Target	20200		mg/kg	20200		1.0	YES	S3VEM
Chromium	Target	10.3		mg/kg	10.3	*	1.0	YES	S3VEM
Cobalt	Target	7.5		mg/kg	7.5		1.0	YES	S3VEM
Copper	Target	113		mg/kg	113	*	1.0	YES	S3VEM
Iron	Target	19600		mg/kg	19600	*	1.0	YES	S3VEM
Lead	Target	187		mg/kg	187		1.0	YES	S3VEM
Magnesium	Target	10200		mg/kg	10200		1.0	YES	S3VEM
Manganese	Target	276		mg/kg	276		1.0	YES	S3VEM
Nickel	Target	26.0		mg/kg	26.0		1.0	YES	S3VEM
Potassium	Target	631		mg/kg	631		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.93		mg/kg	0.93	*	1.0	YES	S3VEM
Sodium	Target	370	U	mg/kg	172	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	17.1		mg/kg	17.1		1.0	YES	S3VEM
Zinc	Target	181		mg/kg	181	*	1.0	YES	S3VEM
Tin	Target	9.7		mg/kg	9.7	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE035	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4900		mg/kg	4900		1.0	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J*	1.0	YES	S3VEM
Arsenic	Target	41.4		mg/kg	41.4	*	1.0	YES	S3VEM
Barium	Target	187		mg/kg	187		1.0	YES	S3VEM
Beryllium	Target	0.98		mg/kg	0.98		1.0	YES	S3VEM
Cadmium	Target	2.5		mg/kg	2.5		1.0	YES	S3VEM
Calcium	Target	29000		mg/kg	29000		1.0	YES	S3VEM
Chromium	Target	10.3		mg/kg	10.3	*	1.0	YES	S3VEM
Cobalt	Target	10.1		mg/kg	10.1		1.0	YES	S3VEM
Copper	Target	126		mg/kg	126	*	1.0	YES	S3VEM
Iron	Target	21200		mg/kg	21200	*	1.0	YES	S3VEM
Lead	Target	225		mg/kg	225		1.0	YES	S3VEM
Magnesium	Target	6700		mg/kg	6700		1.0	YES	S3VEM
Manganese	Target	498		mg/kg	498		1.0	YES	S3VEM
Nickel	Target	24.5		mg/kg	24.5		1.0	YES	S3VEM
Potassium	Target	910		mg/kg	910		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	175	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.8		mg/kg	17.8		1.0	YES	S3VEM
Zinc	Target	310		mg/kg	310	*	1.0	YES	S3VEM
Tin	Target	13.3		mg/kg	13.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE036	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5160		mg/kg	5160		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J*	1.0	YES	S3VEM
Arsenic	Target	19.8		mg/kg	19.8	*	1.0	YES	S3VEM
Barium	Target	161		mg/kg	161		1.0	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1.0	YES	S3VEM
Cadmium	Target	2.1		mg/kg	2.1		1.0	YES	S3VEM
Calcium	Target	40800		mg/kg	40800		1.0	YES	S3VEM
Chromium	Target	13.5		mg/kg	13.5	*	1.0	YES	S3VEM
Cobalt	Target	9.3		mg/kg	9.3		1.0	YES	S3VEM
Copper	Target	138		mg/kg	138	*	1.0	YES	S3VEM
Iron	Target	20600		mg/kg	20600	*	1.0	YES	S3VEM
Lead	Target	226		mg/kg	226		1.0	YES	S3VEM
Magnesium	Target	7720		mg/kg	7720		1.0	YES	S3VEM
Manganese	Target	598		mg/kg	598		1.0	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1.0	YES	S3VEM
Potassium	Target	908		mg/kg	908		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	1.1		mg/kg	1.1	*	1.0	YES	S3VEM
Sodium	Target	357	U	mg/kg	148	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	15.7		mg/kg	15.7		1.0	YES	S3VEM
Zinc	Target	248		mg/kg	248	*	1.0	YES	S3VEM
Tin	Target	31.1		mg/kg	31.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE037	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6160		mg/kg	6160		1.0	YES	S3VEM
Antimony	Target	1.3	J	mg/kg	1.3	J*	1.0	YES	S3VEM
Arsenic	Target	14.0		mg/kg	14.0	*	1.0	YES	S3VEM
Barium	Target	393		mg/kg	393		1.0	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7		1.0	YES	S3VEM
Calcium	Target	42400		mg/kg	42400		1.0	YES	S3VEM
Chromium	Target	12.8		mg/kg	12.8	*	1.0	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3		1.0	YES	S3VEM
Copper	Target	124		mg/kg	124	*	1.0	YES	S3VEM
Iron	Target	16600		mg/kg	16600	*	1.0	YES	S3VEM
Lead	Target	1180		mg/kg	1180		1.0	YES	S3VEM
Magnesium	Target	7340		mg/kg	7340		1.0	YES	S3VEM
Manganese	Target	633		mg/kg	633		1.0	YES	S3VEM
Nickel	Target	19.6		mg/kg	19.6		1.0	YES	S3VEM
Potassium	Target	994		mg/kg	994		1.0	YES	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1.0	YES	S3VEM
Silver	Target	0.88		mg/kg	0.88	*	1.0	YES	S3VEM
Sodium	Target	379	U	mg/kg	146	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	19.7		mg/kg	19.7		1.0	YES	S3VEM
Zinc	Target	280		mg/kg	280	*	1.0	YES	S3VEM
Tin	Target	24.6		mg/kg	24.6	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE073	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S004	pH:	Sample Date: 09/19/2017	Sample Time: 12:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5040		mg/kg	5040		1.0	YES	S3VEM
Antimony	Target	1.5	J	mg/kg	1.5	J*	1.0	YES	S3VEM
Arsenic	Target	22.4		mg/kg	22.4	*	1.0	YES	S3VEM
Barium	Target	135		mg/kg	135		1.0	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Cadmium	Target	2.1		mg/kg	2.1		1.0	YES	S3VEM
Calcium	Target	23200		mg/kg	23200		1.0	YES	S3VEM
Chromium	Target	12.2		mg/kg	12.2	*	1.0	YES	S3VEM
Cobalt	Target	9.2		mg/kg	9.2		1.0	YES	S3VEM
Copper	Target	166		mg/kg	166	*	1.0	YES	S3VEM
Iron	Target	22200		mg/kg	22200	*	1.0	YES	S3VEM
Lead	Target	246		mg/kg	246		1.0	YES	S3VEM
Magnesium	Target	7670		mg/kg	7670		1.0	YES	S3VEM
Manganese	Target	405		mg/kg	405		1.0	YES	S3VEM
Nickel	Target	23.9		mg/kg	23.9		1.0	YES	S3VEM
Potassium	Target	730		mg/kg	730		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	1.1		mg/kg	1.1	*	1.0	YES	S3VEM
Sodium	Target	373	U	mg/kg	200	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	18.2		mg/kg	18.2		1.0	YES	S3VEM
Zinc	Target	264		mg/kg	264	*	1.0	YES	S3VEM
Tin	Target	20.7		mg/kg	20.7	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE074	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S008	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5370		mg/kg	5370		1.0	YES	S3VEM
Antimony	Target	0.45	J	mg/kg	0.45	J*	1.0	YES	S3VEM
Arsenic	Target	6.2		mg/kg	6.2	*	1.0	YES	S3VEM
Barium	Target	87.3		mg/kg	87.3		1.0	YES	S3VEM
Beryllium	Target	0.43		mg/kg	0.43		1.0	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Calcium	Target	13000		mg/kg	13000		1.0	YES	S3VEM
Chromium	Target	10.8		mg/kg	10.8	*	1.0	YES	S3VEM
Cobalt	Target	5.2		mg/kg	5.2		1.0	YES	S3VEM
Copper	Target	38.5		mg/kg	38.5	*	1.0	YES	S3VEM
Iron	Target	10800		mg/kg	10800	*	1.0	YES	S3VEM
Lead	Target	161		mg/kg	161		1.0	YES	S3VEM
Magnesium	Target	5120		mg/kg	5120		1.0	YES	S3VEM
Manganese	Target	312		mg/kg	312		1.0	YES	S3VEM
Nickel	Target	16.3		mg/kg	16.3		1.0	YES	S3VEM
Potassium	Target	741		mg/kg	741		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.55	J	mg/kg	0.55	J*	1.0	YES	S3VEM
Sodium	Target	352	U	mg/kg	86.6	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.1		mg/kg	13.1		1.0	YES	S3VEM
Zinc	Target	110		mg/kg	110	*	1.0	YES	S3VEM
Tin	Target	5.3		mg/kg	5.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE075	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S008	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5780		mg/kg	5780		1.0	YES	S3VEM
Antimony	Target	0.43	J	mg/kg	0.43	J*	1.0	YES	S3VEM
Arsenic	Target	7.2		mg/kg	7.2	*	1.0	YES	S3VEM
Barium	Target	104		mg/kg	104		1.0	YES	S3VEM
Beryllium	Target	0.49		mg/kg	0.49		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Calcium	Target	17200		mg/kg	17200		1.0	YES	S3VEM
Chromium	Target	10.6		mg/kg	10.6	*	1.0	YES	S3VEM
Cobalt	Target	5.9		mg/kg	5.9		1.0	YES	S3VEM
Copper	Target	42.2		mg/kg	42.2	*	1.0	YES	S3VEM
Iron	Target	11700		mg/kg	11700	*	1.0	YES	S3VEM
Lead	Target	191		mg/kg	191		1.0	YES	S3VEM
Magnesium	Target	5730		mg/kg	5730		1.0	YES	S3VEM
Manganese	Target	385		mg/kg	385		1.0	YES	S3VEM
Nickel	Target	16.3		mg/kg	16.3		1.0	YES	S3VEM
Potassium	Target	774		mg/kg	774		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.61	J	mg/kg	0.61	J*	1.0	YES	S3VEM
Sodium	Target	362	U	mg/kg	94.7	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.9		mg/kg	13.9		1.0	YES	S3VEM
Zinc	Target	109		mg/kg	109	*	1.0	YES	S3VEM
Tin	Target	7.0		mg/kg	7.0	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE076	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S008	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5850		mg/kg	5850		1.0	YES	S3VEM
Antimony	Target	4.3	U	mg/kg	4.3	U*	1.0	YES	S3VEM
Arsenic	Target	7.9		mg/kg	7.9	*	1.0	YES	S3VEM
Barium	Target	113		mg/kg	113		1.0	YES	S3VEM
Beryllium	Target	0.50		mg/kg	0.50		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Calcium	Target	28200		mg/kg	28200		1.0	YES	S3VEM
Chromium	Target	10.3		mg/kg	10.3	*	1.0	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1.0	YES	S3VEM
Copper	Target	39.5		mg/kg	39.5	*	1.0	YES	S3VEM
Iron	Target	12200		mg/kg	12200	*	1.0	YES	S3VEM
Lead	Target	200		mg/kg	200		1.0	YES	S3VEM
Magnesium	Target	7190		mg/kg	7190		1.0	YES	S3VEM
Manganese	Target	425		mg/kg	425		1.0	YES	S3VEM
Nickel	Target	14.3		mg/kg	14.3		1.0	YES	S3VEM
Potassium	Target	827		mg/kg	827		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.65	J	mg/kg	0.65	J*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	105	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.5		mg/kg	13.5		1.0	YES	S3VEM
Zinc	Target	109		mg/kg	109	*	1.0	YES	S3VEM
Tin	Target	7.9		mg/kg	7.9	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE080	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S007	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5380		mg/kg	5380		1.0	YES	S3VEM
Antimony	Target	0.46	J	mg/kg	0.46	J*	1.0	YES	S3VEM
Arsenic	Target	5.8		mg/kg	5.8	*	1.0	YES	S3VEM
Barium	Target	103		mg/kg	103		1.0	YES	S3VEM
Beryllium	Target	0.42		mg/kg	0.42		1.0	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Target	9240		mg/kg	9240		1.0	YES	S3VEM
Chromium	Target	10.1		mg/kg	10.1	*	1.0	YES	S3VEM
Cobalt	Target	5.3		mg/kg	5.3		1.0	YES	S3VEM
Copper	Target	47.3		mg/kg	47.3	*	1.0	YES	S3VEM
Iron	Target	10700		mg/kg	10700	*	1.0	YES	S3VEM
Lead	Target	186		mg/kg	186		1.0	YES	S3VEM
Magnesium	Target	3980		mg/kg	3980		1.0	YES	S3VEM
Manganese	Target	420		mg/kg	420		1.0	YES	S3VEM
Nickel	Target	15.7		mg/kg	15.7		1.0	YES	S3VEM
Potassium	Target	692		mg/kg	692		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.58	J	mg/kg	0.58	J*	1.0	YES	S3VEM
Sodium	Target	376	U	mg/kg	80.7	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	13.3		mg/kg	13.3		1.0	YES	S3VEM
Zinc	Target	140		mg/kg	140	*	1.0	YES	S3VEM
Tin	Target	6.3		mg/kg	6.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE081	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S007	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6420		mg/kg	6420		1.0	YES	S3VEM
Antimony	Target	4.6	U	mg/kg	4.6	U*	1.0	YES	S3VEM
Arsenic	Target	5.3		mg/kg	5.3	*	1.0	YES	S3VEM
Barium	Target	118		mg/kg	118		1.0	YES	S3VEM
Beryllium	Target	0.47		mg/kg	0.47		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Calcium	Target	11000		mg/kg	11000		1.0	YES	S3VEM
Chromium	Target	10.4		mg/kg	10.4	*	1.0	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1.0	YES	S3VEM
Copper	Target	46.4		mg/kg	46.4	*	1.0	YES	S3VEM
Iron	Target	12500		mg/kg	12500	*	1.0	YES	S3VEM
Lead	Target	229		mg/kg	229		1.0	YES	S3VEM
Magnesium	Target	4420		mg/kg	4420		1.0	YES	S3VEM
Manganese	Target	554		mg/kg	554		1.0	YES	S3VEM
Nickel	Target	16.7		mg/kg	16.7		1.0	YES	S3VEM
Potassium	Target	694		mg/kg	694		1.0	YES	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1.0	YES	S3VEM
Silver	Target	0.61	J	mg/kg	0.61	J*	1.0	YES	S3VEM
Sodium	Target	379	U	mg/kg	93.4	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	15.7		mg/kg	15.7		1.0	YES	S3VEM
Zinc	Target	139		mg/kg	139	*	1.0	YES	S3VEM
Tin	Target	5.4		mg/kg	5.4	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE082	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S007	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5810		mg/kg	5810		1.0	YES	S3VEM
Antimony	Target	0.57	J	mg/kg	0.57	J*	1.0	YES	S3VEM
Arsenic	Target	7.3		mg/kg	7.3	*	1.0	YES	S3VEM
Barium	Target	137		mg/kg	137		1.0	YES	S3VEM
Beryllium	Target	0.48		mg/kg	0.48		1.0	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3		1.0	YES	S3VEM
Calcium	Target	14800		mg/kg	14800		1.0	YES	S3VEM
Chromium	Target	10.6		mg/kg	10.6	*	1.0	YES	S3VEM
Cobalt	Target	6.1		mg/kg	6.1		1.0	YES	S3VEM
Copper	Target	45.9		mg/kg	45.9	*	1.0	YES	S3VEM
Iron	Target	12900		mg/kg	12900	*	1.0	YES	S3VEM
Lead	Target	297		mg/kg	297		1.0	YES	S3VEM
Magnesium	Target	4170		mg/kg	4170		1.0	YES	S3VEM
Manganese	Target	451		mg/kg	451		1.0	YES	S3VEM
Nickel	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Potassium	Target	614		mg/kg	614		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.65	J	mg/kg	0.65	J*	1.0	YES	S3VEM
Sodium	Target	370	U	mg/kg	105	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	14.8		mg/kg	14.8		1.0	YES	S3VEM
Zinc	Target	142		mg/kg	142	*	1.0	YES	S3VEM
Tin	Target	8.1		mg/kg	8.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE083	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S007	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6640		mg/kg	6640		1.0	YES	S3VEM
Antimony	Target	0.69	J	mg/kg	0.69	J*	1.0	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5	*	1.0	YES	S3VEM
Barium	Target	226		mg/kg	226		1.0	YES	S3VEM
Beryllium	Target	0.73		mg/kg	0.73		1.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0		1.0	YES	S3VEM
Calcium	Target	15600		mg/kg	15600		1.0	YES	S3VEM
Chromium	Target	16.2		mg/kg	16.2	*	1.0	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9		1.0	YES	S3VEM
Copper	Target	70.8		mg/kg	70.8	*	1.0	YES	S3VEM
Iron	Target	12600		mg/kg	12600	*	1.0	YES	S3VEM
Lead	Target	712		mg/kg	712		1.0	YES	S3VEM
Magnesium	Target	4970		mg/kg	4970		1.0	YES	S3VEM
Manganese	Target	382		mg/kg	382		1.0	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1.0	YES	S3VEM
Potassium	Target	839		mg/kg	839		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.85		mg/kg	0.85	*	1.0	YES	S3VEM
Sodium	Target	352	U	mg/kg	146	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	18.6		mg/kg	18.6		1.0	YES	S3VEM
Zinc	Target	296		mg/kg	296	*	1.0	YES	S3VEM
Tin	Target	18.1		mg/kg	18.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE084	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S007	pH:	Sample Date: 09/19/2017	Sample Time: 15:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6890		mg/kg	6890		1.0	YES	S3VEM
Antimony	Target	0.61	J	mg/kg	0.61	J*	1.0	YES	S3VEM
Arsenic	Target	8.9		mg/kg	8.9	*	1.0	YES	S3VEM
Barium	Target	192		mg/kg	192		1.0	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6		1.0	YES	S3VEM
Calcium	Target	21700		mg/kg	21700		1.0	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1	*	1.0	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0		1.0	YES	S3VEM
Copper	Target	73.3		mg/kg	73.3	*	1.0	YES	S3VEM
Iron	Target	11400		mg/kg	11400	*	1.0	YES	S3VEM
Lead	Target	861		mg/kg	861		1.0	YES	S3VEM
Magnesium	Target	5780		mg/kg	5780		1.0	YES	S3VEM
Manganese	Target	381		mg/kg	381		1.0	YES	S3VEM
Nickel	Target	19.4		mg/kg	19.4		1.0	YES	S3VEM
Potassium	Target	906		mg/kg	906		1.0	YES	S3VEM
Selenium	Target	2.4	U	mg/kg	2.4	U	1.0	YES	S3VEM
Silver	Target	0.84		mg/kg	0.84	*	1.0	YES	S3VEM
Sodium	Target	345	U	mg/kg	138	J	1.0	YES	S3VEM
Thallium	Target	1.7	U	mg/kg	1.7	U*	1.0	YES	S3VEM
Vanadium	Target	17.2		mg/kg	17.2		1.0	YES	S3VEM
Zinc	Target	236		mg/kg	236	*	1.0	YES	S3VEM
Tin	Target	15.2		mg/kg	15.2	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: MBE085	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S003	pH:	Sample Date: 09/19/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4800		mg/kg	4800		1.0	YES	S3VEM
Antimony	Target	0.69	J	mg/kg	0.69	J*	1.0	YES	S3VEM
Arsenic	Target	13.4		mg/kg	13.4	*	1.0	YES	S3VEM
Barium	Target	198		mg/kg	198		1.0	YES	S3VEM
Beryllium	Target	0.66		mg/kg	0.66		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7		1.0	YES	S3VEM
Calcium	Target	31500		mg/kg	31500		1.0	YES	S3VEM
Chromium	Target	12.3		mg/kg	12.3	*	1.0	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1		1.0	YES	S3VEM
Copper	Target	76.7		mg/kg	76.7	*	1.0	YES	S3VEM
Iron	Target	15400		mg/kg	15400	*	1.0	YES	S3VEM
Lead	Target	187		mg/kg	187		1.0	YES	S3VEM
Magnesium	Target	15800		mg/kg	15800		1.0	YES	S3VEM
Manganese	Target	406		mg/kg	406		1.0	YES	S3VEM
Nickel	Target	27.8		mg/kg	27.8		1.0	YES	S3VEM
Potassium	Target	809		mg/kg	809		1.0	YES	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1.0	YES	S3VEM
Silver	Target	0.79		mg/kg	0.79	*	1.0	YES	S3VEM
Sodium	Target	382	U	mg/kg	145	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	15.2		mg/kg	15.2		1.0	YES	S3VEM
Zinc	Target	177		mg/kg	177	*	1.0	YES	S3VEM
Tin	Target	8.9		mg/kg	8.9	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM

