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The Trusted Integrator for Sustainable Solutions

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

January 29, 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-0010-0053
DC No: RST3-04-D-0096
SUBJECT: REMOVAL ASSESSMENT REPORT
EIGHTEENMILE CREEK SITE
LOCKPORT, NIAGARA COUNTY, NEW YORK

Dear Mr. Kish,

Enclosed please find the Removal Assessment Report 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 Eighteenmile Creek Site (the Site) located in Lockport, Niagara County, New York. The sampling event was performed as part of a Remedial Investigation at ten residential properties located in the vicinity of the Site from November 13 through November 17, 2017.

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

Sincerely,

Weston Solutions, Inc.

Michael Garibaldi
RST 3 Site Project Manager

Enclosure
cc: TDD File: TO-0010-0053

REMOVAL ASSESSMENT REPORT

EIGHTEENMILE CREEK SITE

Lockport, Niagara County, New York
SSID No: A269
CERCLIS No.: NYN000206456

DC No: RST3-04-D-0096
TDD No: TO-0010-0053
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

January 2018

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1.0 Introduction

As part of the Removal Assessment of the Eighteenmile Creek Site (the Site), on November 13 through November 17, 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 Remedial Investigation of the existing soil at ten residential properties located along North Adam Street, Frost Street, and Porter Street, located in the vicinity of the Site. For privacy reasons, unique identifier numbers (Property P034 through P043) have been assigned to each of the investigated properties instead of using their complete addresses. Composite soil samples were collected from sampling quadrants established at each property and submitted for laboratory analysis.

1.1 Site Location and Description

The Site is located in Lockport, Niagara County, New York and includes contaminated sediments, soil, and groundwater in and around Eighteenmile Creek (the Creek). The headwaters of the Creek consist of an East and West Branch which begin immediately north of the New York State Barge Canal (the Canal). Water from the Creek's East Branch originates at the spillway on the south side of the Canal, where it is directed northward underneath the Canal and the Mill Street Bridge through a culvert. Water from the West Branch originates from the dry dock on the north side of the Barge Canal and then flows northward. The East and West Branches converge just south of Clinton Street in Lockport. The Creek flows north for approximately 15 miles and discharges to Lake Ontario in Olcott, New York.

Refer to Figure 1: Site Location Map.

1.2 Site History and Background

A portion of the Creek from the Canal to Harwood Street in the City of Lockport has been identified by the New York State Department of Environmental Conservation (NYSDEC) as the Eighteenmile Creek Corridor (the Corridor). 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. In June of 2011, the NYSDEC referred the Site to EPA to consider it for inclusion in the National Priorities List (NPL). EPA proposed the Site for placement in the NPL on September 15, 2011, and subsequently placed it on the NPL on March 15, 2012.

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 found to be present 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. This comparison indicated that the lead found on the residential properties was likely attributable to the Site. As a result, EPA determined that an expansion of the Remedial Investigation, to include additional residential properties, is warranted.

On July 17 through July 21, 2017, EPA and RST 3 conducted a Removal Assessment at nine residential properties (Property P002 through P005 and Property P021 through P025) located in the vicinity of the Site along Mill Street, Porter Street, and Chapel Street. Utilizing non-dedicated stainless steel hand augers, soil borings were advanced at locations in each property, and 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 to a laboratory for TAL metals, including tin, and TCL PCBs, analyses. The screening and analytical results were compared with the EPA Removal Management Levels (RMLs) for residential soil. Based on the screening results, total lead concentrations were below the EPA RML in all the soil samples collected from Properties P002, P023, and P025. Based on the screening results, total lead concentrations were above the EPA RML in soil samples collected from five properties, including Properties P003, P004, P005, P021, P022, and P024. One sample collected from Property P022 at 6 to 12 inches bgs indicated the highest total lead screening result at 1,054 mg/kg.

Validated analytical results indicated that concentrations of lead and/or manganese were above the EPA RMLs of 400 mg/kg and 1,800 mg/kg, respectively for lead and manganese, in at least one or more soil samples collected from at least one or more soil sample locations in each of the nine properties sampled during the July 2017 sampling event. One sample collected from Property P022 at 6 to 12 inches bgs indicated the highest concentration of lead at 1,340 mg/kg. One sample collected from Property P003 at 18 to 24 inches bgs indicated the highest concentration of manganese at 2,830 mg/kg. Validated analytical results indicated that concentrations of thallium were above the EPA RML of 0.78 mg/kg in at least one or more soil samples collected from three properties, including Properties P023, P024, and P025. Validated analytical results did not indicate any concentrations of PCBs above the EPA RML in any soil sample collected from all nine properties.

On September 19 through September 21, 2017, EPA and RST 3 conducted a Removal Assessment at eight residential properties (Property P026 through P033) located in the vicinity of the Site along Mill Street, Porter Street, and Chapel Street. Utilizing non-dedicated stainless steel hand augers, soil borings were advanced at locations in each property, and a total of 147 composite soil samples, including QA/QC samples, were collected from all eight properties at depths 0 to 2 inches, 2 to 6 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches bgs. The soil samples were split and shipped to two EPA Contract Laboratory Program (CLP) laboratories, including Chemtech Consulting Group, located in Mountainside, New Jersey and Bonner Analytical Testing Company, located in Hattiesburg, Mississippi, for TAL metals, including tin, analyses.

The validated analytical results of the soil samples collected from the eight properties were compared with the EPA RMLs, 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. One sample collected from Property P030 at 6 to 12 inches bgs in Quad 2, indicated the highest concentration of lead at 1,400 mg/kg. Manganese and thallium were detected above the EPA RMLs of 1,800 mg/kg and 0.78 mg/kg respectively, in at least one or more soil samples collected at Properties P032 and P033. One sample collected from Property P033 at 12 to 18 inches bgs indicated the highest concentration of manganese at 2,400 mg/kg and thallium at 1.9 J (estimated result) mg/kg.

2.0 Scope of Work

RST 3 was tasked by EPA with the collection of composite soil samples, including QA/QC samples, from soil borings advanced using non-dedicated stainless steel hand augers at ten residential properties (Property P034, P035, P036, P037, P038, P039, P040, P041, P042, and P043) located in the vicinity of the Site. Five-point composite soil samples were collected from boring locations randomly selected by the EPA On-Scene Coordinator (OSC) at each property. Soil samples were collected from depths 0 to 2 inches, 2 to 6 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches, bgs. The soil samples were collected for a definitive data QA objective and 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 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 Garibaldi	Weston Solutions, Inc., RST 3	Site Project Manager, Site H&S, Sample Collection and Sample Management, GPS
Michael Beuthe	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management Coordinator, Sample QA/QC
Adriana Morocho	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management
Brando Chacon	Weston Solutions, Inc., RST 3	Sample Collection and Sample Management

EPA: U.S. Environmental Protection Agency
H&S: Health and Safety
GPS: Global Positioning System
RST 3: Removal Support Team 3
QA/QC: Quality Control/Quality Assurance

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 November 13,

2017, RST 3 mobilized to the Site to perform the Removal Assessment sampling event. On November 14 through November 16, 2017, RST 3 utilized non-dedicated stainless steel hand augers to advance soil borings at locations in designated quadrants (quads) at each property. A total of 121 composite soil samples, including QA/QC samples, were collected from all ten residential properties. Rinsate blanks were collected daily at the end of each sampling day. The soil samples and rinsate blanks were shipped to an EPA CLP laboratory, Bonner Analytical Testing Company (Bonner), located in Hattiesburg, Mississippi, for TAL metals, including tin, analyses. There were no significant observations noted at the residential properties within the vicinity of the Site during the sampling event.

Refer to Attachment C: Photographic Documentation Log.

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 Operating 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 quadrants of approximately equal surface area. The number of quadrants and sample locations at each property were determined by the EPA OSC and marked using survey flags. Soil sampling was conducted 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. 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 quadrant and composited into one sample for each specific interval. It is noteworthy that four-point composite samples were collected from property P039. At each property, all 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 quadrant 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 Removal Assessment. 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 Laboratory Receiving Samples

Sample Matrix	CLP Case Number	Analysis	Name and Address of Laboratory
Soil and Rinsate Blank (Aqueous)	47320	TAL Metals and Tin	Bonner Analytical Testing Company 2703 Oak Grove Road Hattiesburg, Mississippi 39402 ***(CLP laboratory)***

CLP = Contract Laboratory Program TAL = Target Analyte List

7.0 Sample Collection and Dispatch

On November 17, 2017, RST 3 shipped a total of 121 soil samples, including six field duplicates, additional volumes of six samples designated as MS/MSD and three rinsate blank samples under COC record numbers (Nos.) 2-111417-201443-011, 2-111717-102039-0012, 2-111717-104520-0013, 2-111717-105019-0014, and 2-111717-105745-0015 via FedEx Airbill No. 8993-5598-3952 to Bonner for TAL metals, including tin, analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Attachment D: Chain of Custody Record and FedEx Airbills.

8.0 Soil Analytical Results Summary

The validated analytical results of the soil samples collected from the ten residential properties were compared with the EPA RMLs, 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 eight of the ten properties sampled during this event. Sample P040-S002-0612-01, which was collected at 6 to 12 inches bgs in Quad 2 of Property P040, indicated the highest concentration of lead at 1,610 (estimated result) mg/kg. Manganese was detected above the EPA RML of 1,800 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 Properties P037, P038, and P041. P038-S003-1824-02 (field duplicate of P038-S003-1824-01), which was collected at 18 to 24 inches bgs from Property P038, indicated the highest concentration of manganese at 2,640 mg/kg.

Refer to Attachment A, Figure 2: Sample Location Layout Map, Figure 3A: P034 Validated Analytical Results Map (Lead), Figure 3B: P035 Validated Analytical Results Map (Lead), Figure 3C: P036 Validated Analytical Results Map (Lead), Figure 3D: P037 Validated Analytical Results

Map (Lead), Figure 3E: P038 Validated Analytical Results Map (Lead), Figure 3F: P039 Validated Analytical Results Map (Lead), Figure 3G: P040 Validated Analytical Results Map (Lead), Figure 3H: P041 Validated Analytical Results Map (Lead), Figure 3I: P042 Validated Analytical Results Map (Lead), and Figure 3J: P043 Validated Analytical Results Map (Lead).

Refer to Attachment B, Table 1: Sample Collection Summary Table, Table 1: Sample Collection Summary Table, Table 2A: Property P034, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2B: Property P035, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2C: Property P036, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2D: Property P037, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2E: Property P038, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2F: Property P039, Validated Analytical Results Summary Table – TAL Metals plus Tin, Table 2G: Property P040, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2H: Property P041, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2I: Property P042, Validated Analytical Results Summary Table - TAL Metals plus Tin, Table 2J: Property P043, Validated Analytical Results Summary Table - TAL Metals plus Tin, and Attachment E: Validated Data Package.

9.0 Conclusion

Concentrations of lead were above the EPA RMLs in eight of the ten properties sampled during this event. In addition, concentrations of manganese were above the EPA RML in three of the properties sampled during this event. EPA will utilize the results from this Removal Assessment sampling event to determine 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 the investigated properties.