Sample Number: PBS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target			mg/kg	-2.5	J	1.0	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Beryllium	Target	0.50	UJ	mg/kg	0.50	U	1.0	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Chromium	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Iron	Target			mg/kg	-2.2	J	1.0	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Manganese	Target			mg/kg	-0.33	J	1.0	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1.0	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1.0	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U	1.0	YES	S3VEM
Vanadium	Target	5.0	UJ	mg/kg	5.0	U	1.0	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Tin	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE028

Lab Code: CHM



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 19 (Soil) & 1 (Water)

Analysis: Metals (ICP-AES)

SDG No.: MBE077

Laboratory: Chemtech Consulting Group

Sampling dates: 9/19/2017 – 9/20/2017

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified “R” rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified “J” estimated. “J+” and “J-“ represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

Sample MBE0A2 has a non-detected analyte (Silver) that has been qualified R due to associated matrix spike percent recovery less than 30%.

Major Findings:

Sample MBE0A2 has analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentration of **Iron, Lead, Manganese, Arsenic, Barium, Cadmium and Cobalt** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/13/2017

Name: Narendra Kumar

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blanks: MBE079 and MBE0C7

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated Field Blank analyte results are greater than or equal to MDLs and less than or equal to CRQLs. Detects are qualified as U. Sample results are reported at CRQLs.

Sodium MBE077, MBE078.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq MDL$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq MDL$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample has matrix spike percent recovery less than 30% and Post-digestion spike sample is not required. Detects are qualified as J-. Non-detects are qualified as R.

Silver MBE0A2.



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The following sample has matrix spike recovery in the range of 30 – 74% and the post digestion spike sample has percent recovery less than 75%. Detected analyte with result greater than or equal to MDL is qualified J-. Non-detected analytes are qualified UJ.

Thallium MBE0A2.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE: MBE0A2/MBE0C6

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the 2xCRQL shall be used if either the sample or duplicate value is $<$ 5x the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

The following Duplicate and original soil sample results are greater than or equal to 5x the CRQL and RPD is greater than 50%. Detected analytes are qualified J.

Arsenic, Barium, Cadmium, Chromium, Copper, Nickel, Zinc MBE0A2 and MBE0C6 (in SDG MBE086)

The following Duplicate and/or original soil sample results are less than 5x the CRQL and absolute difference between duplicate and original samples are greater than 2x the CRQL. Detected analytes with results greater than MDL are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0A2 and MBE0C6 (in SDG MBE086)

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-AES Serial Dilution (SD) soil sample has percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The detected analytes in samples are qualified J.

Cadmium MBE0A2.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, "J". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: LCS001	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location:	pH: 2	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	373		ug/L	373		1.0	YES	S3VEM
Antimony	Spike	110		ug/L	110		1.0	YES	S3VEM
Arsenic	Spike	17.3	J	ug/L	17.3		1.0	YES	S3VEM
Barium	Spike	304		ug/L	304		1.0	YES	S3VEM
Beryllium	Spike	11.2		ug/L	11.2		1.0	YES	S3VEM
Cadmium	Spike	10.8		ug/L	10.8		1.0	YES	S3VEM
Calcium	Spike	9540		ug/L	9540		1.0	YES	S3VEM
Chromium	Spike	23.9	J	ug/L	23.9		1.0	YES	S3VEM
Cobalt	Spike	95.0		ug/L	95.0		1.0	YES	S3VEM
Copper	Spike	48.2		ug/L	48.2		1.0	YES	S3VEM
Iron	Spike	233	J	ug/L	233		1.0	YES	S3VEM
Lead	Spike	21.5		ug/L	21.5		1.0	YES	S3VEM
Magnesium	Spike	10600		ug/L	10600		1.0	YES	S3VEM
Manganese	Spike	33.0		ug/L	33.0		1.0	YES	S3VEM
Nickel	Spike	80.0		ug/L	80.0		1.0	YES	S3VEM
Potassium	Spike	9220		ug/L	9220		1.0	YES	S3VEM
Selenium	Spike	68.5		ug/L	68.5		1.0	YES	S3VEM
Silver	Spike	18.9		ug/L	18.9		1.0	YES	S3VEM
Sodium	Spike	9570		ug/L	9570		1.0	YES	S3VEM
Thallium	Spike	58.0	J	ug/L	58.0		1.0	YES	S3VEM
Vanadium	Spike	105		ug/L	105		1.0	YES	S3VEM
Zinc	Spike	104		ug/L	104		1.0	YES	S3VEM
Tin	Spike	13.4		ug/L	13.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: LCS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	36.7		mg/kg	36.7		1.0	YES	S3VEM
Antimony	Spike	11.3		mg/kg	11.3		1.0	YES	S3VEM
Arsenic	Spike	1.8	J	mg/kg	1.8		1.0	YES	S3VEM
Barium	Spike	30.6		mg/kg	30.6		1.0	YES	S3VEM
Beryllium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Spike	922		mg/kg	922		1.0	YES	S3VEM
Chromium	Spike	2.3	J	mg/kg	2.3		1.0	YES	S3VEM
Cobalt	Spike	9.4		mg/kg	9.4		1.0	YES	S3VEM
Copper	Spike	4.7		mg/kg	4.7		1.0	YES	S3VEM
Iron	Spike	22.5	J	mg/kg	22.5		1.0	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1.0	YES	S3VEM
Magnesium	Spike	1050		mg/kg	1050		1.0	YES	S3VEM
Manganese	Spike	3.2		mg/kg	3.2		1.0	YES	S3VEM
Nickel	Spike	8.0		mg/kg	8.0		1.0	YES	S3VEM
Potassium	Spike	928		mg/kg	928		1.0	YES	S3VEM
Selenium	Spike	6.9		mg/kg	6.9		1.0	YES	S3VEM
Silver	Spike	1.8		mg/kg	1.8		1.0	YES	S3VEM
Sodium	Spike	952		mg/kg	952		1.0	YES	S3VEM
Thallium	Spike	5.4	J	mg/kg	5.4		1.0	YES	S3VEM
Vanadium	Spike	10.4		mg/kg	10.4		1.0	YES	S3VEM
Zinc	Spike	9.9		mg/kg	9.9		1.0	YES	S3VEM
Tin	Spike	9.0		mg/kg	9.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE043	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S001	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6970		mg/kg	6970		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J	1.0	YES	S3VEM
Arsenic	Target	10.7		mg/kg	10.7	*	1.0	YES	S3VEM
Barium	Target	189		mg/kg	189		1.0	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1.0	YES	S3VEM
Cadmium	Target	2.2		mg/kg	2.2	*	1.0	YES	S3VEM
Calcium	Target	9700		mg/kg	9700		1.0	YES	S3VEM
Chromium	Target	15.9		mg/kg	15.9	*	1.0	YES	S3VEM
Cobalt	Target	9.1		mg/kg	9.1	*	1.0	YES	S3VEM
Copper	Target	74.2		mg/kg	74.2		1.0	YES	S3VEM
Iron	Target	17100		mg/kg	17100	*	1.0	YES	S3VEM
Lead	Target	462		mg/kg	462		1.0	YES	S3VEM
Magnesium	Target	3850		mg/kg	3850		1.0	YES	S3VEM
Manganese	Target	1110		mg/kg	1110	*	1.0	YES	S3VEM
Nickel	Target	24.6		mg/kg	24.6		1.0	YES	S3VEM
Potassium	Target	1420		mg/kg	1420		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.86		mg/kg	0.86	*	1.0	YES	S3VEM
Sodium	Target	130	J	mg/kg	130	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.1		mg/kg	17.1		1.0	YES	S3VEM
Zinc	Target	245		mg/kg	245		1.0	YES	S3VEM
Tin	Target	12.5		mg/kg	12.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE044	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S001	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7180		mg/kg	7180		1.0	YES	S3VEM
Antimony	Target	0.68	J	mg/kg	0.68	J	1.0	YES	S3VEM
Arsenic	Target	11.4		mg/kg	11.4	*	1.0	YES	S3VEM
Barium	Target	196		mg/kg	196		1.0	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76		1.0	YES	S3VEM
Cadmium	Target	2.2		mg/kg	2.2	*	1.0	YES	S3VEM
Calcium	Target	10700		mg/kg	10700		1.0	YES	S3VEM
Chromium	Target	14.7		mg/kg	14.7	*	1.0	YES	S3VEM
Cobalt	Target	9.6		mg/kg	9.6	*	1.0	YES	S3VEM
Copper	Target	168		mg/kg	168		1.0	YES	S3VEM
Iron	Target	17300		mg/kg	17300	*	1.0	YES	S3VEM
Lead	Target	482		mg/kg	482		1.0	YES	S3VEM
Magnesium	Target	3470		mg/kg	3470		1.0	YES	S3VEM
Manganese	Target	1220		mg/kg	1220	*	1.0	YES	S3VEM
Nickel	Target	22.5		mg/kg	22.5		1.0	YES	S3VEM
Potassium	Target	1260		mg/kg	1260		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.87		mg/kg	0.87	*	1.0	YES	S3VEM
Sodium	Target	140	J	mg/kg	140	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.4		mg/kg	17.4		1.0	YES	S3VEM
Zinc	Target	276		mg/kg	276		1.0	YES	S3VEM
Tin	Target	14.9		mg/kg	14.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE045	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S001	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7410		mg/kg	7410		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J	1.0	YES	S3VEM
Arsenic	Target	10.1		mg/kg	10.1	*	1.0	YES	S3VEM
Barium	Target	115		mg/kg	115		1.0	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Calcium	Target	6800		mg/kg	6800		1.0	YES	S3VEM
Chromium	Target	12.3		mg/kg	12.3	*	1.0	YES	S3VEM
Cobalt	Target	10.1		mg/kg	10.1	*	1.0	YES	S3VEM
Copper	Target	130		mg/kg	130		1.0	YES	S3VEM
Iron	Target	17300		mg/kg	17300	*	1.0	YES	S3VEM
Lead	Target	211		mg/kg	211		1.0	YES	S3VEM
Magnesium	Target	2500		mg/kg	2500		1.0	YES	S3VEM
Manganese	Target	1320		mg/kg	1320	*	1.0	YES	S3VEM
Nickel	Target	18.7		mg/kg	18.7		1.0	YES	S3VEM
Potassium	Target	1120		mg/kg	1120		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.76		mg/kg	0.76	*	1.0	YES	S3VEM
Sodium	Target	130	J	mg/kg	130	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	15.6		mg/kg	15.6		1.0	YES	S3VEM
Zinc	Target	123		mg/kg	123		1.0	YES	S3VEM
Tin	Target	8.6		mg/kg	8.6		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE046	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S001	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7260		mg/kg	7260		1.0	YES	S3VEM
Antimony	Target	0.48	J	mg/kg	0.48	J	1.0	YES	S3VEM
Arsenic	Target	7.7		mg/kg	7.7	*	1.0	YES	S3VEM
Barium	Target	71.9		mg/kg	71.9		1.0	YES	S3VEM
Beryllium	Target	0.68		mg/kg	0.68		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Calcium	Target	11600		mg/kg	11600		1.0	YES	S3VEM
Chromium	Target	12.5		mg/kg	12.5	*	1.0	YES	S3VEM
Cobalt	Target	10.3		mg/kg	10.3	*	1.0	YES	S3VEM
Copper	Target	38.5		mg/kg	38.5		1.0	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1.0	YES	S3VEM
Lead	Target	85.3		mg/kg	85.3		1.0	YES	S3VEM
Magnesium	Target	2590		mg/kg	2590		1.0	YES	S3VEM
Manganese	Target	1190		mg/kg	1190	*	1.0	YES	S3VEM
Nickel	Target	20.6		mg/kg	20.6		1.0	YES	S3VEM
Potassium	Target	1060		mg/kg	1060		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.67	J	mg/kg	0.67	J*	1.0	YES	S3VEM
Sodium	Target	133	J	mg/kg	133	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.3		mg/kg	14.3		1.0	YES	S3VEM
Zinc	Target	64.2		mg/kg	64.2		1.0	YES	S3VEM
Tin	Target	4.4		mg/kg	4.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE047	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S001	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5790		mg/kg	5790		1.0	YES	S3VEM
Antimony	Target	4.3	U	mg/kg	4.3	U	1.0	YES	S3VEM
Arsenic	Target	5.5		mg/kg	5.5	*	1.0	YES	S3VEM
Barium	Target	51.6		mg/kg	51.6		1.0	YES	S3VEM
Beryllium	Target	0.57		mg/kg	0.57		1.0	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1.0	YES	S3VEM
Calcium	Target	66800		mg/kg	66800	D	10.0	YES	S3VEM
Chromium	Target	10.8		mg/kg	10.8	*	1.0	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1.0	YES	S3VEM
Copper	Target	34.0		mg/kg	34.0		1.0	YES	S3VEM
Iron	Target	15000		mg/kg	15000	*	1.0	YES	S3VEM
Lead	Target	73.6		mg/kg	73.6		1.0	YES	S3VEM
Magnesium	Target	11000		mg/kg	11000		1.0	YES	S3VEM
Manganese	Target	794		mg/kg	794	*	1.0	YES	S3VEM
Nickel	Target	18.7		mg/kg	18.7		1.0	YES	S3VEM
Potassium	Target	1150		mg/kg	1150		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.50	J	mg/kg	0.50	J*	1.0	YES	S3VEM
Sodium	Target	140	J	mg/kg	140	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	11.5		mg/kg	11.5		1.0	YES	S3VEM
Zinc	Target	67.2		mg/kg	67.2		1.0	YES	S3VEM
Tin	Target	3.3	J	mg/kg	3.3	J	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE048	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S002	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6560		mg/kg	6560		1.0	YES	S3VEM
Antimony	Target	0.46	J	mg/kg	0.46	J	1.0	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2	*	1.0	YES	S3VEM
Barium	Target	153		mg/kg	153		1.0	YES	S3VEM
Beryllium	Target	0.58		mg/kg	0.58		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8	*	1.0	YES	S3VEM
Calcium	Target	21800		mg/kg	21800		1.0	YES	S3VEM
Chromium	Target	15.5		mg/kg	15.5	*	1.0	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1.0	YES	S3VEM
Copper	Target	64.5		mg/kg	64.5		1.0	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1.0	YES	S3VEM
Lead	Target	435		mg/kg	435		1.0	YES	S3VEM
Magnesium	Target	6610		mg/kg	6610		1.0	YES	S3VEM
Manganese	Target	826		mg/kg	826	*	1.0	YES	S3VEM
Nickel	Target	23.0		mg/kg	23.0		1.0	YES	S3VEM
Potassium	Target	1200		mg/kg	1200		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.83		mg/kg	0.83	*	1.0	YES	S3VEM
Sodium	Target	209	J	mg/kg	209	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.0		mg/kg	16.0		1.0	YES	S3VEM
Zinc	Target	288		mg/kg	288		1.0	YES	S3VEM
Tin	Target	11.3		mg/kg	11.3		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE049	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S002	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6210		mg/kg	6210		1.0	YES	S3VEM
Antimony	Target	0.41	J	mg/kg	0.41	J	1.0	YES	S3VEM
Arsenic	Target	8.7		mg/kg	8.7	*	1.0	YES	S3VEM
Barium	Target	169		mg/kg	169		1.0	YES	S3VEM
Beryllium	Target	0.60		mg/kg	0.60		1.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0	*	1.0	YES	S3VEM
Calcium	Target	38300		mg/kg	38300		1.0	YES	S3VEM
Chromium	Target	13.9		mg/kg	13.9	*	1.0	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7	*	1.0	YES	S3VEM
Copper	Target	73.8		mg/kg	73.8		1.0	YES	S3VEM
Iron	Target	15600		mg/kg	15600	*	1.0	YES	S3VEM
Lead	Target	443		mg/kg	443		1.0	YES	S3VEM
Magnesium	Target	7460		mg/kg	7460		1.0	YES	S3VEM
Manganese	Target	937		mg/kg	937	*	1.0	YES	S3VEM
Nickel	Target	22.1		mg/kg	22.1		1.0	YES	S3VEM
Potassium	Target	1200		mg/kg	1200		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.82		mg/kg	0.82	*	1.0	YES	S3VEM
Sodium	Target	192	J	mg/kg	192	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	15.0		mg/kg	15.0		1.0	YES	S3VEM
Zinc	Target	263		mg/kg	263		1.0	YES	S3VEM
Tin	Target	13.1		mg/kg	13.1		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE050	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S002	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6230		mg/kg	6230		1.0	YES	S3VEM
Antimony	Target	0.39	J	mg/kg	0.39	J	1.0	YES	S3VEM
Arsenic	Target	6.4		mg/kg	6.4	*	1.0	YES	S3VEM
Barium	Target	105		mg/kg	105		1.0	YES	S3VEM
Beryllium	Target	0.60		mg/kg	0.60		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Calcium	Target	83900		mg/kg	83900	D	10.0	YES	S3VEM
Chromium	Target	12.5		mg/kg	12.5	*	1.0	YES	S3VEM
Cobalt	Target	8.1		mg/kg	8.1	*	1.0	YES	S3VEM
Copper	Target	52.7		mg/kg	52.7		1.0	YES	S3VEM
Iron	Target	16200		mg/kg	16200	*	1.0	YES	S3VEM
Lead	Target	233		mg/kg	233		1.0	YES	S3VEM
Magnesium	Target	7320		mg/kg	7320		1.0	YES	S3VEM
Manganese	Target	1040		mg/kg	1040	*	1.0	YES	S3VEM
Nickel	Target	20.5		mg/kg	20.5		1.0	YES	S3VEM
Potassium	Target	1370		mg/kg	1370		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73		mg/kg	0.73	*	1.0	YES	S3VEM
Sodium	Target	226	J	mg/kg	226	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.7		mg/kg	13.7		1.0	YES	S3VEM
Zinc	Target	132		mg/kg	132		1.0	YES	S3VEM
Tin	Target	20.7		mg/kg	20.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE051	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S002	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6530		mg/kg	6530		1.0	YES	S3VEM
Antimony	Target	4.4	U	mg/kg	4.4	U	1.0	YES	S3VEM
Arsenic	Target	8.0		mg/kg	8.0	*	1.0	YES	S3VEM
Barium	Target	122		mg/kg	122		1.0	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Calcium	Target	27100		mg/kg	27100		1.0	YES	S3VEM
Chromium	Target	12.6		mg/kg	12.6	*	1.0	YES	S3VEM
Cobalt	Target	8.9		mg/kg	8.9	*	1.0	YES	S3VEM
Copper	Target	53.4		mg/kg	53.4		1.0	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1.0	YES	S3VEM
Lead	Target	216		mg/kg	216		1.0	YES	S3VEM
Magnesium	Target	4150		mg/kg	4150		1.0	YES	S3VEM
Manganese	Target	1500		mg/kg	1500	*	1.0	YES	S3VEM
Nickel	Target	17.9		mg/kg	17.9		1.0	YES	S3VEM
Potassium	Target	1270		mg/kg	1270		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.74		mg/kg	0.74	*	1.0	YES	S3VEM
Sodium	Target	261	J	mg/kg	261	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.8		mg/kg	13.8		1.0	YES	S3VEM
Zinc	Target	115		mg/kg	115		1.0	YES	S3VEM
Tin	Target	54.9		mg/kg	54.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE052	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P027-S002	pH:	Sample Date: 09/20/2017	Sample Time: 09:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7220		mg/kg	7220		1.0	YES	S3VEM
Antimony	Target	0.53	J	mg/kg	0.53	J	1.0	YES	S3VEM
Arsenic	Target	7.3		mg/kg	7.3	*	1.0	YES	S3VEM
Barium	Target	98.0		mg/kg	98.0		1.0	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1.0	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1.0	YES	S3VEM
Calcium	Target	11000		mg/kg	11000		1.0	YES	S3VEM
Chromium	Target	13.2		mg/kg	13.2	*	1.0	YES	S3VEM
Cobalt	Target	9.5		mg/kg	9.5	*	1.0	YES	S3VEM
Copper	Target	41.2		mg/kg	41.2		1.0	YES	S3VEM
Iron	Target	17300		mg/kg	17300	*	1.0	YES	S3VEM
Lead	Target	101		mg/kg	101		1.0	YES	S3VEM
Magnesium	Target	2870		mg/kg	2870		1.0	YES	S3VEM
Manganese	Target	1730		mg/kg	1730	*	1.0	YES	S3VEM
Nickel	Target	20.3		mg/kg	20.3		1.0	YES	S3VEM
Potassium	Target	1210		mg/kg	1210		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.70	J	mg/kg	0.70	J*	1.0	YES	S3VEM
Sodium	Target	287	J	mg/kg	287	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.9		mg/kg	13.9		1.0	YES	S3VEM
Zinc	Target	69.8		mg/kg	69.8		1.0	YES	S3VEM
Tin	Target	8.0		mg/kg	8.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE077	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S008	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6020		mg/kg	6020		1.0	YES	S3VEM
Antimony	Target	4.3	U	mg/kg	4.3	U	1.0	YES	S3VEM
Arsenic	Target	8.3		mg/kg	8.3	*	1.0	YES	S3VEM
Barium	Target	124		mg/kg	124		1.0	YES	S3VEM
Beryllium	Target	0.46		mg/kg	0.46		1.0	YES	S3VEM
Cadmium	Target	0.97		mg/kg	0.97	*	1.0	YES	S3VEM
Calcium	Target	28900		mg/kg	28900		1.0	YES	S3VEM
Chromium	Target	10.2		mg/kg	10.2	*	1.0	YES	S3VEM
Cobalt	Target	5.1		mg/kg	5.1	*	1.0	YES	S3VEM
Copper	Target	39.5		mg/kg	39.5		1.0	YES	S3VEM
Iron	Target	11900		mg/kg	11900	*	1.0	YES	S3VEM
Lead	Target	197		mg/kg	197		1.0	YES	S3VEM