Report prepared by: Michael Garibaldi — 1/29/2018
Michael Garibaldi — Date
RST 3 Site Project Manager

Report reviewed by: Bernard Nwosu — 1/29/2018
Bernard Nwosu — Date
RST 3 Group Leader

ATTACHMENT A

Figures

Figure 1: Site Location Map
Figure 2: Sample Location Layout Map
Figure 3A: P034 Validated Analytical Results Map (Lead)
Figure 3B: P035 Validated Analytical Results Map (Lead)
Figure 3C: P036 Validated Analytical Results Map (Lead)
Figure 3D: P037 Validated Analytical Results Map (Lead)
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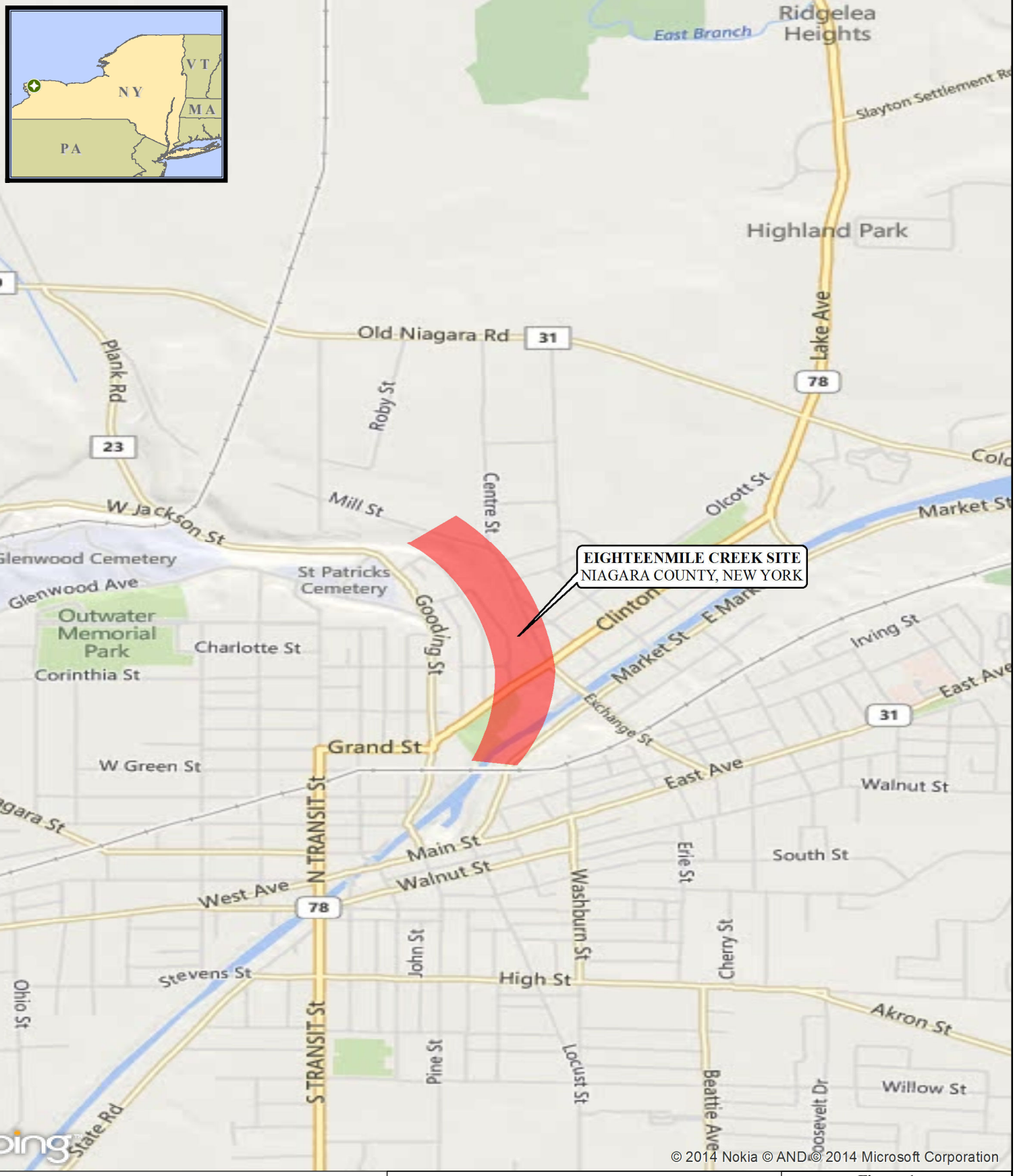
Figure 3G: P040 Validated Analytical Results Map (Lead)
Figure 3H: P041 Validated Analytical Results Map (Lead)
Figure 3I: P042 Validated Analytical Results Map (Lead)
Figure 3J: P043 Validated Analytical Results Map (Lead)



Legend

Site Location

0 0.1 0.2 0.4 0.6 0.8 Miles

N

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East Division

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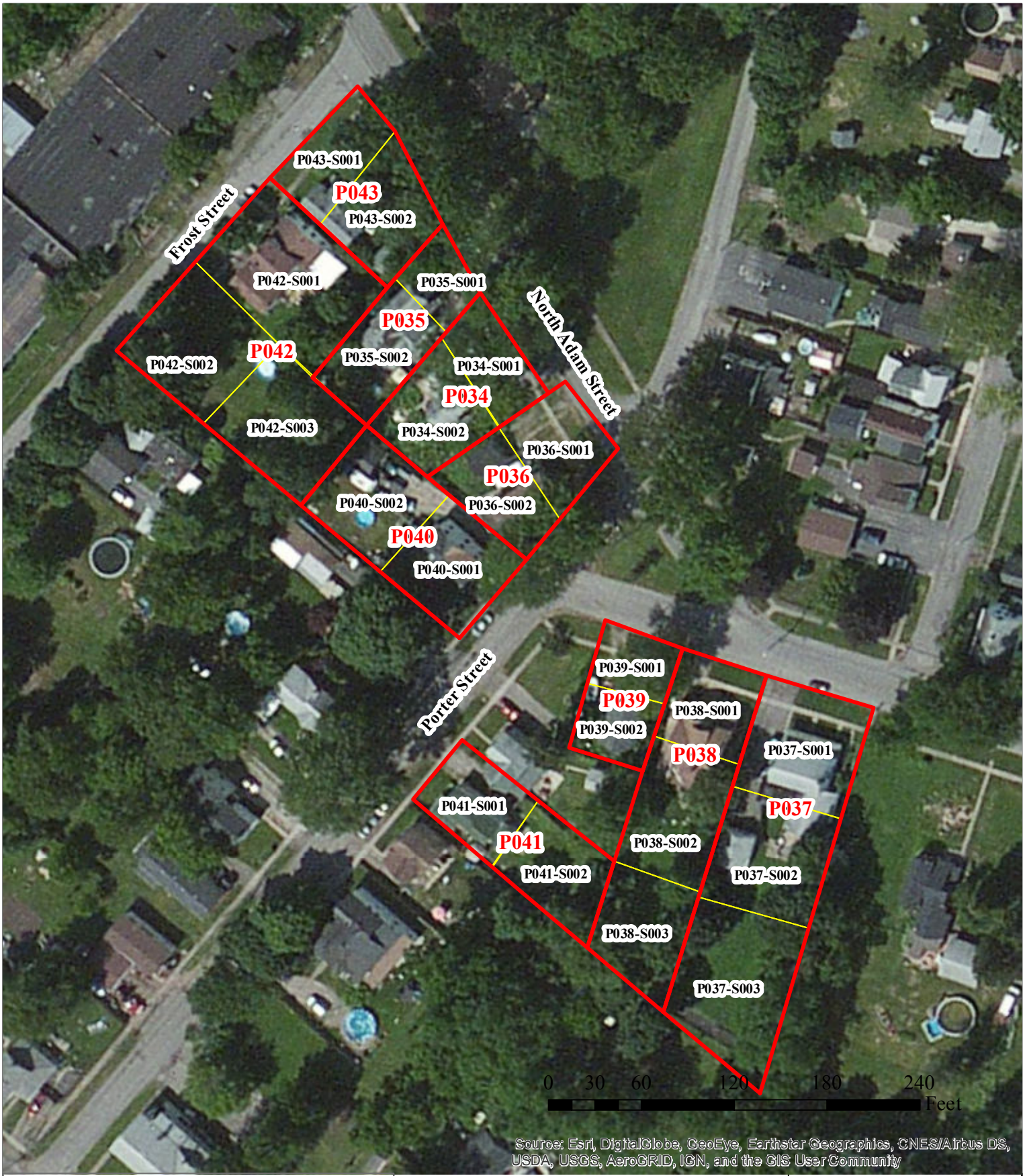
Figure 1:
Site Location Map

EIGHTEENMILE CREEK SITE
NIAGARA COUNTY, NEW YORK

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

DATE MODIFIED: 7/29/2014

GIS ANALYST:	T. BENTON
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	SITE LOCATION MAP.MXD



Legend

- Parcel Boundary
- Sample Quadrant Boundaries

N

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

Figure 2:
Sample Location Layout Map

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

DATE MODIFIED: 1/18/2018

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
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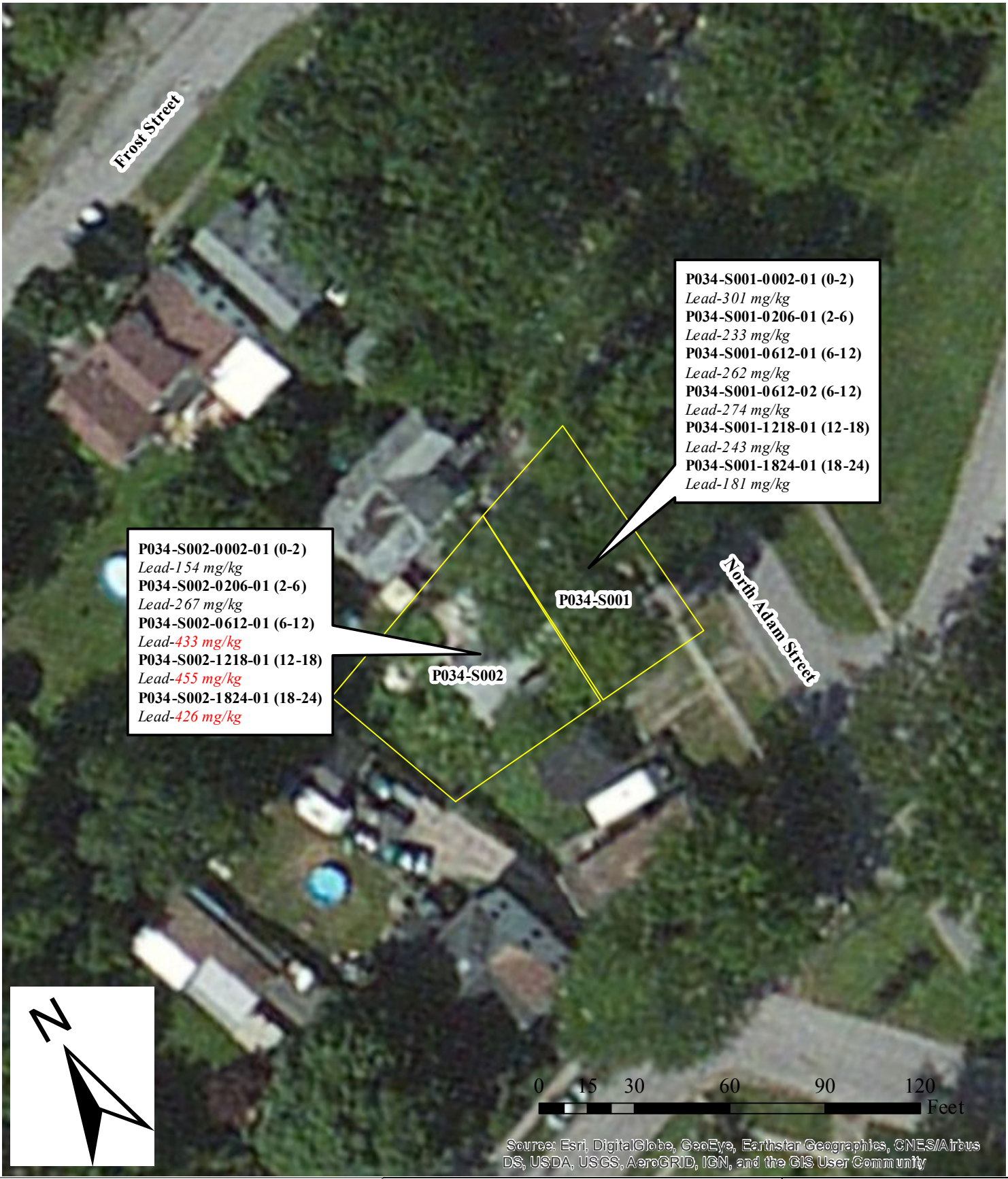

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P034 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