Magnesium	Target	6960		mg/kg	6960		1.0	YES	S3VEM
Manganese	Target	399		mg/kg	399	*	1.0	YES	S3VEM
Nickel	Target	12.1		mg/kg	12.1		1.0	YES	S3VEM
Potassium	Target	789		mg/kg	789		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.56	J	mg/kg	0.56	J*	1.0	YES	S3VEM
Sodium	Target	360	U	mg/kg	106	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	12.3		mg/kg	12.3		1.0	YES	S3VEM
Zinc	Target	110		mg/kg	110		1.0	YES	S3VEM
Tin	Target	10.9		mg/kg	10.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE078	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P026-S008	pH:	Sample Date: 09/19/2017	Sample Time: 14:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6910		mg/kg	6910		1.0	YES	S3VEM
Antimony	Target	0.45	J	mg/kg	0.45	J	1.0	YES	S3VEM
Arsenic	Target	6.8		mg/kg	6.8	*	1.0	YES	S3VEM
Barium	Target	125		mg/kg	125		1.0	YES	S3VEM
Beryllium	Target	0.48		mg/kg	0.48		1.0	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Calcium	Target	29400		mg/kg	29400		1.0	YES	S3VEM
Chromium	Target	11.0		mg/kg	11.0	*	1.0	YES	S3VEM
Cobalt	Target	5.1		mg/kg	5.1	*	1.0	YES	S3VEM
Copper	Target	37.1		mg/kg	37.1		1.0	YES	S3VEM
Iron	Target	12500		mg/kg	12500	*	1.0	YES	S3VEM
Lead	Target	264		mg/kg	264		1.0	YES	S3VEM
Magnesium	Target	6580		mg/kg	6580		1.0	YES	S3VEM
Manganese	Target	424		mg/kg	424	*	1.0	YES	S3VEM
Nickel	Target	13.0		mg/kg	13.0		1.0	YES	S3VEM
Potassium	Target	867		mg/kg	867		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.59	J	mg/kg	0.59	J*	1.0	YES	S3VEM
Sodium	Target	370	U	mg/kg	115	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	13.0		mg/kg	13.0		1.0	YES	S3VEM
Zinc	Target	99.6		mg/kg	99.6		1.0	YES	S3VEM
Tin	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE079	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location: Rinsate	pH: 2	Sample Date: 09/19/2017	Sample Time: 13:35:00
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	16.5	J	ug/L	16.5	J	1.0	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Arsenic	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Barium	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Calcium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Iron	Target	42.1	J	ug/L	42.1	J	1.0	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1.0	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1.0	YES	S3VEM
Potassium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Selenium	Target	35.0	U	ug/L	35.0	U	1.0	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Sodium	Target	197	J	ug/L	197	J	1.0	YES	S3VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Zinc	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE096	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S001	pH:	Sample Date: 09/20/2017	Sample Time: 14:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5440		mg/kg	5440		1.0	YES	S3VEM
Antimony	Target	0.78	J	mg/kg	0.78	J	1.0	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2	*	1.0	YES	S3VEM
Barium	Target	95.5		mg/kg	95.5		1.0	YES	S3VEM
Beryllium	Target	0.54		mg/kg	0.54		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Calcium	Target	38800		mg/kg	38800		1.0	YES	S3VEM
Chromium	Target	15.0		mg/kg	15.0	*	1.0	YES	S3VEM
Cobalt	Target	6.1		mg/kg	6.1	*	1.0	YES	S3VEM
Copper	Target	97.2		mg/kg	97.2		1.0	YES	S3VEM
Iron	Target	15400		mg/kg	15400	*	1.0	YES	S3VEM
Lead	Target	199		mg/kg	199		1.0	YES	S3VEM
Magnesium	Target	18600		mg/kg	18600		1.0	YES	S3VEM
Manganese	Target	641		mg/kg	641	*	1.0	YES	S3VEM
Nickel	Target	19.0		mg/kg	19.0		1.0	YES	S3VEM
Potassium	Target	791		mg/kg	791		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.68	J	mg/kg	0.68	J*	1.0	YES	S3VEM
Sodium	Target	146	J	mg/kg	146	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.7		mg/kg	13.7		1.0	YES	S3VEM
Zinc	Target	198		mg/kg	198		1.0	YES	S3VEM
Tin	Target	12.1		mg/kg	12.1		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE097	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S001	pH:	Sample Date: 09/20/2017	Sample Time: 14:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6220		mg/kg	6220		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J	1.0	YES	S3VEM
Arsenic	Target	12.4		mg/kg	12.4	*	1.0	YES	S3VEM
Barium	Target	96.5		mg/kg	96.5		1.0	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Calcium	Target	15200		mg/kg	15200		1.0	YES	S3VEM
Chromium	Target	12.6		mg/kg	12.6	*	1.0	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1.0	YES	S3VEM
Copper	Target	66.6		mg/kg	66.6		1.0	YES	S3VEM
Iron	Target	17300		mg/kg	17300	*	1.0	YES	S3VEM
Lead	Target	273		mg/kg	273		1.0	YES	S3VEM
Magnesium	Target	7110		mg/kg	7110		1.0	YES	S3VEM
Manganese	Target	560		mg/kg	560	*	1.0	YES	S3VEM
Nickel	Target	23.7		mg/kg	23.7		1.0	YES	S3VEM
Potassium	Target	751		mg/kg	751		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.65	J	mg/kg	0.65	J*	1.0	YES	S3VEM
Sodium	Target	166	J	mg/kg	166	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	17.5		mg/kg	17.5		1.0	YES	S3VEM
Zinc	Target	188		mg/kg	188		1.0	YES	S3VEM
Tin	Target	9.5		mg/kg	9.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE098	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S001	pH:	Sample Date: 09/20/2017	Sample Time: 14:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5290		mg/kg	5290		1.0	YES	S3VEM
Antimony	Target	0.86	J	mg/kg	0.86	J	1.0	YES	S3VEM
Arsenic	Target	11.3		mg/kg	11.3	*	1.0	YES	S3VEM
Barium	Target	116		mg/kg	116		1.0	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1.0	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1.0	YES	S3VEM
Calcium	Target	17000		mg/kg	17000		1.0	YES	S3VEM
Chromium	Target	11.8		mg/kg	11.8	*	1.0	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9	*	1.0	YES	S3VEM
Copper	Target	113		mg/kg	113		1.0	YES	S3VEM
Iron	Target	22000		mg/kg	22000	*	1.0	YES	S3VEM
Lead	Target	204		mg/kg	204		1.0	YES	S3VEM
Magnesium	Target	4990		mg/kg	4990		1.0	YES	S3VEM
Manganese	Target	588		mg/kg	588	*	1.0	YES	S3VEM
Nickel	Target	19.9		mg/kg	19.9		1.0	YES	S3VEM
Potassium	Target	805		mg/kg	805		1.0	YES	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1.0	YES	S3VEM
Silver	Target	0.80		mg/kg	0.80	*	1.0	YES	S3VEM
Sodium	Target	193	J	mg/kg	193	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.3		mg/kg	16.3		1.0	YES	S3VEM
Zinc	Target	151		mg/kg	151		1.0	YES	S3VEM
Tin	Target	14.4		mg/kg	14.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE099	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S001	pH:	Sample Date: 09/20/2017	Sample Time: 14:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5710		mg/kg	5710		1.0	YES	S3VEM
Antimony	Target	0.63	J	mg/kg	0.63	J	1.0	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5	*	1.0	YES	S3VEM
Barium	Target	138		mg/kg	138		1.0	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1.0	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1.0	YES	S3VEM
Calcium	Target	21400		mg/kg	21400		1.0	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1	*	1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8	*	1.0	YES	S3VEM
Copper	Target	137		mg/kg	137		1.0	YES	S3VEM
Iron	Target	18300		mg/kg	18300	*	1.0	YES	S3VEM
Lead	Target	190		mg/kg	190		1.0	YES	S3VEM
Magnesium	Target	5010		mg/kg	5010		1.0	YES	S3VEM
Manganese	Target	766		mg/kg	766	*	1.0	YES	S3VEM
Nickel	Target	19.2		mg/kg	19.2		1.0	YES	S3VEM
Potassium	Target	849		mg/kg	849		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.76		mg/kg	0.76	*	1.0	YES	S3VEM
Sodium	Target	170	J	mg/kg	170	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.7		mg/kg	14.7		1.0	YES	S3VEM
Zinc	Target	162		mg/kg	162		1.0	YES	S3VEM
Tin	Target	14.8		mg/kg	14.8		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S001	pH:	Sample Date: 09/20/2017	Sample Time: 14:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5610		mg/kg	5610		1.0	YES	S3VEM
Antimony	Target	0.55	J	mg/kg	0.55	J	1.0	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2	*	1.0	YES	S3VEM
Barium	Target	144		mg/kg	144		1.0	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72		1.0	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1.0	YES	S3VEM
Calcium	Target	26300		mg/kg	26300		1.0	YES	S3VEM
Chromium	Target	12.4		mg/kg	12.4	*	1.0	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4	*	1.0	YES	S3VEM
Copper	Target	107		mg/kg	107		1.0	YES	S3VEM
Iron	Target	15100		mg/kg	15100	*	1.0	YES	S3VEM
Lead	Target	144		mg/kg	144		1.0	YES	S3VEM
Magnesium	Target	5000		mg/kg	5000		1.0	YES	S3VEM
Manganese	Target	844		mg/kg	844	*	1.0	YES	S3VEM
Nickel	Target	19.2		mg/kg	19.2		1.0	YES	S3VEM
Potassium	Target	842		mg/kg	842		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.64	J	mg/kg	0.64	J*	1.0	YES	S3VEM
Sodium	Target	199	J	mg/kg	199	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.7		mg/kg	13.7		1.0	YES	S3VEM
Zinc	Target	132		mg/kg	132		1.0	YES	S3VEM
Tin	Target	15.2		mg/kg	15.2		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5350		mg/kg	5350		1.0	YES	S3VEM
Antimony	Target	0.42	J	mg/kg	0.42	J	1.0	YES	S3VEM
Arsenic	Target	4.9		mg/kg	4.9	*	1.0	YES	S3VEM
Barium	Target	85.7		mg/kg	85.7		1.0	YES	S3VEM
Beryllium	Target	0.41		mg/kg	0.41		1.0	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1.0	YES	S3VEM
Calcium	Target	4350		mg/kg	4350		1.0	YES	S3VEM
Chromium	Target	13.4		mg/kg	13.4	*	1.0	YES	S3VEM
Cobalt	Target	5.1		mg/kg	5.1	*	1.0	YES	S3VEM
Copper	Target	48.3		mg/kg	48.3		1.0	YES	S3VEM
Iron	Target	12500		mg/kg	12500	*	1.0	YES	S3VEM
Lead	Target	201		mg/kg	201		1.0	YES	S3VEM
Magnesium	Target	2410		mg/kg	2410		1.0	YES	S3VEM
Manganese	Target	327		mg/kg	327	*	1.0	YES	S3VEM
Nickel	Target	16.3		mg/kg	16.3		1.0	YES	S3VEM
Potassium	Target	520		mg/kg	520		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.44	J	mg/kg	0.44	J*	1.0	YES	S3VEM
Sodium	Target	127	J	mg/kg	127	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.6		mg/kg	14.6		1.0	YES	S3VEM
Zinc	Target	161		mg/kg	161		1.0	YES	S3VEM
Tin	Target	7.5		mg/kg	7.5		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7990		mg/kg	7990		1.0	YES	S3VEM
Antimony	Target	0.74	J	mg/kg	0.74	J	1.0	YES	S3VEM
Arsenic	Target	26.4	J	mg/kg	26.4	*	1.0	YES	S3VEM
Barium	Target	561	J	mg/kg	561		1.0	YES	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Cadmium	Target	3.6	J	mg/kg	3.6	*	1.0	YES	S3VEM
Calcium	Target	19900		mg/kg	19900		1.0	YES	S3VEM
Chromium	Target	28.9	J	mg/kg	28.9	*	1.0	YES	S3VEM
Cobalt	Target	13.3		mg/kg	13.3	*	1.0	YES	S3VEM
Copper	Target	179	J	mg/kg	179		1.0	YES	S3VEM
Iron	Target	22200		mg/kg	22200	*	1.0	YES	S3VEM
Lead	Target	547		mg/kg	547		1.0	YES	S3VEM
Magnesium	Target	5010		mg/kg	5010		1.0	YES	S3VEM
Manganese	Target	416		mg/kg	416	*	1.0	YES	S3VEM
Nickel	Target	48.7	J	mg/kg	48.7		1.0	YES	S3VEM
Potassium	Target	1130		mg/kg	1130		1.0	YES	S3VEM
Selenium	Target	0.53	J	mg/kg	0.53	J	1.0	YES	S3VEM
Silver	Target	0.73	R	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	202	J	mg/kg	202	J	1.0	YES	S3VEM
Thallium	Target	1.8	UJ	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	25.6		mg/kg	25.6		1.0	YES	S3VEM
Zinc	Target	680	J	mg/kg	680		1.0	YES	S3VEM
Tin	Target	34.0	J	mg/kg	34.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A2A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Thallium	Spike	1.8	U	mg/kg	1.8	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A2D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8070		mg/kg	8070		1.0	YES	S3VEM
Antimony	Target	0.87	J	mg/kg	0.87	J	1.0	YES	S3VEM
Arsenic	Target	26.9		mg/kg	26.9		1.0	YES	S3VEM
Barium	Target	569		mg/kg	569		1.0	YES	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1.0	YES	S3VEM
Cadmium	Target	3.6		mg/kg	3.6		1.0	YES	S3VEM
Calcium	Target	20200		mg/kg	20200		1.0	YES	S3VEM
Chromium	Target	29.2	J	mg/kg	29.2		1.0	YES	S3VEM
Cobalt	Target	13.2		mg/kg	13.2		1.0	YES	S3VEM
Copper	Target	181		mg/kg	181		1.0	YES	S3VEM
Iron	Target	22700	J	mg/kg	22700		1.0	YES	S3VEM
Lead	Target	544	J	mg/kg	544		1.0	YES	S3VEM
Magnesium	Target	5080		mg/kg	5080		1.0	YES	S3VEM
Manganese	Target	425		mg/kg	425		1.0	YES	S3VEM
Nickel	Target	48.9		mg/kg	48.9		1.0	YES	S3VEM
Potassium	Target	1140		mg/kg	1140		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U	1.0	YES	S3VEM
Sodium	Target	202	J	mg/kg	202	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U	1.0	YES	S3VEM
Vanadium	Target	26.1		mg/kg	26.1		1.0	YES	S3VEM
Zinc	Target	683		mg/kg	683		1.0	YES	S3VEM
Tin	Target	34.4		mg/kg	34.4		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A2L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8180		mg/kg	8180		5.0	YES	S3VEM
Antimony	Target	22.0	U	mg/kg	22.0	U	5.0	YES	S3VEM
Arsenic	Target	29.2		mg/kg	29.2	*	5.0	YES	S3VEM
Barium	Target	594		mg/kg	594		5.0	YES	S3VEM
Beryllium	Target	1.3	J	mg/kg	1.3	J	5.0	YES	S3VEM
Cadmium	Target	2.9		mg/kg	2.9	*	5.0	YES	S3VEM
Calcium	Target	21100		mg/kg	21100		5.0	YES	S3VEM
Chromium	Target	33.3	J	mg/kg	33.3	*	5.0	YES	S3VEM
Cobalt	Target	11.5	J	mg/kg	11.5	J*	5.0	YES	S3VEM
Copper	Target	186		mg/kg	186		5.0	YES	S3VEM
Iron	Target	25200	J	mg/kg	25200	*	5.0	YES	S3VEM
Lead	Target	529	J	mg/kg	529		5.0	YES	S3VEM
Magnesium	Target	5400		mg/kg	5400		5.0	YES	S3VEM
Manganese	Target	469		mg/kg	469	*	5.0	YES	S3VEM
Nickel	Target	44.8		mg/kg	44.8		5.0	YES	S3VEM
Potassium	Target	1130	J	mg/kg	1130	J	5.0	YES	S3VEM
Selenium	Target	12.5	U	mg/kg	12.5	U	5.0	YES	S3VEM
Silver	Target	3.7	U	mg/kg	3.7	U	5.0	YES	S3VEM
Sodium	Target	190	J	mg/kg	190	J	5.0	YES	S3VEM
Thallium	Target	9.0	U	mg/kg	9.0	U	5.0	YES	S3VEM
Vanadium	Target	27.8		mg/kg	27.8		5.0	YES	S3VEM
Zinc	Target	708		mg/kg	708		5.0	YES	S3VEM
Tin	Target	31.9		mg/kg	31.9		5.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: MBE0A2S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	12.8		mg/kg	12.8		1.0	YES	S3VEM
Arsenic	Spike	30.2		mg/kg	30.2		1.0	YES	S3VEM
Barium	Spike	836		mg/kg	836		1.0	YES	S3VEM
Beryllium	Spike	7.3		mg/kg	7.3		1.0	YES	S3VEM
Cadmium	Spike	10.9		mg/kg	10.9		1.0	YES	S3VEM
Chromium	Spike	54.5	J	mg/kg	54.5		1.0	YES	S3VEM
Cobalt	Spike	88.8		mg/kg	88.8		1.0	YES	S3VEM
Copper	Spike	212		mg/kg	212		1.0	YES	S3VEM
Lead	Spike	542	J	mg/kg	542		1.0	YES	S3VEM
Manganese	Spike	493		mg/kg	493		1.0	YES	S3VEM
Nickel	Spike	126		mg/kg	126		1.0	YES	S3VEM
Selenium	Spike	6.2		mg/kg	6.2		1.0	YES	S3VEM
Silver	Spike	0.25	J	mg/kg	0.25	J*	1.0	YES	S3VEM
Thallium	Spike	2.9		mg/kg	2.9	*	1.0	YES	S3VEM
Vanadium	Spike	94.0		mg/kg	94.0		1.0	YES	S3VEM
Zinc	Spike	703		mg/kg	703		1.0	YES	S3VEM
Tin	Spike	104		mg/kg	104		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: PBS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Arsenic	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Chromium	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Iron	Target	10.0	UJ	mg/kg	10.0	U	1.0	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1.0	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1.0	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1.0	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U	1.0	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Tin	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM

Sample Number: PBW001	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.1
Sample Location:	pH: 2	Sample Date:	Sample Time:
% Moisture:		% Solids:	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Antimony	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Arsenic	Target			ug/L	-6.9	J	1.0	YES	S3VEM
Barium	Target	200	U	ug/L	200	U	1.0	YES	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	1.0	YES	S3VEM
Calcium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Chromium	Target	10.0	UJ	ug/L	10.0	U	1.0	YES	S3VEM
Cobalt	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1.0	YES	S3VEM
Iron	Target	100	UJ	ug/L	100	U	1.0	YES	S3VEM
Lead	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Manganese	Target	15.0	U	ug/L	15.0	U	1.0	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1.0	YES	S3VEM
Potassium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Selenium	Target	35.0	U	ug/L	35.0	U	1.0	YES	S3VEM
Silver	Target	10.0	U	ug/L	10.0	U	1.0	YES	S3VEM
Sodium	Target	5000	U	ug/L	5000	U	1.0	YES	S3VEM
Thallium	Target	25.0	UJ	ug/L	25.0	U	1.0	YES	S3VEM
Vanadium	Target	50.0	U	ug/L	50.0	U	1.0	YES	S3VEM
Zinc	Target	60.0	U	ug/L	60.0	U	1.0	YES	S3VEM
Tin	Target	7.0	U	ug/L	7.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE077