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DATE MODIFIED: 12/19/2017

Figure 3A:
Property P034
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
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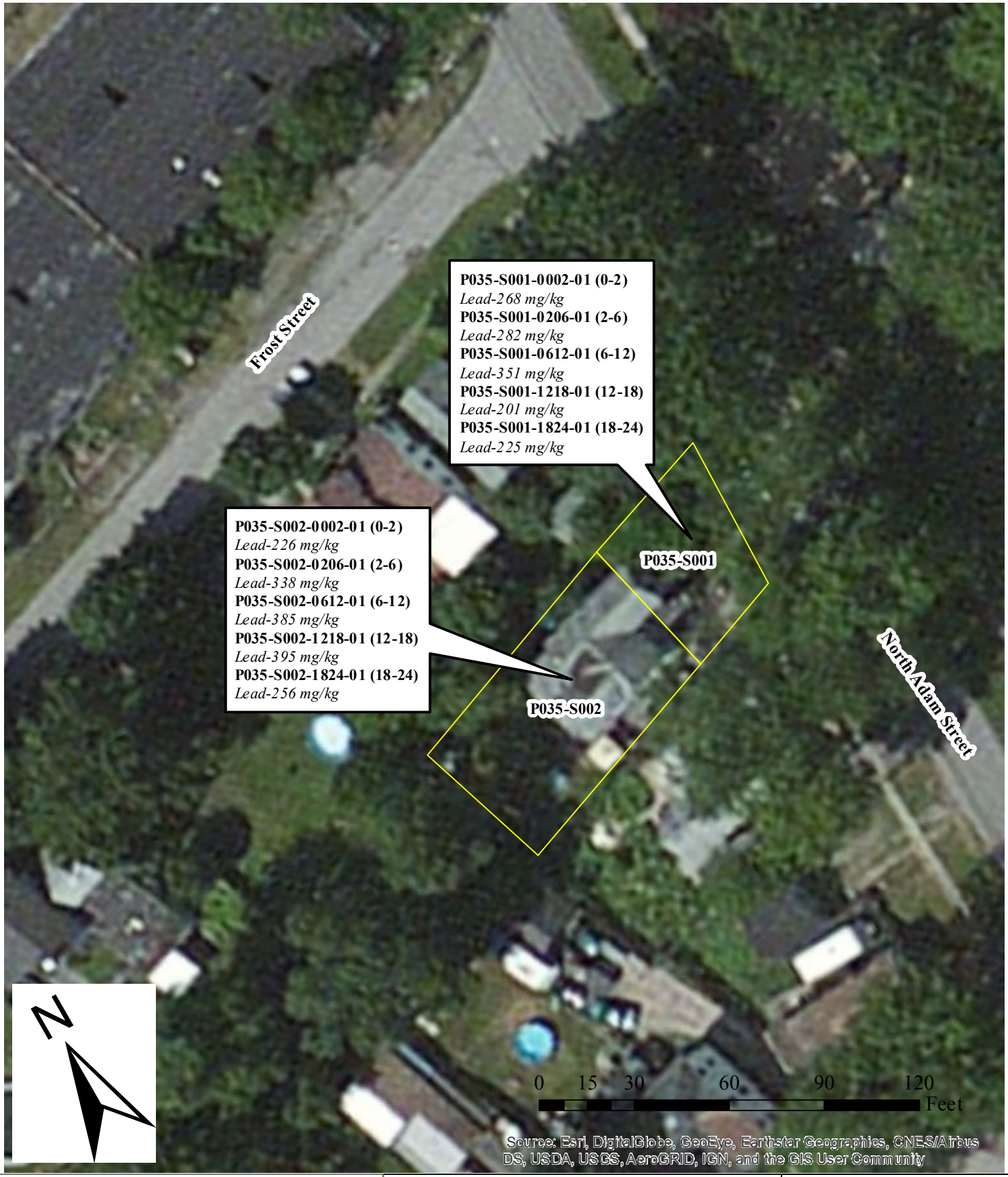

Legend

P035 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

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DATE MODIFIED: 12/19/2017

Figure 3B:
Property P035
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
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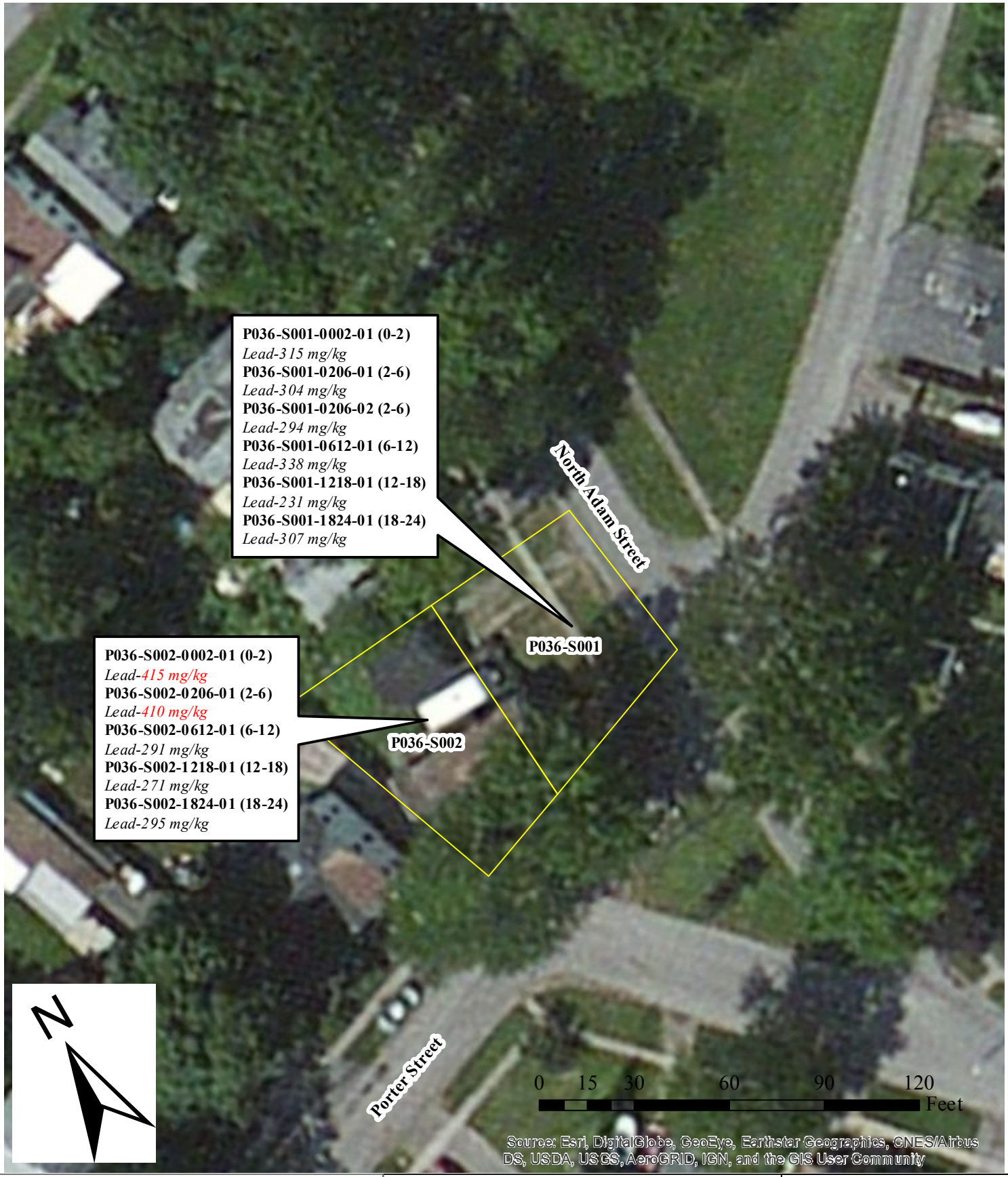

Legend

P036 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

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

Figure 3C:
Property P036
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

DATE MODIFIED: 12/19/2017

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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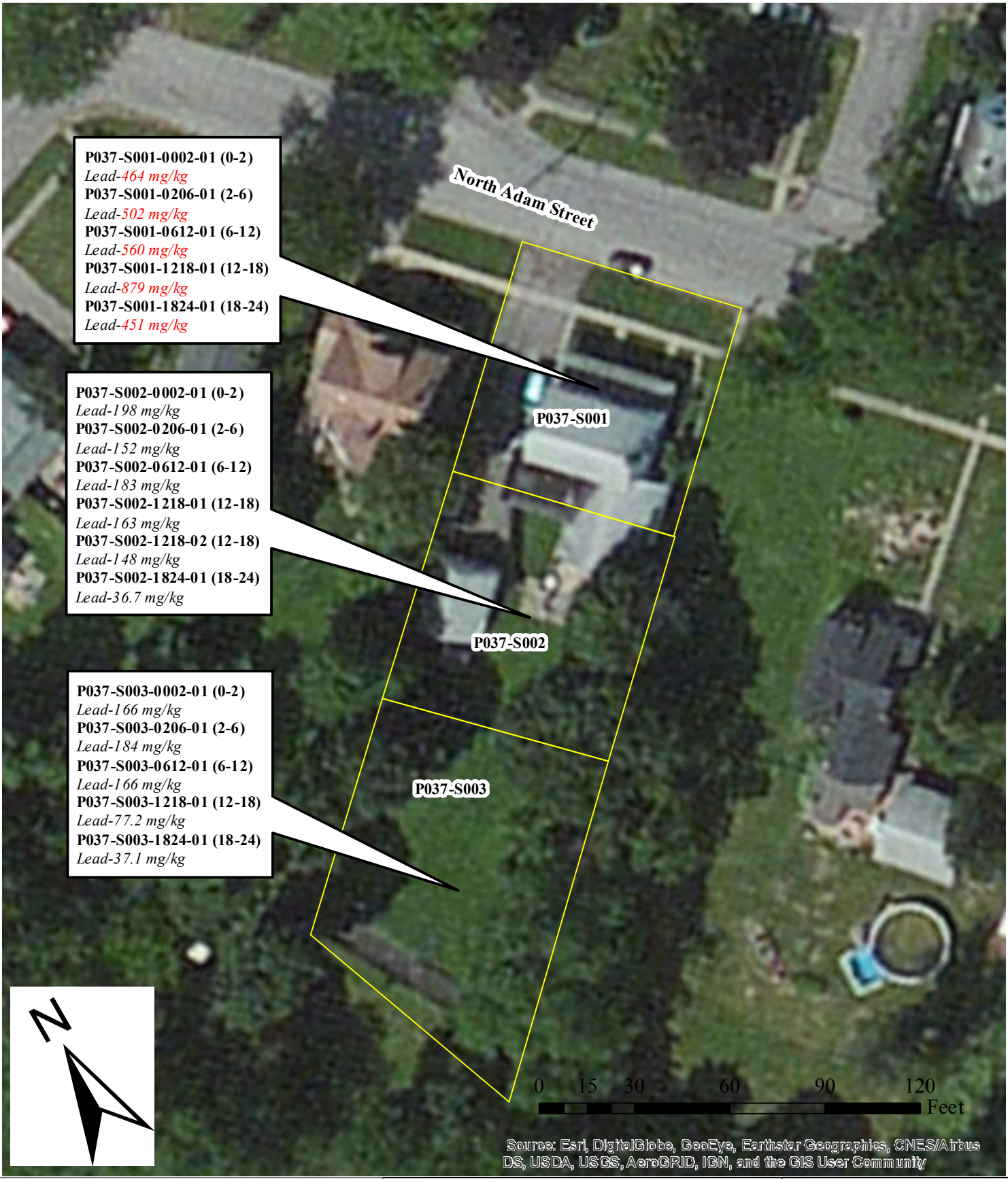

Legend

P037 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

DATE MODIFIED: 12/19/2017

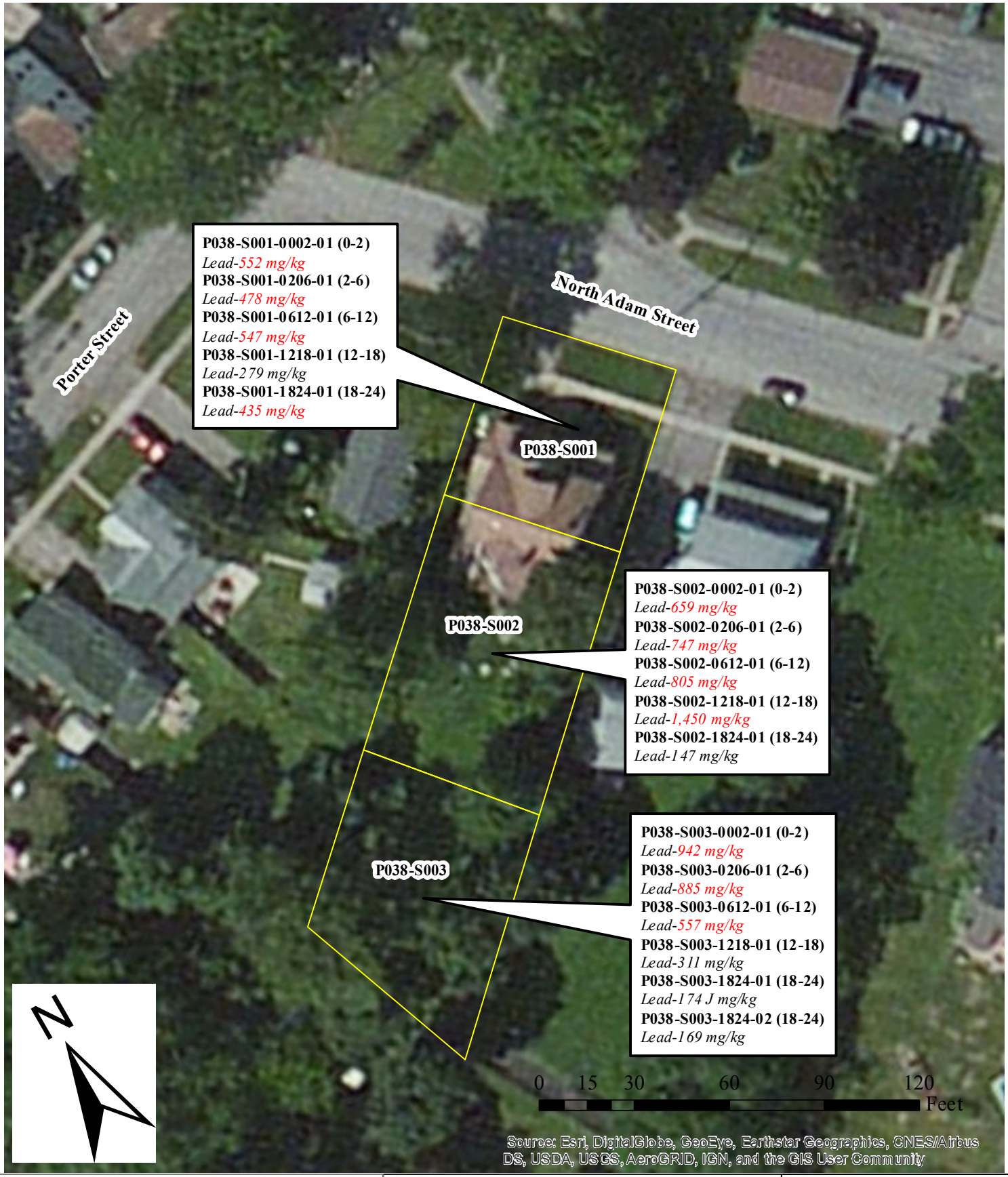
Figure 3D:
Property P037
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