Lab Code: CHM



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EXECUTIVE NARRATIVE

Case No.: 47214

Site: Eighteenmile Creek

Number of Samples: 20 (Soil)

Analysis: Metals (ICP-AES)

SDG No.: MBE086

Laboratory: Chemtech Consulting Group

Sampling dates: 9/20/2017

Validation SOP: HW-3a (Rev 1)

QAPP

Contractor: LATA

Reference: DCN: 010-RICO-0269

SUMMARY OF DEFINITIONS:

Critical: Results have an unacceptable level of uncertainty and should not be used for making decisions.
Data have been qualified "R" rejected.

Major: A level of uncertainty exists that may not meet the data quality objectives for the project. A bias is likely to be present in the results. Data has been qualified "J" estimated. "J+" and "J-" represent likely direction of the bias.

Minor: The level of uncertainty is acceptable. No significant bias in the data was observed.

Critical Findings:

Sample MBE0C1 has a non-detected analyte (Silver) that has been qualified R due to associated matrix spike percent recovery less than 30%.

Major Findings:

Samples MBE0C1 and MBE0C6 have analytes that have been qualified J, J+ or J-.

Minor Findings:

None

COMMENT: Concentration of **Aluminum, Iron, Lead, Manganese, Arsenic, Barium, Cadmium Cobalt and Copper** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature:

Date: 10/13/2017

Name: Narendra Kumar

Affiliation: USEPA/R2/HWSB/HWSS



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Data Qualifier Definitions (National Functional Guidelines)			
Qualifier Symbol	Explanation		
	INORGANICS	ORGANICS	CHLORINATED DIOXIN/FURAN
U	The analyte was analyzed for, but was not detected above the level of the reported quantitation limit.	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method	The analyte was analyzed for but not detected. The value preceding the "U" may represent the adjusted Contract Required Quantitation Limit (see DLM02.X, Exhibit D, Section 1.2 and Table 2), or the sample specific estimated detection limit (EDL, see Method 8290A, Section 11.9.5).
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to an issue with the quality of the data generated because certain QC criteria were not met, or the concentration of the analyte was below the adjusted CRQL).
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.	
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.	
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.	The analyte was not detected (see definition of "U" flag, above). The reported value should be considered approximate.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.	The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
N		The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".	
NJ		The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.	
C		This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).	
X		This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.	



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DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2822.0)

The current SOP HW-3a (Rev 1) September 2016, USEPA Region II for the evaluation of ICP-AES metals generated through Statement of Work ISOM02.2, and any future editorial revisions of ISOM02.2 has been applied. Data have been reviewed according to TDF specifications, the National Functional Guidelines Report and the CCS Semi- Automated Screening Results Report.

1. HOLDING TIME AND PRESERVATION

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time or pH (aqueous samples are not within the acceptable range, the data may not be valid. Those analytes detected in the samples whose holding time (180 days) or pH (≤ 2) have not been met, will be qualified as estimated, "J"; the non-detects will be flagged as unusable, "R". Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

2. CALIBRATION

Method requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data for the metals on the Inorganic Target Analyte List (TAL). Initial Calibration Verification (ICV) demonstrates that the instrument is capable of acceptable performance at the beginning of the analytical run. Continuing Calibration Verification (CCV) demonstrates that the initial calibration is still valid by checking the performance of the instrument on a continuing basis.

A) INITIAL CALIBRATION

A blank and at least five calibration standards shall be used to establish each analytical curve. At least one of these standards shall be at or below the CRQL. The calibration curve shall be fitted using linear regression or weighted linear regression. The curve may be forced through zero. The curve must have a correlation coefficient ≥ 0.995 . The percent differences calculated for all of the non-zero standards must be within $\pm 30\%$ of the true value of the standard. The y-intercept of the curve must be less than the CRQL. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

B) INITIAL AND CONTINUING CALIBRATION VERIFICATION

Immediately after each system has been calibrated, the accuracy of the initial calibration must be verified and documented for each target analyte by the analysis of an ICV solution(s). The CCV standard shall be analyzed at a frequency of every two hours during an analytical run. The CCV standard shall also be analyzed at the beginning of the run, and again after the last analytical sample. The percent recovery acceptable limits for ICV/CCV are 90 – 110%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.



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3. BLANK CONTAMINATION

Quality assurance (QA) blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Calibration blanks (ICB and CCB) are used to ensure a stable instrument baseline before and during the analysis of analytical samples. The preparation blank is used to assess the level of contamination introduced to the analytical samples throughout the sample preparation process. Field and rinse blanks measure cross-contamination of samples during field operations. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Field Blanks: MBE0C7

No problems were found for this criterion.

4. INTERFERENCE CHECK SAMPLE

The Interference Check Sample (ICS) verifies the analytical instrument's ability to overcome interferences typical of those found in samples. The laboratory should have analyzed and reported ICS results for all elements being reported from the analytical run and for all interferents (target and non-target) for these reported elements. The ICS consists of two solutions: Solution A and Solution AB. Solution A consists of the interferents, and Solution AB consists of the analytes mixed with the interferents. Results for the analysis of ICS Solution must fall within the control limits of $\pm 20\%$ or $\pm CRQL$ (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are $\geq MDL$ are observed for analytes that are not present in the ICS solution, the possibility of false positives exists. If negative results are observed for analytes that are not present in the ICS solution, and their absolute value is $\geq MDL$, the possibility of false negatives in the samples exists. In general, ICP sample data can be accepted if the concentrations of Al, Ca, Fe, and Mg in the sample are found to be less than or equal to their respective concentrations in the ICS. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

5. SPIKE SAMPLE ANALYSIS

The spiked sample analysis is designed to provide information about the effect of each sample matrix on the sample preparation procedures and the measurement methodology. The spike Percent Recovery (%R) shall be within the established acceptance limits of 75 – 125%. However, spike recovery limits do not apply when the sample concentration is $\geq 4x$ the spike added. For a matrix spike analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the matrix spike sample.

The following sample has matrix spike percent recovery less than 30% and Post-digestion spike sample is not required. Detects are qualified as J-. Non-detects are qualified as R.

Silver MBE0C1.

The following sample has matrix spike recovery in the range of 30 – 74% and the post digestion spike sample has percent recovery less than 75%. Detected analyte with result greater than or equal to MDL is qualified J-. Non-detected analytes are qualified UJ.



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Thallium MBE0C1.

6. DUPLICATE SAMPLE ANALYSIS

The objective of duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. A control limit of 35% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the CRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For a duplicate sample analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the duplicate sample.

No problems were found for this criterion.

7. FIELD DUPLICATE: MBE0A2/MBE0C6, MBE0C1/MBE0D8

Field duplicates may be taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. A control limit of 50% for the Relative Percent Difference (RPD) shall be used for original and duplicate sample values \geq five times (5x) the Contract Required Quantitation Limit (CRQL). A control limit of the 2xCRQL shall be used if either the sample or duplicate value is $< 5x$ the CRQL. For field duplicates analysis that does not meet the technical criteria, the action was applied to only the field sample and it's duplicate.

The following Duplicate and original soil sample results are greater than or equal to 5x the CRQL and RPD is greater than 50%. Detected analytes are qualified J.

Arsenic, Barium, Cadmium, Chromium, Copper, Nickel, Zinc MBE0C6 and MBE0A2 (in SDG MBE077)

The following Duplicate and/or original soil sample results are less than 5x the CRQL and absolute difference between duplicate and original samples are greater than 2x the CRQL. Detected analytes with results greater than MDL are qualified J. Non-detected analytes are qualified UJ.

Tin MBE0C6 and MBE0A2 (in SDG MBE077)

8. LABORATORY CONTROL SAMPLE

The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Aqueous/water, soil/sediment, wipe, and filter LCSs shall be analyzed for each analyte utilizing the same sample preparations, analytical methods, and Quality Assurance/Quality Control (QA/QC) procedures as employed for the samples. All LCS Percent Recoveries (%R) must fall within the control limits of 70-130%, except for Sb and Ag which must fall within the control limits of 50-150%. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

9. ICP SERIAL DILUTION

The serial dilution of samples quantitated by Inductively Coupled Plasma determines whether or not significant physical or chemical interferences exist due to sample matrix. If the analyte concentration is sufficiently high [concentration in the original sample is > 50 times (50x) the Method Detection Limit (MDL)], the Percent Difference (%D) between the original determination and the serial dilution analysis (a five-fold dilution) after correction for dilution shall be less than 15. For a serial dilution



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
DESA/HWSB/HWSS
2890, Woodbridge Avenue, Edison, NJ 08837

analysis that does not meet the technical criteria, the action was applied to only the field sample used to prepare the serial dilution sample.

The following ICP-AES Serial Dilution (SD) soil sample has percent difference (%D) greater than 15% and initial sample results are greater than 50xMDLs. The detected analytes in samples are qualified J.

Nickel MBE0C1.

10. PERCENT SOLIDS

The laboratory is required to perform the percent solids determination prior to sample preparation and analysis. All results of a sample with percent solids less than 50% are qualified estimated, “J”. Qualifications were applied to the samples and analytes as shown below.

No problems were found for this criterion.