Z:\RST_3\00100053\MXD\171211_Results_P034-P042.mxd



Legend

P038 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

DATE MODIFIED: 12/19/2017

Figure 3E:
Property P038
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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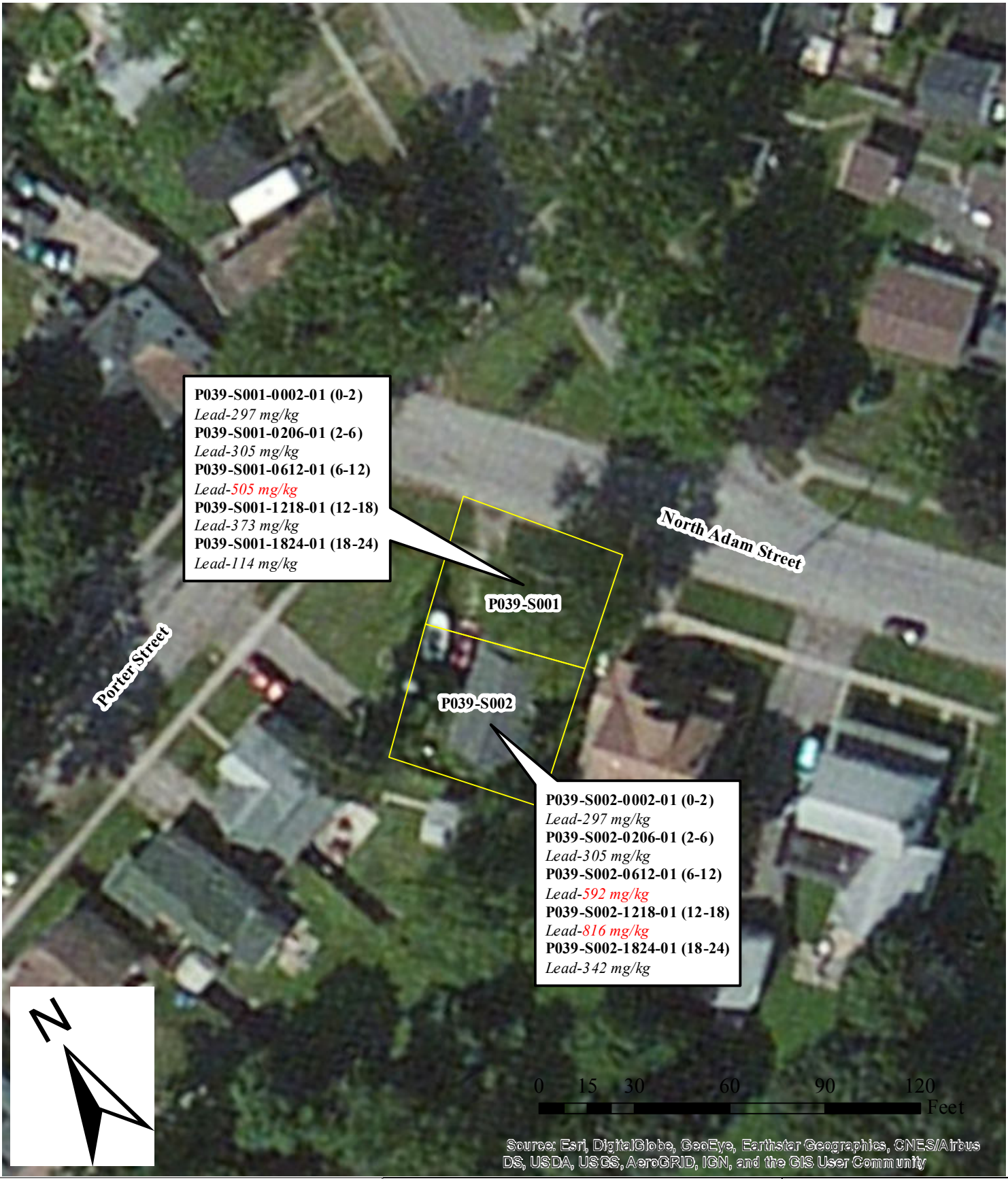

Legend

P039 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

DATE MODIFIED: 12/19/2017

Figure 3F:
Property P039
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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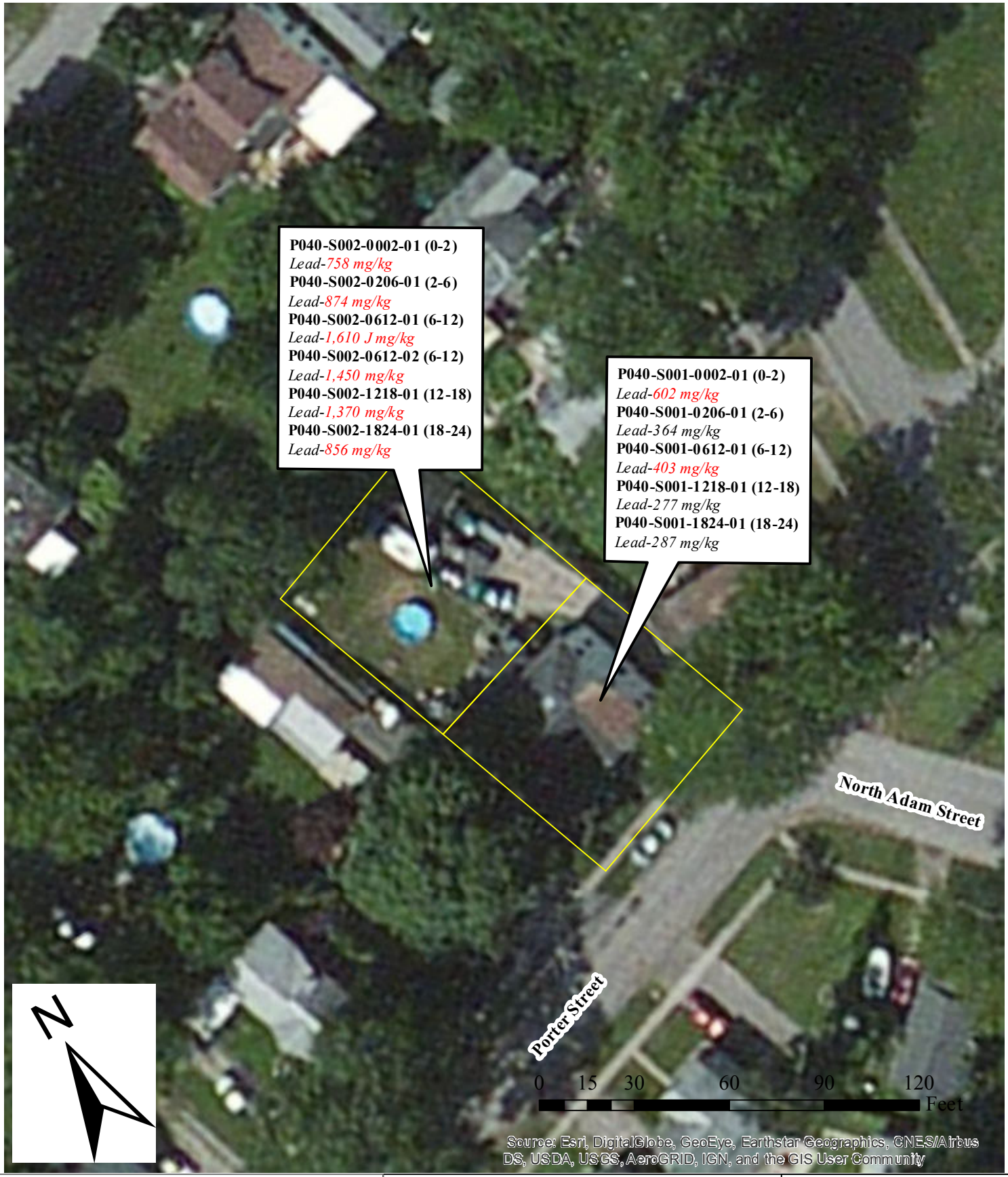

Legend

P040 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

DATE MODIFIED: 12/19/2017

Figure 3G:
Property P040
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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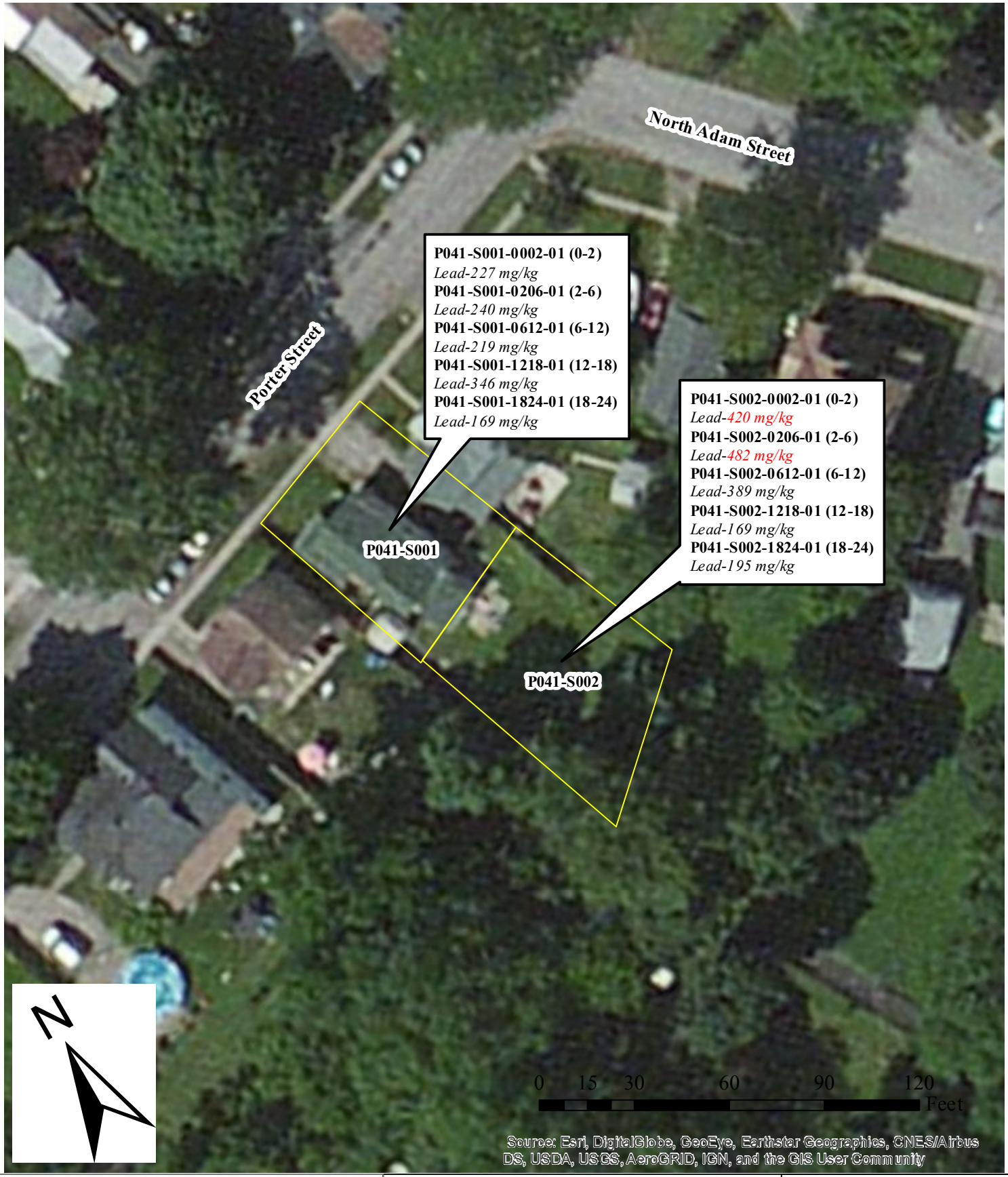

Legend

P041 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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:
Property P041
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

DATE MODIFIED: 12/19/2017

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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Legend

P042 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agency (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

Figure 3I:
Property P042
Validated Analytical Results Map (Lead)

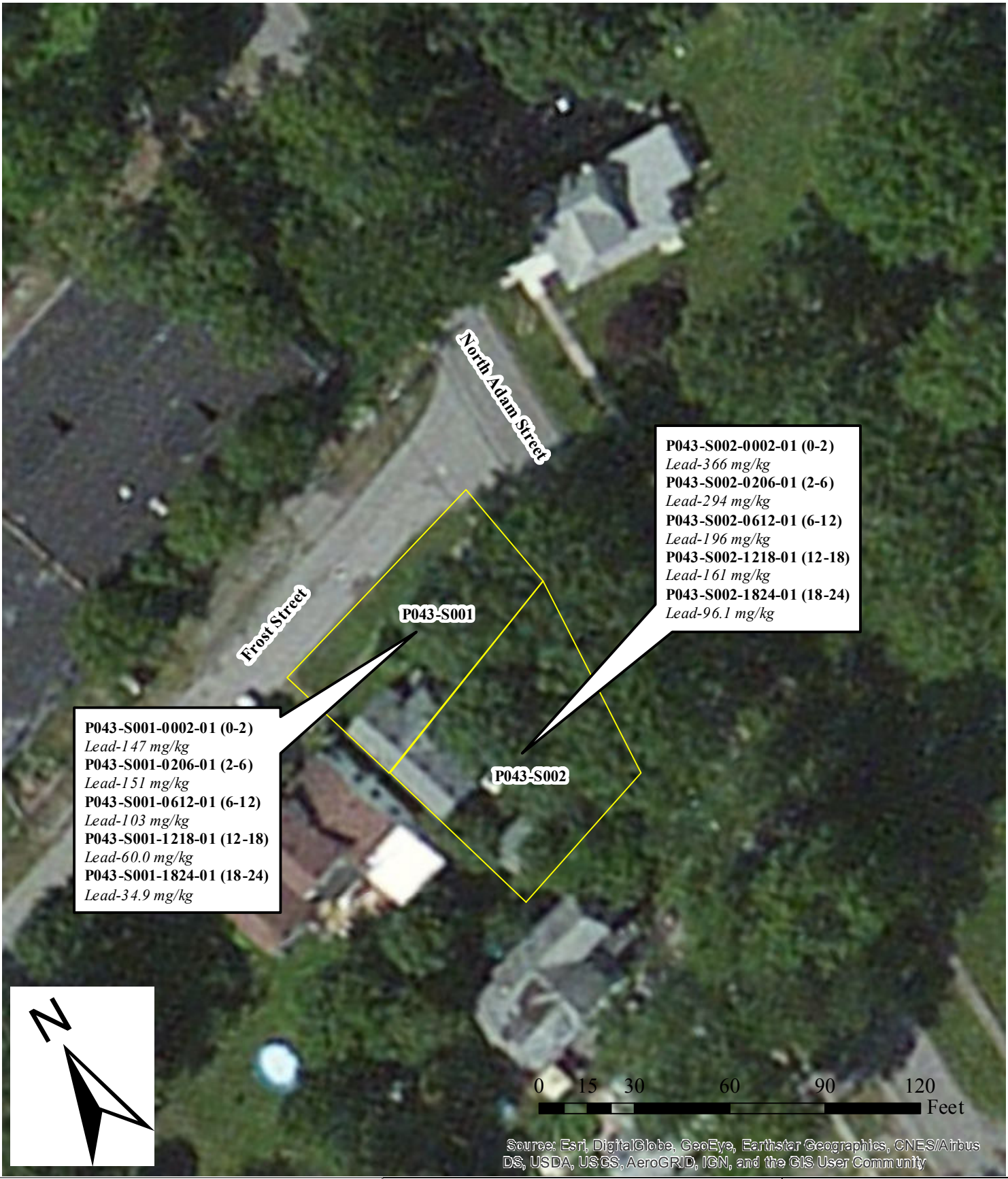
Eighteenmile Creek Site
Lockport, Niagara County, New York

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

DATE MODIFIED: 12/19/2017

GIS ANALYST:	M. BEUTHE
EPA OSC:	T. KISH
RST SPM:	M. GARIBALDI
FILENAME:	171211_Results_P034-P042

Z:\RST_3\00100053\MXD\171211_Results_P034-P042.mxd



Legend

P043 Sample Quadrants

Notes

1) All results are presented in milligrams per kilogram (mg/kg).
2) Sample depths are presented in parenthesis next to sample number in inches below ground surface
3) Values highlighted in red indicate an exceedance of the U.S. Environmental Protection Agencey (EPA) Removal Management Level (RML) of 400 mg/kg.
4) J - Indicates that the measured value is an estimate.

Weston Solutions, Inc.

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

DATE MODIFIED: 12/19/2017

Figure 3J:
Property P043
Validated Analytical Results Map (Lead)

Eighteenmile Creek Site
Lockport, Niagara County, New York

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

GIS ANALYST:	M.BEUTHE
EPA OSC:	T. KISH
RST SPM:	M.GARIBALDI
FILENAME:	171211_Results_P034-P042

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ATTACHMENT B

Tables

Table 1: Sample Collection Summary Table
Table 2A: Property P034, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2B: Property P035, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2C: Property P036, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2D: Property P037, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2E: Property P038, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2F: Property P039, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2G: Property P040, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2H: Property P041, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2I: Property P042, Validated Analytical Results Summary Table - TAL Metals + Tin
Table 2J: Property P043, Validated Analytical Results Summary Table - TAL Metals + Tin

Table 1: Sample Collection Summary Table
Eighteenmile Creek Assessment Site
Lockport, Niagara County, New York
November 14 through November 16, 2017

Property No.	RST 3 Sample No.	CLP Sample No.	Sample Date	Sample Time	Matrix	Collection Method	Depth (Inches)	Sample Type	Analysis
P034	P034-S001-0002-01	MBE0S3	11/14/2017	9:30	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P034-S001-0206-01	MBE0S4	11/14/2017	9:38	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	*P034-S001-0612-01	MBE0S5	11/14/2017	9:45	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P034-S001-0612-02	MBE0S6	11/14/2017	9:46	Soil	Composite	6-12	Field Duplicate of MBE0S5	TAL Metals + Tin
	P034-S001-1218-01	MBE0S7	11/14/2017	9:30	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P034-S001-1824-01	MBE0S8	11/14/2017	9:53	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P034-S002-0002-01	MBE0S9	11/14/2017	10:56	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P034-S002-0206-01	MBE0T0	11/14/2017	11:04	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P034-S002-0612-01	MBE0T1	11/14/2017	11:09	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P034-S002-1218-01	MBE0T2	11/14/2017	11:09	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P034-S002-1824-01	MBE0T3	11/14/2017	11:36	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P035	P035-S001-0002-01	MBE0T4	11/14/2017	12:47	Soil	Composite	0-2	Field Duplicate	TAL Metals + Tin
	P035-S001-0206-01	MBE0T5	11/14/2017	13:06	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P035-S001-0612-01	MBE0T6	11/14/2017	13:52	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P035-S001-1218-01	MBE0T7	11/14/2017	13:55	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P035-S001-1824-01	MBE0T8	11/14/2017	14:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P035-S002-0002-01	MBE0T9	11/14/2017	12:57	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P035-S002-0206-01	MBE0W0	11/14/2017	12:18	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P035-S002-0612-01	MBE0W1	11/14/2017	12:30	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P035-S002-1218-01	MBE0W2	11/14/2017	12:48	Soil	Composite	12-18	Field Duplicate	TAL Metals + Tin
	P035-S002-1824-01	MBE0W3	11/14/2017	12:57	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P036	P036-S001-0002-01	MBE0W4	11/14/2017	15:05	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	*P036-S001-0206-01	MBE0W5	11/14/2017	15:23	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P036-S001-0206-02	MBE0W6	11/14/2017	15:25	Soil	Composite	2-6	Field Duplicate of MBE0W6	TAL Metals + Tin
	P036-S001-0612-01	MBE0W7	11/14/2017	16:06	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P036-S001-1218-01	MBE0W8	11/14/2017	16:56	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P036-S001-1824-01	MBE0W9	11/14/2017	17:01	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P036-S002-0002-01	MBE0X0	11/14/2017	15:50	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P036-S002-0206-01	MBE0X2	11/14/2017	15:58	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P036-S002-0612-01	MBE0X3	11/14/2017	16:04	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P036-S002-1218-01	MBE0X4	11/14/2017	16:10	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P036-S002-1824-01	MBE0X5	11/14/2017	16:30	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P037	P037-S001-0002-01	MBE0X8	11/15/2017	8:31	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P037-S001-0206-01	MBE0X9	11/15/2017	8:40	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P037-S001-0612-01	MBE0Y0	11/15/2017	8:50	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P037-S001-1218-01	MBE0Y1	11/15/2017	9:03	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P037-S001-1824-01	MBE0Y2	11/15/2017	9:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P037-S002-0002-01	MBE0Y3	11/15/2017	9:15	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P037-S002-0206-01	MBE0Y4	11/15/2017	9:27	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P037-S002-0612-01	MBE0Y5	11/15/2017	9:34	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	*P037-S002-1218-01	MBE0Y6	11/15/2017	9:50	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P037-S002-1218-02	MBE0Y7	11/15/2017	9:55	Soil	Composite	12-18	Field Duplicate of MBE0Y6	TAL Metals + Tin
	P037-S002-1824-01	MBE0Y8	11/15/2017	10:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P037-S003-0002-01	MBE0Y9	11/15/2017	9:36	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P037-S003-0206-01	MBE0Z0	11/15/2017	9:52	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P037-S003-0612-01	MBE0Z1	11/15/2017	10:14	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P037-S003-1218-01	MBE0Z2	11/15/2017	10:41	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P037-S003-1824-01	MBE0Z3	11/15/2017	10:48	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P038	P038-S001-0002-01	MBE0Z4	11/15/2017	11:43	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P038-S001-0206-01	MBE0Z5	11/15/2017	12:16	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P038-S001-0612-01	MBE0Z6	11/15/2017	12:16	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P038-S001-1218-01	MBE0Z7	11/15/2017	12:40	Soil	Composite	12-18	Field Sample	TAL Metals + Tin

Notes:
RST 3 = Removal Support Team 3.
No. = Number.
TAL = Target Analyte List.
DI = De-ionized.
NA = Not Applicable.
*Matrix Spike/Matrix Spike Duplicate.