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: LCS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Spike	37.9		mg/kg	37.9		1.0	YES	S3VEM
Antimony	Spike	11.8		mg/kg	11.8		1.0	YES	S3VEM
Arsenic	Spike	1.6		mg/kg	1.6		1.0	YES	S3VEM
Barium	Spike	34.5		mg/kg	34.5		1.0	YES	S3VEM
Beryllium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Spike	1.1		mg/kg	1.1		1.0	YES	S3VEM
Calcium	Spike	942		mg/kg	942		1.0	YES	S3VEM
Chromium	Spike	2.3	J	mg/kg	2.3		1.0	YES	S3VEM
Cobalt	Spike	9.4		mg/kg	9.4		1.0	YES	S3VEM
Copper	Spike	4.9		mg/kg	4.9		1.0	YES	S3VEM
Iron	Spike	21.5	J	mg/kg	21.5		1.0	YES	S3VEM
Lead	Spike	2.1	J	mg/kg	2.1		1.0	YES	S3VEM
Magnesium	Spike	960		mg/kg	960		1.0	YES	S3VEM
Manganese	Spike	3.2		mg/kg	3.2		1.0	YES	S3VEM
Nickel	Spike	8.1		mg/kg	8.1		1.0	YES	S3VEM
Potassium	Spike	913		mg/kg	913		1.0	YES	S3VEM
Selenium	Spike	6.4		mg/kg	6.4		1.0	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1.0	YES	S3VEM
Sodium	Spike	918		mg/kg	918		1.0	YES	S3VEM
Thallium	Spike	5.4		mg/kg	5.4		1.0	YES	S3VEM
Vanadium	Spike	10.1		mg/kg	10.1		1.0	YES	S3VEM
Zinc	Spike	11.2		mg/kg	11.2		1.0	YES	S3VEM
Tin	Spike	9.7		mg/kg	9.7		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE086	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S001	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5470		mg/kg	5470		1.0	YES	S3VEM
Antimony	Target	4.6	U	mg/kg	4.6	U	1.0	YES	S3VEM
Arsenic	Target	10.3		mg/kg	10.3		1.0	YES	S3VEM
Barium	Target	149		mg/kg	149		1.0	YES	S3VEM
Beryllium	Target	0.50		mg/kg	0.50		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Calcium	Target	14200		mg/kg	14200		1.0	YES	S3VEM
Chromium	Target	12.6		mg/kg	12.6		1.0	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7		1.0	YES	S3VEM
Copper	Target	55.5		mg/kg	55.5		1.0	YES	S3VEM
Iron	Target	13300		mg/kg	13300		1.0	YES	S3VEM
Lead	Target	297		mg/kg	297		1.0	YES	S3VEM
Magnesium	Target	5340		mg/kg	5340		1.0	YES	S3VEM
Manganese	Target	742		mg/kg	742		1.0	YES	S3VEM
Nickel	Target	17.1		mg/kg	17.1	*	1.0	YES	S3VEM
Potassium	Target	878		mg/kg	878		1.0	YES	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1.0	YES	S3VEM
Silver	Target	0.76	U	mg/kg	0.76	U*	1.0	YES	S3VEM
Sodium	Target	88.0	J	mg/kg	88.0	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	13.8		mg/kg	13.8		1.0	YES	S3VEM
Zinc	Target	226		mg/kg	226		1.0	YES	S3VEM
Tin	Target	8.3		mg/kg	8.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE087	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S001	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5580		mg/kg	5580		1.0	YES	S3VEM
Antimony	Target	0.64	J	mg/kg	0.64	J	1.0	YES	S3VEM
Arsenic	Target	9.0		mg/kg	9.0		1.0	YES	S3VEM
Barium	Target	163		mg/kg	163		1.0	YES	S3VEM
Beryllium	Target	0.55		mg/kg	0.55		1.0	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9	*	1.0	YES	S3VEM
Calcium	Target	30800		mg/kg	30800		1.0	YES	S3VEM
Chromium	Target	10.4		mg/kg	10.4		1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	52.5		mg/kg	52.5		1.0	YES	S3VEM
Iron	Target	14200		mg/kg	14200		1.0	YES	S3VEM
Lead	Target	362		mg/kg	362		1.0	YES	S3VEM
Magnesium	Target	8760		mg/kg	8760		1.0	YES	S3VEM
Manganese	Target	759		mg/kg	759		1.0	YES	S3VEM
Nickel	Target	19.5		mg/kg	19.5	*	1.0	YES	S3VEM
Potassium	Target	825		mg/kg	825		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	100	J	mg/kg	100	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.8		mg/kg	13.8		1.0	YES	S3VEM
Zinc	Target	276		mg/kg	276		1.0	YES	S3VEM
Tin	Target	10.1		mg/kg	10.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE088	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S001	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5480		mg/kg	5480		1.0	YES	S3VEM
Antimony	Target	4.5	U	mg/kg	4.5	U	1.0	YES	S3VEM
Arsenic	Target	8.5		mg/kg	8.5		1.0	YES	S3VEM
Barium	Target	144		mg/kg	144		1.0	YES	S3VEM
Beryllium	Target	0.55		mg/kg	0.55		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Calcium	Target	19500		mg/kg	19500		1.0	YES	S3VEM
Chromium	Target	10.8		mg/kg	10.8		1.0	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7		1.0	YES	S3VEM
Copper	Target	58.6		mg/kg	58.6		1.0	YES	S3VEM
Iron	Target	14900		mg/kg	14900		1.0	YES	S3VEM
Lead	Target	257		mg/kg	257		1.0	YES	S3VEM
Magnesium	Target	5110		mg/kg	5110		1.0	YES	S3VEM
Manganese	Target	934		mg/kg	934		1.0	YES	S3VEM
Nickel	Target	16.7		mg/kg	16.7	*	1.0	YES	S3VEM
Potassium	Target	860		mg/kg	860		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	107	J	mg/kg	107	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	13.4		mg/kg	13.4		1.0	YES	S3VEM
Zinc	Target	169		mg/kg	169		1.0	YES	S3VEM
Tin	Target	16.4		mg/kg	16.4	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE089	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S001	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5710		mg/kg	5710		1.0	YES	S3VEM
Antimony	Target	4.4	U	mg/kg	4.4	U	1.0	YES	S3VEM
Arsenic	Target	9.2		mg/kg	9.2		1.0	YES	S3VEM
Barium	Target	124		mg/kg	124		1.0	YES	S3VEM
Beryllium	Target	0.53		mg/kg	0.53		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8	*	1.0	YES	S3VEM
Calcium	Target	25100		mg/kg	25100		1.0	YES	S3VEM
Chromium	Target	14.9		mg/kg	14.9		1.0	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9		1.0	YES	S3VEM
Copper	Target	69.6		mg/kg	69.6		1.0	YES	S3VEM
Iron	Target	17000		mg/kg	17000		1.0	YES	S3VEM
Lead	Target	219		mg/kg	219		1.0	YES	S3VEM
Magnesium	Target	6190		mg/kg	6190		1.0	YES	S3VEM
Manganese	Target	1060		mg/kg	1060		1.0	YES	S3VEM
Nickel	Target	19.4		mg/kg	19.4	*	1.0	YES	S3VEM
Potassium	Target	940		mg/kg	940		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	112	J	mg/kg	112	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	13.9		mg/kg	13.9		1.0	YES	S3VEM
Zinc	Target	126		mg/kg	126		1.0	YES	S3VEM
Tin	Target	22.2		mg/kg	22.2	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE090	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S001	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7420		mg/kg	7420		1.0	YES	S3VEM
Antimony	Target	4.5	U	mg/kg	4.5	U	1.0	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2		1.0	YES	S3VEM
Barium	Target	119		mg/kg	119		1.0	YES	S3VEM
Beryllium	Target	0.60		mg/kg	0.60		1.0	YES	S3VEM
Cadmium	Target	1.7		mg/kg	1.7	*	1.0	YES	S3VEM
Calcium	Target	17000		mg/kg	17000		1.0	YES	S3VEM
Chromium	Target	13.4		mg/kg	13.4		1.0	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5		1.0	YES	S3VEM
Copper	Target	52.2		mg/kg	52.2		1.0	YES	S3VEM
Iron	Target	18800		mg/kg	18800		1.0	YES	S3VEM
Lead	Target	166		mg/kg	166		1.0	YES	S3VEM
Magnesium	Target	5260		mg/kg	5260		1.0	YES	S3VEM
Manganese	Target	1690		mg/kg	1690		1.0	YES	S3VEM
Nickel	Target	19.4		mg/kg	19.4	*	1.0	YES	S3VEM
Potassium	Target	820		mg/kg	820		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	101	J	mg/kg	101	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.7		mg/kg	16.7		1.0	YES	S3VEM
Zinc	Target	121		mg/kg	121		1.0	YES	S3VEM
Tin	Target	22.8		mg/kg	22.8	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE091	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S002	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6060		mg/kg	6060		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J	1.0	YES	S3VEM
Arsenic	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Barium	Target	163		mg/kg	163		1.0	YES	S3VEM
Beryllium	Target	0.46		mg/kg	0.46		1.0	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1.0	YES	S3VEM
Calcium	Target	11600		mg/kg	11600		1.0	YES	S3VEM
Chromium	Target	13.2		mg/kg	13.2		1.0	YES	S3VEM
Cobalt	Target	5.9		mg/kg	5.9		1.0	YES	S3VEM
Copper	Target	56.4		mg/kg	56.4		1.0	YES	S3VEM
Iron	Target	12600		mg/kg	12600		1.0	YES	S3VEM
Lead	Target	242		mg/kg	242		1.0	YES	S3VEM
Magnesium	Target	3070		mg/kg	3070		1.0	YES	S3VEM
Manganese	Target	575		mg/kg	575		1.0	YES	S3VEM
Nickel	Target	15.8		mg/kg	15.8	*	1.0	YES	S3VEM
Potassium	Target	903		mg/kg	903		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.74	U	mg/kg	0.74	U*	1.0	YES	S3VEM
Sodium	Target	88.3	J	mg/kg	88.3	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	14.0		mg/kg	14.0		1.0	YES	S3VEM
Zinc	Target	247		mg/kg	247		1.0	YES	S3VEM
Tin	Target	11.3		mg/kg	11.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE092	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S002	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6880		mg/kg	6880		1.0	YES	S3VEM
Antimony	Target	0.68	J	mg/kg	0.68	J	1.0	YES	S3VEM
Arsenic	Target	8.5		mg/kg	8.5		1.0	YES	S3VEM
Barium	Target	210		mg/kg	210		1.0	YES	S3VEM
Beryllium	Target	0.58		mg/kg	0.58		1.0	YES	S3VEM
Cadmium	Target	2.2		mg/kg	2.2	*	1.0	YES	S3VEM
Calcium	Target	20500		mg/kg	20500		1.0	YES	S3VEM
Chromium	Target	15.4		mg/kg	15.4		1.0	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1.0	YES	S3VEM
Copper	Target	82.3		mg/kg	82.3		1.0	YES	S3VEM
Iron	Target	15600		mg/kg	15600		1.0	YES	S3VEM
Lead	Target	380		mg/kg	380		1.0	YES	S3VEM
Magnesium	Target	4110		mg/kg	4110		1.0	YES	S3VEM
Manganese	Target	758		mg/kg	758		1.0	YES	S3VEM
Nickel	Target	19.6		mg/kg	19.6	*	1.0	YES	S3VEM
Potassium	Target	1050		mg/kg	1050		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.70	U	mg/kg	0.70	U*	1.0	YES	S3VEM
Sodium	Target	109	J	mg/kg	109	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	15.8		mg/kg	15.8		1.0	YES	S3VEM
Zinc	Target	347		mg/kg	347		1.0	YES	S3VEM
Tin	Target	17.3		mg/kg	17.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE093	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S002	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7240		mg/kg	7240		1.0	YES	S3VEM
Antimony	Target	0.52	J	mg/kg	0.52	J	1.0	YES	S3VEM
Arsenic	Target	8.9		mg/kg	8.9		1.0	YES	S3VEM
Barium	Target	194		mg/kg	194		1.0	YES	S3VEM
Beryllium	Target	0.61		mg/kg	0.61		1.0	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8	*	1.0	YES	S3VEM
Calcium	Target	15200		mg/kg	15200		1.0	YES	S3VEM
Chromium	Target	12.7		mg/kg	12.7		1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	91.3		mg/kg	91.3		1.0	YES	S3VEM
Iron	Target	14800		mg/kg	14800		1.0	YES	S3VEM
Lead	Target	345		mg/kg	345		1.0	YES	S3VEM
Magnesium	Target	3310		mg/kg	3310		1.0	YES	S3VEM
Manganese	Target	732		mg/kg	732		1.0	YES	S3VEM
Nickel	Target	16.8		mg/kg	16.8	*	1.0	YES	S3VEM
Potassium	Target	903		mg/kg	903		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	130	J	mg/kg	130	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	17.1		mg/kg	17.1		1.0	YES	S3VEM
Zinc	Target	288		mg/kg	288		1.0	YES	S3VEM
Tin	Target	16.5		mg/kg	16.5	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE094	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S002	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7410		mg/kg	7410		1.0	YES	S3VEM
Antimony	Target	0.69	J	mg/kg	0.69	J	1.0	YES	S3VEM
Arsenic	Target	13.6		mg/kg	13.6		1.0	YES	S3VEM
Barium	Target	276		mg/kg	276		1.0	YES	S3VEM
Beryllium	Target	0.73		mg/kg	0.73		1.0	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4	*	1.0	YES	S3VEM
Calcium	Target	19600		mg/kg	19600		1.0	YES	S3VEM
Chromium	Target	16.5		mg/kg	16.5		1.0	YES	S3VEM
Cobalt	Target	9.8		mg/kg	9.8		1.0	YES	S3VEM
Copper	Target	122		mg/kg	122		1.0	YES	S3VEM
Iron	Target	18700		mg/kg	18700		1.0	YES	S3VEM
Lead	Target	622		mg/kg	622		1.0	YES	S3VEM
Magnesium	Target	3340		mg/kg	3340		1.0	YES	S3VEM
Manganese	Target	1220		mg/kg	1220		1.0	YES	S3VEM
Nickel	Target	21.2		mg/kg	21.2	*	1.0	YES	S3VEM
Potassium	Target	1370		mg/kg	1370		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	216	J	mg/kg	216	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	20.7		mg/kg	20.7		1.0	YES	S3VEM
Zinc	Target	346		mg/kg	346		1.0	YES	S3VEM
Tin	Target	33.0		mg/kg	33.0	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE095	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P028-S002	pH:	Sample Date: 09/20/2017	Sample Time: 11:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7110		mg/kg	7110		1.0	YES	S3VEM
Antimony	Target	0.42	J	mg/kg	0.42	J	1.0	YES	S3VEM
Arsenic	Target	12.7		mg/kg	12.7		1.0	YES	S3VEM
Barium	Target	242		mg/kg	242		1.0	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64		1.0	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4	*	1.0	YES	S3VEM
Calcium	Target	32700		mg/kg	32700		1.0	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1		1.0	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6		1.0	YES	S3VEM
Copper	Target	157		mg/kg	157		1.0	YES	S3VEM
Iron	Target	17800		mg/kg	17800		1.0	YES	S3VEM
Lead	Target	450		mg/kg	450		1.0	YES	S3VEM
Magnesium	Target	4380		mg/kg	4380		1.0	YES	S3VEM
Manganese	Target	1230		mg/kg	1230		1.0	YES	S3VEM
Nickel	Target	19.7		mg/kg	19.7	*	1.0	YES	S3VEM
Potassium	Target	1310		mg/kg	1310		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	199	J	mg/kg	199	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2		1.0	YES	S3VEM
Zinc	Target	348		mg/kg	348		1.0	YES	S3VEM
Tin	Target	35.1		mg/kg	35.1	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0A3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5730		mg/kg	5730		1.0	YES	S3VEM
Antimony	Target	0.92	J	mg/kg	0.92	J	1.0	YES	S3VEM
Arsenic	Target	12.0		mg/kg	12.0		1.0	YES	S3VEM
Barium	Target	219		mg/kg	219		1.0	YES	S3VEM
Beryllium	Target	0.71		mg/kg	0.71		1.0	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4	*	1.0	YES	S3VEM
Calcium	Target	12200		mg/kg	12200		1.0	YES	S3VEM
Chromium	Target	12.2		mg/kg	12.2		1.0	YES	S3VEM
Cobalt	Target	7.3		mg/kg	7.3		1.0	YES	S3VEM
Copper	Target	76.5		mg/kg	76.5		1.0	YES	S3VEM
Iron	Target	23000		mg/kg	23000		1.0	YES	S3VEM
Lead	Target	388		mg/kg	388		1.0	YES	S3VEM
Magnesium	Target	2990		mg/kg	2990		1.0	YES	S3VEM
Manganese	Target	421		mg/kg	421		1.0	YES	S3VEM
Nickel	Target	21.4		mg/kg	21.4	*	1.0	YES	S3VEM
Potassium	Target	623		mg/kg	623		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.71	U	mg/kg	0.71	U*	1.0	YES	S3VEM
Sodium	Target	149	J	mg/kg	149	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	23.2		mg/kg	23.2		1.0	YES	S3VEM
Zinc	Target	281		mg/kg	281		1.0	YES	S3VEM
Tin	Target	11.3		mg/kg	11.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0A4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	3800		mg/kg	3800		1.0	YES	S3VEM
Antimony	Target	1.4	J	mg/kg	1.4	J	1.0	YES	S3VEM
Arsenic	Target	18.3		mg/kg	18.3		1.0	YES	S3VEM
Barium	Target	218		mg/kg	218		1.0	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1.0	YES	S3VEM
Cadmium	Target	3.9		mg/kg	3.9	*	1.0	YES	S3VEM
Calcium	Target	5190		mg/kg	5190		1.0	YES	S3VEM
Chromium	Target	10.5		mg/kg	10.5		1.0	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9		1.0	YES	S3VEM
Copper	Target	86.9		mg/kg	86.9		1.0	YES	S3VEM
Iron	Target	51900		mg/kg	51900		1.0	YES	S3VEM
Lead	Target	144		mg/kg	144		1.0	YES	S3VEM
Magnesium	Target	1240		mg/kg	1240		1.0	YES	S3VEM
Manganese	Target	184		mg/kg	184		1.0	YES	S3VEM
Nickel	Target	23.2		mg/kg	23.2	*	1.0	YES	S3VEM
Potassium	Target	662		mg/kg	662		1.0	YES	S3VEM
Selenium	Target	0.98	J	mg/kg	0.98	J	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	279	J	mg/kg	279	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	33.5		mg/kg	33.5		1.0	YES	S3VEM
Zinc	Target	124		mg/kg	124		1.0	YES	S3VEM
Tin	Target	9.3		mg/kg	9.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0A5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	4040		mg/kg	4040		1.0	YES	S3VEM
Antimony	Target	1.6	J	mg/kg	1.6	J	1.0	YES	S3VEM
Arsenic	Target	18.6		mg/kg	18.6		1.0	YES	S3VEM
Barium	Target	233		mg/kg	233		1.0	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Target	4.3		mg/kg	4.3	*	1.0	YES	S3VEM
Calcium	Target	5440		mg/kg	5440		1.0	YES	S3VEM
Chromium	Target	11.9		mg/kg	11.9		1.0	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6		1.0	YES	S3VEM
Copper	Target	92.6		mg/kg	92.6		1.0	YES	S3VEM
Iron	Target	54600		mg/kg	54600		1.0	YES	S3VEM
Lead	Target	158		mg/kg	158		1.0	YES	S3VEM
Magnesium	Target	1360		mg/kg	1360		1.0	YES	S3VEM
Manganese	Target	196		mg/kg	196		1.0	YES	S3VEM
Nickel	Target	25.8		mg/kg	25.8	*	1.0	YES	S3VEM
Potassium	Target	728		mg/kg	728		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	284	J	mg/kg	284	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	35.6		mg/kg	35.6		1.0	YES	S3VEM
Zinc	Target	133		mg/kg	133		1.0	YES	S3VEM
Tin	Target	12.3		mg/kg	12.3	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0B6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S001	pH:	Sample Date: 09/20/2017	Sample Time: 17:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6500		mg/kg	6500		1.0	YES	S3VEM
Antimony	Target	0.68	J	mg/kg	0.68	J	1.0	YES	S3VEM
Arsenic	Target	6.7		mg/kg	6.7		1.0	YES	S3VEM
Barium	Target	182		mg/kg	182		1.0	YES	S3VEM
Beryllium	Target	0.61		mg/kg	0.61		1.0	YES	S3VEM
Cadmium	Target	2.6		mg/kg	2.6	*	1.0	YES	S3VEM
Calcium	Target	39300		mg/kg	39300		1.0	YES	S3VEM
Chromium	Target	13.9		mg/kg	13.9		1.0	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1.0	YES	S3VEM
Copper	Target	67.5		mg/kg	67.5		1.0	YES	S3VEM
Iron	Target	15000		mg/kg	15000		1.0	YES	S3VEM
Lead	Target	348		mg/kg	348		1.0	YES	S3VEM
Magnesium	Target	10800		mg/kg	10800		1.0	YES	S3VEM
Manganese	Target	776		mg/kg	776		1.0	YES	S3VEM
Nickel	Target	24.7		mg/kg	24.7	*	1.0	YES	S3VEM
Potassium	Target	1310		mg/kg	1310		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.72	U	mg/kg	0.72	U*	1.0	YES	S3VEM
Sodium	Target	119	J	mg/kg	119	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	15.4		mg/kg	15.4		1.0	YES	S3VEM
Zinc	Target	284		mg/kg	284		1.0	YES	S3VEM
Tin	Target	10.7		mg/kg	10.7	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6490		mg/kg	6490		1.0	YES	S3VEM
Antimony	Target	0.87	J	mg/kg	0.87	J	1.0	YES	S3VEM
Arsenic	Target	9.1		mg/kg	9.1		1.0	YES	S3VEM
Barium	Target	415		mg/kg	415		1.0	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64		1.0	YES	S3VEM
Cadmium	Target	2.8		mg/kg	2.8	*	1.0	YES	S3VEM
Calcium	Target	31700		mg/kg	31700		1.0	YES	S3VEM
Chromium	Target	22.9		mg/kg	22.9		1.0	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2		1.0	YES	S3VEM
Copper	Target	107		mg/kg	107		1.0	YES	S3VEM
Iron	Target	16100		mg/kg	16100		1.0	YES	S3VEM
Lead	Target	470		mg/kg	470		1.0	YES	S3VEM
Magnesium	Target	8400		mg/kg	8400		1.0	YES	S3VEM
Manganese	Target	500		mg/kg	500		1.0	YES	S3VEM
Nickel	Target	36.4	J	mg/kg	36.4	*	1.0	YES	S3VEM
Potassium	Target	1160		mg/kg	1160		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73	R	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	128	J	mg/kg	128	J	1.0	YES	S3VEM
Thallium	Target	1.8	UJ	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	18.0		mg/kg	18.0		1.0	YES	S3VEM
Zinc	Target	502		mg/kg	502		1.0	YES	S3VEM
Tin	Target	20.0		mg/kg	20.0	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C1A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Thallium	Spike	0.74	J	mg/kg	0.74	J	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C1D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6520		mg/kg	6520		1.0	YES	S3VEM
Antimony	Target	0.77	J	mg/kg	0.77	J	1.0	YES	S3VEM
Arsenic	Target	8.8		mg/kg	8.8		1.0	YES	S3VEM
Barium	Target	415		mg/kg	415		1.0	YES	S3VEM
Beryllium	Target	0.66		mg/kg	0.66		1.0	YES	S3VEM
Cadmium	Target	2.8		mg/kg	2.8		1.0	YES	S3VEM
Calcium	Target	31900		mg/kg	31900		1.0	YES	S3VEM
Chromium	Target	23.2	J	mg/kg	23.2		1.0	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3		1.0	YES	S3VEM
Copper	Target	107		mg/kg	107		1.0	YES	S3VEM
Iron	Target	16100	J	mg/kg	16100		1.0	YES	S3VEM
Lead	Target	477	J	mg/kg	477		1.0	YES	S3VEM
Magnesium	Target	8440		mg/kg	8440		1.0	YES	S3VEM
Manganese	Target	502		mg/kg	502		1.0	YES	S3VEM
Nickel	Target	36.5		mg/kg	36.5		1.0	YES	S3VEM
Potassium	Target	1160		mg/kg	1160		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U	1.0	YES	S3VEM
Sodium	Target	133	J	mg/kg	133	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U	1.0	YES	S3VEM
Vanadium	Target	18.3		mg/kg	18.3		1.0	YES	S3VEM
Zinc	Target	505		mg/kg	505		1.0	YES	S3VEM
Tin	Target	20.0		mg/kg	20.0		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C1L	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	5990		mg/kg	5990		5.0	YES	S3VEM
Antimony	Target	22.0	U	mg/kg	22.0	U	5.0	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5		5.0	YES	S3VEM
Barium	Target	385		mg/kg	385		5.0	YES	S3VEM
Beryllium	Target	0.67	J	mg/kg	0.67	J	5.0	YES	S3VEM
Cadmium	Target	2.1		mg/kg	2.1	*	5.0	YES	S3VEM
Calcium	Target	29800		mg/kg	29800		5.0	YES	S3VEM
Chromium	Target	23.8	J	mg/kg	23.8		5.0	YES	S3VEM
Cobalt	Target	6.4	J	mg/kg	6.4	J	5.0	YES	S3VEM
Copper	Target	99.0		mg/kg	99.0		5.0	YES	S3VEM
Iron	Target	16300	J	mg/kg	16300		5.0	YES	S3VEM
Lead	Target	424	J	mg/kg	424		5.0	YES	S3VEM
Magnesium	Target	8030		mg/kg	8030		5.0	YES	S3VEM
Manganese	Target	505		mg/kg	505		5.0	YES	S3VEM
Nickel	Target	31.1		mg/kg	31.1	*	5.0	YES	S3VEM
Potassium	Target	1040	J	mg/kg	1040	J	5.0	YES	S3VEM
Selenium	Target	12.5	U	mg/kg	12.5	U	5.0	YES	S3VEM
Silver	Target	3.7	U	mg/kg	3.7	U	5.0	YES	S3VEM
Sodium	Target	125	J	mg/kg	125	J	5.0	YES	S3VEM
Thallium	Target	9.0	U	mg/kg	9.0	U	5.0	YES	S3VEM
Vanadium	Target	18.0		mg/kg	18.0	J	5.0	YES	S3VEM
Zinc	Target	459		mg/kg	459		5.0	YES	S3VEM
Tin	Target	17.6		mg/kg	17.6	J*	5.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C1S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	12.7		mg/kg	12.7		1.0	YES	S3VEM
Arsenic	Spike	14.1		mg/kg	14.1		1.0	YES	S3VEM
Barium	Spike	680		mg/kg	680		1.0	YES	S3VEM
Beryllium	Spike	6.8		mg/kg	6.8		1.0	YES	S3VEM
Cadmium	Spike	9.9		mg/kg	9.9		1.0	YES	S3VEM
Chromium	Spike	48.1	J	mg/kg	48.1		1.0	YES	S3VEM
Cobalt	Spike	81.8		mg/kg	81.8		1.0	YES	S3VEM
Copper	Spike	138		mg/kg	138		1.0	YES	S3VEM
Lead	Spike	474	J	mg/kg	474		1.0	YES	S3VEM
Manganese	Spike	569		mg/kg	569		1.0	YES	S3VEM
Nickel	Spike	112		mg/kg	112		1.0	YES	S3VEM
Selenium	Spike	6.7		mg/kg	6.7		1.0	YES	S3VEM
Silver	Spike	0.47	J	mg/kg	0.47	J*	1.0	YES	S3VEM
Thallium	Spike	4.2		mg/kg	4.2	*	1.0	YES	S3VEM
Vanadium	Spike	85.0		mg/kg	85.0		1.0	YES	S3VEM
Zinc	Spike	536		mg/kg	536		1.0	YES	S3VEM
Tin	Spike	90.9		mg/kg	90.9		1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6640		mg/kg	6640		1.0	YES	S3VEM
Antimony	Target	0.77	J	mg/kg	0.77	J	1.0	YES	S3VEM
Arsenic	Target	11.2		mg/kg	11.2		1.0	YES	S3VEM
Barium	Target	512		mg/kg	512		1.0	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1.0	YES	S3VEM
Cadmium	Target	3.4		mg/kg	3.4	*	1.0	YES	S3VEM
Calcium	Target	31200		mg/kg	31200		1.0	YES	S3VEM
Chromium	Target	23.0		mg/kg	23.0		1.0	YES	S3VEM
Cobalt	Target	8.7		mg/kg	8.7		1.0	YES	S3VEM
Copper	Target	136		mg/kg	136		1.0	YES	S3VEM
Iron	Target	17400		mg/kg	17400		1.0	YES	S3VEM
Lead	Target	629		mg/kg	629		1.0	YES	S3VEM
Magnesium	Target	7320		mg/kg	7320		1.0	YES	S3VEM
Manganese	Target	528		mg/kg	528		1.0	YES	S3VEM
Nickel	Target	39.4		mg/kg	39.4	*	1.0	YES	S3VEM
Potassium	Target	1140		mg/kg	1140		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.73	U	mg/kg	0.73	U*	1.0	YES	S3VEM
Sodium	Target	134	J	mg/kg	134	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	19.1		mg/kg	19.1		1.0	YES	S3VEM
Zinc	Target	624		mg/kg	624		1.0	YES	S3VEM
Tin	Target	28.0		mg/kg	28.0	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7540		mg/kg	7540		1.0	YES	S3VEM
Antimony	Target	0.88	J	mg/kg	0.88	J	1.0	YES	S3VEM
Arsenic	Target	22.5		mg/kg	22.5		1.0	YES	S3VEM
Barium	Target	1140		mg/kg	1140		1.0	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1.0	YES	S3VEM
Cadmium	Target	5.4		mg/kg	5.4	*	1.0	YES	S3VEM
Calcium	Target	27900		mg/kg	27900		1.0	YES	S3VEM
Chromium	Target	48.2		mg/kg	48.2		1.0	YES	S3VEM
Cobalt	Target	13.8		mg/kg	13.8		1.0	YES	S3VEM
Copper	Target	397		mg/kg	397		1.0	YES	S3VEM
Iron	Target	25200		mg/kg	25200		1.0	YES	S3VEM
Lead	Target	883		mg/kg	883		1.0	YES	S3VEM
Magnesium	Target	10100		mg/kg	10100		1.0	YES	S3VEM
Manganese	Target	555		mg/kg	555		1.0	YES	S3VEM
Nickel	Target	83.8		mg/kg	83.8	*	1.0	YES	S3VEM
Potassium	Target	1120		mg/kg	1120		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.71	U	mg/kg	0.71	U*	1.0	YES	S3VEM
Sodium	Target	240	J	mg/kg	240	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	29.0		mg/kg	29.0		1.0	YES	S3VEM
Zinc	Target	1300		mg/kg	1300		1.0	YES	S3VEM
Tin	Target	58.4		mg/kg	58.4	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6140		mg/kg	6140		1.0	YES	S3VEM
Antimony	Target	0.76	J	mg/kg	0.76	J	1.0	YES	S3VEM
Arsenic	Target	9.6		mg/kg	9.6		1.0	YES	S3VEM
Barium	Target	205		mg/kg	205		1.0	YES	S3VEM
Beryllium	Target	0.58		mg/kg	0.58		1.0	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0	*	1.0	YES	S3VEM
Calcium	Target	11500		mg/kg	11500		1.0	YES	S3VEM
Chromium	Target	13.8		mg/kg	13.8		1.0	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6		1.0	YES	S3VEM
Copper	Target	96.1		mg/kg	96.1		1.0	YES	S3VEM
Iron	Target	16200		mg/kg	16200		1.0	YES	S3VEM
Lead	Target	485		mg/kg	485		1.0	YES	S3VEM
Magnesium	Target	3160		mg/kg	3160		1.0	YES	S3VEM
Manganese	Target	435		mg/kg	435		1.0	YES	S3VEM
Nickel	Target	20.7		mg/kg	20.7	*	1.0	YES	S3VEM
Potassium	Target	556		mg/kg	556		1.0	YES	S3VEM
Selenium	Target	2.4	U	mg/kg	2.4	U	1.0	YES	S3VEM
Silver	Target	0.69	U	mg/kg	0.69	U*	1.0	YES	S3VEM
Sodium	Target	130	J	mg/kg	130	J	1.0	YES	S3VEM
Thallium	Target	1.7	U	mg/kg	1.7	U*	1.0	YES	S3VEM
Vanadium	Target	20.5		mg/kg	20.5		1.0	YES	S3VEM
Zinc	Target	323		mg/kg	323		1.0	YES	S3VEM
Tin	Target	14.9		mg/kg	14.9	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P031-S002	pH:	Sample Date: 09/20/2017	Sample Time: 16:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8070		mg/kg	8070		1.0	YES	S3VEM
Antimony	Target	0.45	J	mg/kg	0.45	J	1.0	YES	S3VEM
Arsenic	Target	23.7		mg/kg	23.7		1.0	YES	S3VEM
Barium	Target	247		mg/kg	247		1.0	YES	S3VEM
Beryllium	Target	0.93		mg/kg	0.93		1.0	YES	S3VEM
Cadmium	Target	2.2		mg/kg	2.2	*	1.0	YES	S3VEM
Calcium	Target	21200		mg/kg	21200		1.0	YES	S3VEM
Chromium	Target	15.3		mg/kg	15.3		1.0	YES	S3VEM
Cobalt	Target	9.6		mg/kg	9.6		1.0	YES	S3VEM
Copper	Target	89.4		mg/kg	89.4		1.0	YES	S3VEM
Iron	Target	16100		mg/kg	16100		1.0	YES	S3VEM
Lead	Target	278		mg/kg	278		1.0	YES	S3VEM
Magnesium	Target	4610		mg/kg	4610		1.0	YES	S3VEM
Manganese	Target	354		mg/kg	354		1.0	YES	S3VEM
Nickel	Target	26.8		mg/kg	26.8	*	1.0	YES	S3VEM
Potassium	Target	1100		mg/kg	1100		1.0	YES	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Silver	Target	0.72	U	mg/kg	0.72	U*	1.0	YES	S3VEM
Sodium	Target	183	J	mg/kg	183	J	1.0	YES	S3VEM
Thallium	Target	1.8	U	mg/kg	1.8	U*	1.0	YES	S3VEM
Vanadium	Target	21.4		mg/kg	21.4		1.0	YES	S3VEM
Zinc	Target	358		mg/kg	358		1.0	YES	S3VEM
Tin	Target	11.8		mg/kg	11.8	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: MBE0C6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P029-S002	pH:	Sample Date: 09/20/2017	Sample Time: 14:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6160		mg/kg	6160		1.0	YES	S3VEM
Antimony	Target	0.72	J	mg/kg	0.72	J	1.0	YES	S3VEM
Arsenic	Target	10.0	J	mg/kg	10.0		1.0	YES	S3VEM
Barium	Target	204	J	mg/kg	204		1.0	YES	S3VEM
Beryllium	Target	0.59		mg/kg	0.59		1.0	YES	S3VEM
Cadmium	Target	2.0	J	mg/kg	2.0	*	1.0	YES	S3VEM
Calcium	Target	12500		mg/kg	12500		1.0	YES	S3VEM
Chromium	Target	13.9	J	mg/kg	13.9		1.0	YES	S3VEM
Cobalt	Target	6.5		mg/kg	6.5		1.0	YES	S3VEM
Copper	Target	93.3	J	mg/kg	93.3		1.0	YES	S3VEM
Iron	Target	16100		mg/kg	16100		1.0	YES	S3VEM
Lead	Target	488		mg/kg	488		1.0	YES	S3VEM
Magnesium	Target	3220		mg/kg	3220		1.0	YES	S3VEM
Manganese	Target	438		mg/kg	438		1.0	YES	S3VEM
Nickel	Target	21.4	J	mg/kg	21.4	*	1.0	YES	S3VEM
Potassium	Target	556		mg/kg	556		1.0	YES	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1.0	YES	S3VEM
Silver	Target	0.75	U	mg/kg	0.75	U*	1.0	YES	S3VEM
Sodium	Target	123	J	mg/kg	123	J	1.0	YES	S3VEM
Thallium	Target	1.9	U	mg/kg	1.9	U*	1.0	YES	S3VEM
Vanadium	Target	20.3		mg/kg	20.3		1.0	YES	S3VEM
Zinc	Target	327	J	mg/kg	327		1.0	YES	S3VEM
Tin	Target	14.5	J	mg/kg	14.5	*	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM

Sample Number: PBS002	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1.0	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1.0	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Chromium	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Iron	Target	10.0	UJ	mg/kg	10.0	U	1.0	YES	S3VEM
Lead	Target	1.0	UJ	mg/kg	1.0	U	1.0	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Manganese	Target	1.5	U	mg/kg	1.5	U	1.0	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1.0	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1.0	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1.0	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1.0	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1.0	YES	S3VEM
Vanadium	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1.0	YES	S3VEM
Tin	Target	5.0	U	mg/kg	5.0	U	1.0	YES	S3VEM

Sample Summary Report

Case: 47214

Contract: EPW14030

SDG: MBE086

Lab Code: CHM