Table 1: Sample Collection Summary Table
Eighteenmile Creek Assessment Site
Lockport, Niagara County, New York
November 14 through November 16, 2017

Property No.	RST 3 Sample No.	CLP Sample No.	Sample Date	Sample Time	Matrix	Collection Method	Depth (Inches)	Sample Type	Analysis
P038	P038-S001-1824-01	MBE0Z8	11/15/2017	12:40	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P038-S002-0002-01	MBE0Z9	11/15/2017	11:37	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P038-S002-0206-01	MBE100	11/15/2017	11:37	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P038-S002-0612-01	MBE101	11/15/2017	12:32	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P038-S002-1218-01	MBE102	11/15/2017	12:32	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P038-S002-1824-01	MBE103	11/15/2017	12:32	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P038-S003-0002-01	MBE104	11/15/2017	12:48	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P038-S003-0206-01	MBE105	11/15/2017	12:51	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P038-S003-0612-01	MBE106	11/15/2017	13:11	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P038-S003-1218-01	MBE107	11/15/2017	13:26	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	*P038-S003-1824-01	MBE108	11/15/2017	13:29	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P038-S003-1824-02	MBE109	11/15/2017	13:44	Soil	Composite	18-24	Field Duplicate of MBE108	TAL Metals + Tin
P039	P039-S001-0002-01	MBE110	11/15/2017	15:00	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P039-S001-0206-01	MBE111	11/15/2017	15:09	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P039-S001-0612-01	MBE112	11/15/2017	15:21	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P039-S001-1218-01	MBE113	11/15/2017	15:42	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P039-S001-1824-01	MBE114	11/15/2017	16:05	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P039-S002-0002-01	MBE115	11/15/2017	15:09	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P039-S002-0206-01	MBE116	11/15/2017	15:15	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P039-S002-0612-01	MBE117	11/15/2017	15:25	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P039-S002-1218-01	MBE118	11/15/2017	15:42	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P039-S002-1824-01	MBE119	11/15/2017	16:10	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P040	P040-S001-0002-01	MBE120	11/16/2017	8:07	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P040-S001-0206-01	MBE121	11/16/2017	8:10	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P040-S001-0612-01	MBE122	11/16/2017	8:42	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P040-S001-1218-01	MBE123	11/16/2017	9:05	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P040-S001-1824-01	MBE124	11/16/2017	9:11	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P040-S002-0002-01	MBE125	11/16/2017	7:59	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P040-S002-0206-01	MBE126	11/16/2017	8:03	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	*P040-S002-0612-01	MBE127	11/16/2017	8:15	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P040-S002-0612-02	MBE128	11/16/2017	8:20	Soil	Composite	6-12	Field Duplicate of MBE127	TAL Metals + Tin
	P040-S002-1218-01	MBE129	11/16/2017	8:49	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P040-S002-1824-01	MBE130	11/16/2017	8:51	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P041	P041-S001-0002-01	MBE131	11/16/2017	10:07	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P041-S001-0206-01	MBE132	11/16/2017	10:20	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P041-S001-0612-01	MBE133	11/16/2017	10:24	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P041-S001-1218-01	MBE134	11/16/2017	10:45	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P041-S001-1824-01	MBE135	11/16/2017	11:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P041-S002-0002-01	MBE136	11/16/2017	10:18	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P041-S002-0206-01	MBE137	11/16/2017	10:19	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P041-S002-0612-01	MBE138	11/16/2017	10:41	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P041-S002-1218-01	MBE139	11/16/2017	11:28	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P041-S002-1824-01	MBE140	11/16/2017	11:33	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P042	P042-S001-0002-01	MBE142	11/16/2017	13:47	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P042-S001-0206-01	MBE143	11/16/2017	13:50	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P042-S001-0612-01	MBE144	11/16/2017	14:20	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	*P042-S001-1218-01	MBE145	11/16/2017	14:46	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P042-S001-1218-02	MBE166	11/16/2017	14:50	Soil	Composite	12-18	Field Duplicate of MBE145	TAL Metals + Tin
	P042-S001-1824-01	MBE146	11/16/2017	15:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P042-S002-0002-01	MBE147	11/16/2017	13:40	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P042-S002-0206-01	MBE148	11/16/2017	14:00	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P042-S002-0612-01	MBE149	11/16/2017	14:25	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P042-S002-1218-01	MBE150	11/16/2017	14:45	Soil	Composite	12-18	Field Sample	TAL Metals + Tin

Notes:
RST 3 = Removal Support Team 3.
No. = Number.
TAL = Target Analyte List.
DI = De-ionized.
NA = Not Applicable.
*Matrix Spike/Matrix Spike Duplicate.

Table 1: Sample Collection Summary Table
Eighteenmile Creek Assessment Site
Lockport, Niagara County, New York
November 14 through November 16, 2017

Property No.	RST 3 Sample No.	CLP Sample No.	Sample Date	Sample Time	Matrix	Collection Method	Depth (Inches)	Sample Type	Analysis
P042	P042-S002-1824-01	MBE141	11/16/2017	15:00	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P042-S003-0002-01	MBE151	11/16/2017	15:20	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P042-S003-0206-01	MBE152	11/16/2017	15:26	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P042-S003-0612-01	MBE155	11/16/2017	15:49	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P042-S003-1218-01	MBE153	11/16/2017	15:51	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P042-S003-1824-01	MBE154	11/16/2017	16:05	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
P043	P043-S001-0002-01	MBE156	11/16/2017	16:40	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P043-S001-0206-01	MBE157	11/16/2017	16:41	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P043-S001-0612-01	MBE158	11/16/2017	16:56	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P043-S001-1218-01	MBE159	11/16/2017	17:25	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P043-S001-1824-01	MBE160	11/16/2017	17:25	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
	P043-S002-0002-01	MBE161	11/16/2017	16:35	Soil	Composite	0-2	Field Sample	TAL Metals + Tin
	P043-S002-0206-01	MBE162	11/16/2017	16:42	Soil	Composite	2-6	Field Sample	TAL Metals + Tin
	P043-S002-0612-01	MBE163	11/16/2017	17:09	Soil	Composite	6-12	Field Sample	TAL Metals + Tin
	P043-S002-1218-01	MBE164	11/16/2017	18:05	Soil	Composite	12-18	Field Sample	TAL Metals + Tin
	P043-S002-1824-01	MBE165	11/16/2017	18:06	Soil	Composite	18-24	Field Sample	TAL Metals + Tin
Rinsate Blank	RB-171114	MBE0X6	11/14/2017	17:30	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin
	RB-171115	MBE167	11/15/2017	17:30	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin
	RB-171116	MBE168	11/16/2017	17:45	DI Water	Rinsate	N/A	Rinsate Blank	TAL Metals + Tin

Notes:
RST 3 = Removal Support Team 3.
No. = Number.
TAL = Target Analyte List.
DI = De-ionized.
NA = Not Applicable.
*Matrix Spike/Matrix Spike Duplicate.

Table 2A: Property P034, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 14, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P034-S001-0002-01	P034-S001-0206-01	P034-S001-0612-01	P034-S001-0612-02	P034-S001-1218-01	P034-S001-1824-01	P034-S002-0002-01	P034-S002-0206-01	P034-S002-0612-01	P034-S002-1218-01	P034-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0S3	MBE0S4	MBE0S5	MBE0S6	MBE0S7	MBE0S8	MBE0S9	MBE0T0	MBE0T1	MBE0T2	MBE0T3
Sample Date		11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017
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	10,700	9,900	10,300	10,200	10,200	10,200	9,540	9,970	9,930	9,660	9,300
Antimony	31	6.0 U	5.9 U	6.0 UJ	5.7 U	6.0 U	5.9 U	6.0 U	6.0 U	5.9 U	5.9 U	5.9 U
Arsenic	68	17.0	18.3	19.9	19.8	17.5	13.8	7.0	7.9	12.1	23.0	20.6
Barium	15,000	122	105	126	120	142	122	116	138	197	275	248
Beryllium	160	0.50 U	0.49 U	0.78	0.75	0.82	0.83	0.50 U	0.58	0.85	1.0	1.1
Cadmium	71	0.59	0.55	0.80	0.87	0.56	0.50	0.66	0.94	1.3	1.9	1.8
Calcium	NS	8,480	7,800	14,700	14,300	14,400	22,000	6,160	5,410	9,320	10,700	11,200
Chromium	NS	18.6	15.1	19.8	19.3	18.6	16.8	15.9	17.7	21.5	27.4	24.8
Cobalt	23	5.0 U	4.9 U	5.9 J	5.7	6.2	6.2	5.0 U	5.0 U	6.9	8.6	8.4
Copper	3,100	34.1	28.4	38.2	36.9	33.5	33.0	36.4	37.7	60.6	71.7	70.3
Iron	55,000	13,700	13,900	16,500	16,500	15,000	16,000	11,000	13,700	15,300	19,100	18,100
Lead	400	301	233	262	274	243	181	154	267	**433**	**455**	**426**
Magnesium	NS	3,150	3,140	5,220	5,170	4,630	5,190	2,210	2,440	3,400	2,970	3,010
Manganese	1,800	469	430	561	567	522	726	248	291	390	375	383
Nickel	1,500	16.9	15.1	28.1	26.8	24.0	20.6	12.4	17.9	27.4	33.3	31.0
Potassium	NS	1,070	884	1,470	1,440	1,470	2,060	1,180	1,430	1,710	1,520	1,550
Selenium	390	1.5 J	1.3 J	1.5 J-	1.6 J	1.3 J	1.3 J	1.1 J	1.3 J	1.8 J	2.4 J	2.4 J
Silver	390	0.072 J	0.98 U	1.0 UJ	0.95 U	1.0 U	0.99 U	0.50 J	0.24 J	0.15 J	0.18 J	0.18 J
Sodium	NS	501 U	490 U	501 U	474 U	500 U	495 U	502 U	501 U	493 U	496 U	495 U
Thallium	0.78	2.5 U	2.4 U	2.5 UJ	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	390	22.6	23.6	23.5	22.9	22.8	21.5	18.5	21.2	24.0	28.9	27.5
Zinc	23,000	198	172	271	279	206	148	213	324	573	722	708
Tin	47,000	5.4 J-	5.1 J-	9.0 J-	7.8 J-	5.7 J-	5.9 J-	8.2 J-	11.8 J-	18.0 J-	23.1 J-	20.0 J-

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.
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.
Result exceeds the EPA RML.

Table 2B: Property P035, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 14, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P035-S001-0002-01	P035-S001-0206-01	P035-S001-0612-01	P035-S001-1218-01	P035-S001-1824-01	P035-S002-0002-01	P035-S002-0206-01	P035-S002-0612-01	P035-S002-1218-01	P035-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.		MBE0T4	MBE0T5	MBE0T6	MBE0T7	MBE0T8	MBE0T9	MBE0W0	MBE0W1	MBE0W2	MBE0W3
Sample Date		11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017
Matrix		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
TAL Metal											
Aluminum	77,000	8,870	10,200	9,330	11,200	10,100	7,890	10,700	10,800	11,200	11,200
Antimony	31	5.9 U	6.0 U	5.7 U	5.8 U	5.9 U	5.9 U	5.9 U	6.0 U	5.8 U	0.77 J
Arsenic	68	10.6	11.4	16.7	12.6	12.0	6.8	9.3	11.2	11.6	11.0
Barium	15,000	127	140	370	162	192	148	226	262	266	217
Beryllium	160	0.68	0.73	0.79	0.77	0.78	0.49	0.67	0.74	0.78	0.75
Cadmium	71	1.4	1.3	1.5	0.88	0.92	0.80	1.2	1.1	1.1	0.67
Calcium	NS	21,900	25,600	24,000	33,700	36,100	24,200	26,900	37,500	32,400	39,700
Chromium	NS	19.8	20.6	28.1	19.5	21.7	16.4	22.9	22.1	23.4	19.0
Cobalt	23	5.7	6.2	6.5	6.9	6.8	5.0	6.4	6.6	7.3	6.0
Copper	3,100	68.7	63.9	150	80.2	72.3	70.5	116	106	139	67.5
Iron	55,000	14,400	16,700	18,100	16,700	14,000	13,900	16,400	16,700	17,200	16,400
Lead	400	268	282	351	201	225	226	338	385	395	256
Magnesium	NS	7,640	8,620	7,480	8,430	7,290	6,580	7,460	7,690	7,720	7,980
Manganese	1,800	454	546	502	581	504	500	658	653	666	763
Nickel	1,500	31.2	32.4	29.2	23.9	23.5	17.3	23.4	22.5	24.8	17.7
Potassium	NS	1,580	1,760	1,350	2,040	1,570	1,610	2,150	2,170	2,230	2,170
Selenium	390	1.5 J	3.5 U	3.3 U	3.4 U	3.4 U	3.4 U	3.5 U	3.5 U	3.4 U	3.3 U
Silver	390	0.088 J	1.0 U	0.95 U	0.97 U	0.98 U	0.99 U	0.99 U	1.0 U	0.96 U	0.94 U
Sodium	NS	492 U	500 U	476 U	487 U	492 U	493 U	494 U	499 U	482 U	468 U
Thallium	0.78	2.5 U	2.5 U	2.4 U	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.3 U
Vanadium	390	19.4	21.1	22.2	21.7	21.9	19.0	21.4	21.6	22.3	19.5
Zinc	23,000	386	348	427	262	274	319	577	514	512	283
Tin	47,000	10.3 J-	9.8 J-	29.4 J-	10.5 J-	12.8 J-	9.2 J-	13.0 J-	14.5 J-	16.6 J-	12.5

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.
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.
Result exceeds the EPA RML.

Table 2C: Property P036, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 14, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P036-S001-0002-01	P036-S001-0206-01	P036-S001-0206-02	P036-S001-0612-01	P036-S001-1218-01	P036-S001-1824-01	P036-S002-0002-01	P036-S002-0206-01	P036-S002-0612-01	P036-S002-1218-01	P036-S002-1824-01
Sample Depth (inches)		0-2	2-6	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0W4	MBE0W5	MBE0W6	MBE0W7	MBE0W8	MBE0W9	MBE0X0	MBE0X2	MBE0X3	MBE0X4	MBE0X5
Sample Date		11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017	11/14/2017
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	8,900	9,340	9,170	9,480	9,960	10,300	11,400	11,200	11,500	11,400	11,800
Antimony	31	0.50 J	0.66 J	0.54 J	0.55 J	6.0 U	5.9 U	5.6 U	5.8 U	5.6 U	5.8 U	6.0 U
Arsenic	68	10.1	11.0	10.8	15.2	21.9	14.2	11.8	11.9	13.3	13.6	16.6
Barium	15,000	91.9	89.2	87.5	98.5	110	120	173	166	130	122	144
Beryllium	160	0.62	0.65 J	0.63	0.73	0.82	0.70	0.67	0.64	0.65	0.70	1.2
Cadmium	71	0.85	0.90	0.86	0.89	0.70	0.70	0.86	0.87	0.68	0.61	0.59
Calcium	NS	24,800	24,900	25,700	23,900	23,300	33,700	8,740	8,380	10,800	23,600	30,000
Chromium	NS	17.7	17.5	16.5	17.6	17.7	17.2	19.6	18.9	17.7	17.0	19.3
Cobalt	23	5.2	5.2	5.1	5.5	6.4	5.4	6.3	6.0	6.1	6.0	9.1
Copper	3,100	39.4	39.5	38.1	44.4	40.1	51.9	55.4	52.7	50.0	50.6	46.5
Iron	55,000	14,800	15,100	14,900	16,200	16,200	13,700	17,200	16,900	17,000	16,800	14,900
Lead	400	315	304	294	338	231	307	**415**	**410**	291	271	295
Magnesium	NS	10,700	10,700	11,000	9,880	8,230	10,500	3,330	3,360	4,270	5,800	4,920
Manganese	1,800	502	521	505	535	575	635	598	593	801	760	581
Nickel	1,500	25.8	26.0	25.2	27.5	24.4	19.6	26.0	25.6	24.6	22.0	26.7
Potassium	NS	1,680	1,540	1,530	1,520	1,770	1,910	1,820	1,690	1,700	2,040	2,090
Selenium	390	3.4 U	3.5 U	3.5 U	3.5 U	3.5 U	3.4 U	3.3 U	3.4 U	3.3 U	3.4 U	3.5 U
Silver	390	0.98 U	1.0 UJ	0.99 U	1.0 U	1.0 U	0.98 U	0.94 U	0.97 U	0.94 U	0.96 U	1.0 U
Sodium	NS	489 U	502 U	497 U	498 U	499 U	490 U	469 U	484 U	471 U	482 U	501 U
Thallium	0.78	2.4 U	2.5 UJ	2.5 U	2.5 U	2.5 U	2.4 U	2.3 U	2.4 U	2.4 U	2.4 U	2.5 U
Vanadium	390	19.0	19.6	19.5	20.5	20.5	18.3	22.8	22.4	22.1	21.9	26.3
Zinc	23,000	358	341 J	326	314	224	259	455	396	276	232	225
Tin	47,000	8.1	8.1 J-	8.0	9.0	9.5	12.4	8.4	8.7	6.6	7.1	10.5

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.
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.
Result exceeds the EPA RML.

Table 2D: Property P037, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 15, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P037-S001-0002-01	P037-S001-0206-01	P037-S001-0612-01	P037-S001-1218-01	P037-S001-1824-01	P037-S002-0002-01	P037-S002-0206-01	P037-S002-0612-01	P037-S002-1218-01	P037-S002-1218-02	P037-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	12-18	12-18	18-24
CLP Sample No.		MBE0X8	MBE0X9	MBE0Y0	MBE0Y1	MBE0Y2	MBE0Y3	MBE0Y4	MBE0Y5	MBE0Y6	MBE0Y7	MBE0Y8
Sample Date		11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017
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	11,100	11,300	10,800	11,700	10,500	11,600	11,100	11,600	11,900 J	11,500	10,100
Antimony	31	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	6.0 U	5.9 U	6.0 U	6.0 UJ	5.8 U	5.6 U
Arsenic	68	12.4	14.0	13.1	13.9	11.4	11.9	10.4	13.9	12.6	12.8	6.9
Barium	15,000	190	215	218	319	192	119	104	116	112 J	108	54.6
Beryllium	160	0.70	0.78	0.75	0.77	0.63	0.72	0.63	0.78	0.73	0.75	0.56
Cadmium	71	0.82	0.82	0.96	0.91	1.1	0.82	0.71	0.96	0.71 J-	0.72	0.47 U
Calcium	NS	9,570	11,500	10,200	16,500	36,000	16,900	10,600	24,300	46,000 J	45,600	77,400
Chromium	NS	18.3	18.1	18.5	21.1	17.0	16.1	14.8	16.0	14.8 J	14.5	11.5
Cobalt	23	6.2	6.6	6.4	7.3	5.9	6.6	5.9	7.0	6.2 J	6.4	5.4
Copper	3,100	36.1	42.3	45.0	59.8	31.6	31.5	26.5	32.2	32.8 J	32.0	19.8
Iron	55,000	16,500	17,200	16,600	17,600	16,400	17,100	16,000	17,500	16,900 J	17,500	14,800
Lead	400	**464**	**502**	**560**	**879**	**451**	198	152	183	163	148	36.7
Magnesium	NS	4,590	4,540	4,480	4,800	14,000	4,380	3,360	4,500	6,540 J	6,150	9,780
Manganese	1,800	777	815	795	798	762	1,230	1,040	1,360	1,370 J	1,440	842
Nickel	1,500	23.5	23.2	24.7	23.1	20.2	22.0	17.9	21.3	18.1	18.8	15.8
Potassium	NS	1,960	1,890	1,760	1,910	1,960	2,550	2,010	2,440	2,580 J	2,370	2,310
Selenium	390	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.4 U	3.5 U	3.5 UJ	3.4 U	3.3 U
Silver	390	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.98 U	1.0 U	0.99 U	0.97 U	0.94 U
Sodium	NS	500 U	502 U	502 U	502 U	502 U	500 U	490 U	501 U	497 U	487 U	469 U
Thallium	0.78	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.3 U
Vanadium	390	22.4	23.5	22.8	24.5	21.9	21.5	21.3	21.6	20.0 J	19.4	16.2
Zinc	23,000	377	368	424	489	507	299	244	374	264	249	89.2
Tin	47,000	7.5	9.0	9.5	16.6	5.3	5.4	4.9 U	5.9	5.0 UJ	4.9 U	4.7 U

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.
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.
Result exceeds the EPA RML.

Table 2D: Property P037, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 15, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P037-S003-0002-01	P037-S003-0206-01	P037-S003-0612-01	P037-S003-1218-01	P037-S003-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE0Y9	MBE0Z0	MBE0Z1	MBE0Z2	MBE0Z3
Sample Date		11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017
Matrix		Soil	Soil	Soil	Soil	Soil
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal						
Aluminum	77,000	11,600	13,000	13,100	13,800	11,800
Antimony	31	6.0 U	6.0 U	0.59 J	0.45 J	5.7 U
Arsenic	68	15.0	17.6	19.2	13.5	7.6
Barium	15,000	154	207	140	87.7	50.6
Beryllium	160	0.80	0.92	1.1	0.96	0.72
Cadmium	71	0.91	1.1	0.91	0.60	0.35 J
Calcium	NS	13,200	11,200	10,600	27,000	90,500
Chromium	NS	20.4	22.2	21.7	17.7	13.5
Cobalt	23	7.5	8.3	8.6	7.9	6.0
Copper	3,100	50.2	105	56.7	35.6	28.4
Iron	55,000	18,300	20,000	19,600	19,900	15,100
Lead	400	166	184	166	77.2	37.1
Magnesium	NS	4,790	4,120	3,280	4,910	8,860
Manganese	1,800	1,370	1,580	**2,070**	1,430	737
Nickel	1,500	25.5	29.2	29.6	25.5	18.6
Potassium	NS	2,490	2,460	2,340	2,530	2,560
Selenium	390	3.5 U	3.5 U	3.5 U	3.5 U	3.3 U
Silver	390	1.0 U	0.99 U	1.0 U	1.0 U	0.95 U
Sodium	NS	501 U	497 U	500 U	502 U	477 U
Thallium	0.78	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U
Vanadium	390	21.8	23.7	24.2	22.7	17.7
Zinc	23,000	309	346	245	139	69.8
Tin	47,000	6.2	6.5	8.9	5.0 U	4.8 U

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.
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.
Result exceeds the EPA RML.

Table 2E: Property P038, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 15, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P038-S001-0002-01	P038-S001-0206-01	P038-S001-0612-01	P038-S001-1218-01	P038-S001-1824-01	P038-S002-0002-01	P038-S002-0206-01	P038-S002-0612-01	P038-S002-1218-01	P038-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.		MBE0Z4	MBE0Z5	MBE0Z6	MBE0Z7	MBE0Z8	MBE0Z9	MBE100	MBE101	MBE102	MBE103
Sample Date		11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017
Matrix		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
TAL Metal											
Aluminum	77,000	10,400	10,900	11,300	12,200	11,400	12,700	13,200	12,900	13,500	14,100
Antimony	31	0.64 J	0.46 J	5.9 U	6.0 U	5.9 U	5.9 U	5.9 U	5.8 U	5.3 U	5.9 U
Arsenic	68	9.7	11.0	12.1	8.6	9.7	10.6	10.2	10.5	13.5	12.2
Barium	15,000	176	161	195	129	155	198	236	243	333	108
Beryllium	160	0.72	0.77	0.69	0.56	0.59	0.65	0.63	0.62	0.79	0.70
Cadmium	71	1.0	0.98	1.5	1.1	1.5	1.4	1.4	1.4	1.2	1.0
Calcium	NS	15,100	14,300	16,100	10,500	16,600	17,600	17,100	16,200	17,000	7,700
Chromium	NS	16.9	17.8	23.9	19.8	21.9	24.7	25.8	27.1	27.9	21.5
Cobalt	23	6.0	6.2	7.5	6.8	7.2	7.6	7.6	8.2	8.6	8.6
Copper	3,100	37.0	39.8	50.7	30.9	34.8	42.7	45.0	57.6	87.0	30.4
Iron	55,000	17,200	17,500	19,400	17,700	19,900	19,100	19,300	18,800	20,800	20,500
Lead	400	**552**	**478**	**547**	279	**435**	**659**	**747**	**805**	**1,450**	147
Magnesium	NS	5,800	5,550	5,580	4,330	5,120	5,640	5,560	4,930	4,420	3,250
Manganese	1,800	880	900	1,040	817	1,210	1,130	1,070	938	1,160	**2,290**
Nickel	1,500	25.0	26.3	27.0	20.2	22.0	27.4	26.2	28.1	25.5	20.5
Potassium	NS	2,230	2,190	2,200	1,840	2,120	2,660	2,370	2,030	2,260	2,310
Selenium	390	3.5 U	3.3 U	1.2 J	1.1 J	1.3 J	1.4 J	1.2 J	1.2 J	1.5 J	1.7 J
Silver	390	1.0 U	0.94 U	0.37 J	0.30 J	0.40 J	0.31 J	0.41 J	0.35 J	0.39 J	0.34 J
Sodium	NS	498 U	468 U	489 U	497 U	491 U	494 U	491 U	484 U	442 U	495 U
Thallium	0.78	2.5 U	2.3 U	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.2 U	2.5 U
Vanadium	390	20.6	21.6	22.2	21.8	20.9	22.4	22.7	23.1	26.3	23.7
Zinc	23,000	408	350	289	167	179	365	402	437	400	106
Tin	47,000	6.8	7.2	10.9	10.9	28.2	7.7	9.3	8.4	21.8	4.9 U

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.
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.
Result exceeds the EPA RML.

Table 2E: Property P038, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 15, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P038-S003-0002-01	P038-S003-0206-01	P038-S003-0612-01	P038-S003-1218-01	P038-S003-1824-01	P038-S003-1824-02
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	18-24
CLP Sample No.		MBE104	MBE105	MBE106	MBE107	MBE108	MBE109
Sample Date		11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017
Matrix		Soil	Soil	Soil	Soil	Soil	Soil
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal							
Aluminum	77,000	12,100	12,900	14,300	13,700	13,900 J	14,200
Antimony	31	5.8 U	6.0 U	5.9 U	5.7 U	5.9 UJ	5.9 U
Arsenic	68	10.8	10.6	11.3	10.7	9.5 J-	9.3
Barium	15,000	379	429	223	163	131 J	123
Beryllium	160	0.63	0.64	0.71	0.70	0.69 J-	0.70
Cadmium	71	1.9	1.8	1.3	1.2	1.1 J-	1.1
Calcium	NS	15,800	19,200	12,200	7,260	22,500 J	22,000
Chromium	NS	25.9	25.7	25.0	21.8	21.1	21.4
Cobalt	23	8.3	8.5	8.4	8.5	8.3 J-	8.2
Copper	3,100	49.6	50.5	41.2	35.9	26.3 J	27.0
Iron	55,000	19,200	20,500	20,600	21,000	22,600 J	21,900
Lead	400	**942**	**885**	**557**	311	174 J	169
Magnesium	NS	5,200	5,980	4,390	3,040	5,250 J	5,100
Manganese	1,800	1,250	1,100	1,430	**2,290**	**2,550 J**	**2,640**
Nickel	1,500	29.0	27.7	24.7	22.2	21.4 J	21.4
Potassium	NS	2,550	2,580	2,690	2,770	2,720 J	2,730
Selenium	390	1.4 J	1.4 J	1.5 J	1.7 J	1.8 J-	1.7 J
Silver	390	0.40 J	0.36 J	0.47 J	0.40 J	0.52 J-	0.41 J
Sodium	NS	484 U	497 U	492 U	478 U	495 U	494 U
Thallium	0.78	2.4 U	2.5 U	2.5 U	2.4 U	2.5 U	2.5 U
Vanadium	390	23.1	24.2	25.0	22.3	23.3 J-	23.7
Zinc	23,000	454	434	253	154	112 J-	110
Tin	47,000	9.6	12.1	10.4	4.8 U	4.9 U	4.9 U

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.
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.
Result exceeds the EPA RML.

Table 2F: Property P039, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 15, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P039-S001-0002-01	P039-S001-0206-01	P039-S001-0612-01	P039-S001-1218-01	P039-S001-1824-01	P039-S002-0002-01	P039-S002-0206-01	P039-S002-0612-01	P039-S002-1218-01	P039-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.		MBE110	MBE111	MBE112	MBE113	MBE114	MBE115	MBE116	MBE117	MBE118	MBE119
Sample Date		11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017	11/15/2017
Matrix		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
TAL Metal											
Aluminum	77,000	9,930	9,120	9,390	11,700	12,700	11,800	11,400	12,300	13,600	13,800
Antimony	31	6.0 U	5.9 U	5.8 U	5.8 U	6.0 U	5.9 U	6.0 U	6.0 U	6.0 U	6.0 U
Arsenic	68	8.0	8.1	8.1	9.0	6.8	7.6	10.0	14.4	20.0	15.1
Barium	15,000	94.6	85.9	94.4	111	98.5	138	142	222	282	177
Beryllium	160	0.53	0.48 J	0.52	0.59	0.55	0.55	0.67	0.78	0.99	0.88
Cadmium	71	1.1	1.1	0.96	0.86	0.76	1.1	0.82	0.70	1.3	0.52
Calcium	NS	21,700	49,400	21,300	10,800	7,070	18,500	20,300	34,600	25,200	15,100
Chromium	NS	19.8	18.3	20.1	21.2	20.9	21.4	17.5	18.6	24.3	20.2
Cobalt	23	6.4	5.7	6.8	7.2	7.2	6.4	6.3	7.1	8.9	8.5
Copper	3,100	31.5	40.1	44.8	42.8	25.0	36.4	37.8	47.2	89.5	53.2
Iron	55,000	16,100	15,100	17,000	17,200	17,900	15,400	15,100	16,500	19,800	19,400
Lead	400	297	305	**505**	373	114	297	305	**592**	**816**	342
Magnesium	NS	10,300	20,400	9,290	5,120	3,850	5,220	5,280	6,140	4,930	3,610
Manganese	1,800	990	966	1,020	1,000	1,300	755	685	882	1,060	1,380
Nickel	1,500	24.0	22.2	25.0	21.0	18.3	21.9	22.9	24.4	28.6	22.3
Potassium	NS	1,920	1,690	1,690	2,140	2,190	2,650	2,410	2,750	2,860	2,660
Selenium	390	1.1 J	1.2 J	1.0 J	1.2 J	1.1 J	1.2 J	1.1 J	1.2 J	1.7 J	1.2 J
Silver	390	0.22 J	0.24 J	0.23 J	0.20 J	0.26 J	0.26 J	0.99 U	0.13 J	0.18 J	0.047 J
Sodium	NS	497 U	489 U	484 U	485 U	497 U	489 U	496 U	500 U	497 U	501 U
Thallium	0.78	2.5 U	2.4 U	2.4 U	2.4 U	2.5 U	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	390	19.2	17.4	21.1	24.3	21.6	20.5	20.8	21.9	26.5	24.6
Zinc	23,000	153	154	117	116	64.6	200	263	286	517	240
Tin	47,000	7.6	6.8	7.7	7.0	5.0 U	6.2	6.3	8.8	24.2	10.6

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.
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.
Result exceeds the EPA RML.

Table 2G: Property P040, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 16, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P040-S001-0002-01	P040-S001-0206-01	P040-S001-0612-01	P040-S001-1218-01	P040-S001-1824-01	P040-S002-0002-01	P040-S002-0206-01	P040-S002-0612-01	P040-S002-0612-02	P040-S002-1218-01	P040-S002-1824-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	18-24	0-2	2-6	6-12	6-12	12-18	18-24
CLP Sample No.		MBE120	MBE121	MBE122	MBE123	MBE124	MBE125	MBE126	MBE127	MBE128	MBE129	MBE130
Sample Date		11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017
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	9,890	7,490	9,150	10,200	8,940	7,120	7,230	8,840	7,730	8,910	9,170
Antimony	31	5.5 U	6.0 U	6.0 U	5.9 U	5.9 U	5.9 U	6.0 U	6.0 UJ	6.0 U	6.0 U	5.9 U
Arsenic	68	29.9	22.5	57.8	21.4	30.9	10.8	12.5	24.8 J	21.5	21.9	16.9
Barium	15,000	274	190	312	181	238	317	345	639 J-	611	644	532
Beryllium	160	1.0	0.76	1.5	0.98	1.3	0.57	0.62	1.1 J	0.96	1.1	0.87
Cadmium	71	2.0	1.2	1.2	0.81	0.74	1.5	1.6	2.6 J-	2.4	2.0	1.2
Calcium	NS	17,700	14,100	21,100	9,780	16,300	17,800	20,200	35,000	31,600	27,100	31,100
Chromium	NS	24.2	18.8	23.3	18.7	26.9	20.4	21.0	30.8 J	29.0	29.1	26.1
Cobalt	23	6.7	5.3	8.0	8.4	10.1	5.4	5.8	9.6 J	8.3	9.0	7.1
Copper	3,100	86.5	59.9	81.3	59.4	60.1	67.8	101	168 J	152	148	105
Iron	55,000	16,900	16,800	21,400	16,800	16,400	14,500	15,300	22,500	19,900	18,900	16,200
Lead	400	**602**	364	**403**	277	287	**758**	**874**	**1,610 J**	**1,450**	**1,370**	**856**
Magnesium	NS	5,570	3,790	4,410	3,130	3,340	6,580	7,590	13,200	11,900	6,530	7,850
Manganese	1,800	433	320	382	462	385	389	391	598	547	514	437
Nickel	1,500	37.0	26.9	39.4	29.8	42.0	23.6	28.0	45.5 J	39.4	42.4	27.7
Potassium	NS	1,540	1,120	1,330	1,280	1,230	1,350	1,280	1,510 J	1,290	1,530	1,600
Selenium	390	1.9 J	1.5 J	1.6 J	1.1 J	1.2 J	1.1 J	0.95 J	1.6 J	1.2 J	1.5 J	1.6 J
Silver	390	0.14 J	0.047 J	1.0 U	0.99 U	0.98 U	0.23 J	0.29 J	1.2 J-	0.67 J	0.47 J	0.25 J
Sodium	NS	462 U	499 U	501 U	494 U	490 U	495 U	499 U	496 U	501 U	498 U	495 U
Thallium	0.78	2.3 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 UJ	2.5 U	2.5 U	2.5 U
Vanadium	390	23.9	19.8	26.9	23.5	24.2	17.7	18.6	25.3 J	22.2	23.2	20.9
Zinc	23,000	513	321	386	244	255	563	612	1,050 J	955	949	672
Tin	47,000	15.7	14.7	16.2	8.7	9.9	16.5	20.2	30.5	29.2	29.3	23.4

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.
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.
Result exceeds the EPA RML.

Table 2H: Property P041, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 16, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P041-S001-0002-01	P041-S001-0206-01	P041-S001-0612-01	P041-S001-1218-01	P041-S001-1824-01	P041-S002-0002-01	P041-S002-0206-01	P041-S002-0612-01	P041-S002-1218-01	P041-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.		MBE131	MBE132	MBE133	MBE134	MBE135	MBE136	MBE137	MBE138	MBE139	MBE140
Sample Date		11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017
Matrix		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
TAL Metal											
Aluminum	77,000	9,280	10,200	10,400	13,400	15,200	12,900	13,000	14,300	14,300	12,600
Antimony	31	6.0 U	6.0 U	5.7 U	5.9 U	6.0 U	6.0 U	6.0 U	5.9 U	5.8 U	5.9 U
Arsenic	68	8.5	9.5	11.0	14.6	16.5	17.4	19.1	18.1	13.4	11.0
Barium	15,000	110	118	126	191	124	204	212	214	112	130
Beryllium	160	0.55	0.63	0.67	0.87	1.0	0.90	0.92	0.95	0.97	0.84
Cadmium	71	0.76	0.73	0.53	0.53	0.50 U	1.0	1.0	0.94	0.53	0.57
Calcium	NS	57,400	34,700	33,600	29,600	9,050	15,800	16,400	13,900	18,200	60,000
Chromium	NS	14.4	16.4	14.5	16.9	18.8	22.3	22.8	21.5	17.3	15.9
Cobalt	23	5.3	6.1	6.6	7.8	8.9	8.5	8.8	9.2	7.8	6.5
Copper	3,100	28.7	29.7	29.2	39.4	35.4	104	123	76.7	130	45.6
Iron	55,000	14,900	15,900	15,700	19,600	22,100	19,600	20,100	20,300	20,300	17,600
Lead	400	227	240	219	346	169	**420**	**482**	389	169	195
Magnesium	NS	23,100	11,900	7,900	6,060	3,750	4,620	4,700	3,640	3,560	8,250
Manganese	1,800	896	910	1,040	1,370	1,510	1,490	1,540	**2,010**	1,330	1,120
Nickel	1,500	16.7	20.8	18.4	19.1	21.5	28.2	28.9	23.7	23.5	19.1
Potassium	NS	2,050	2,040	2,060	2,310	2,260	2,680	2,490	2,350	2,620	2,840
Selenium	390	1.2 J	0.96 J	1.1 J	1.5 J	1.4 J	2.0 J	2.1 J	1.8 J	1.5 J	0.76 J
Silver	390	1.0 U	1.0 U	0.95 U	0.98 U	1.0 U	0.12 J	0.12 J	0.13 J	0.97 U	0.99 U
Sodium	NS	501 U	500 U	475 U	492 U	500 U	501 U	497 U	491 U	485 U	493 U
Thallium	0.78	2.5 U	2.5 U	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U
Tin	47,000	5.0	6.5	7.0	9.2	4.9 J	12.1	13.3	11.6	6.1	5.6
Vanadium	390	17.0	19.2	19.1	22.4	25.5	23.2	23.7	24.5	23.4	20.2
Zinc	23,000	265	264	191	248	233	384	382	352	171	187

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.
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.
Result exceeds the EPA RML.

Table 2I: Property P042, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 16, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P042-S001-0002-01	P042-S001-0206-01	P042-S001-0612-01	P042-S001-1218-01	P042-S001-1218-02	P042-S001-1824-01	P042-S002-0002-01	P042-S002-0206-01	P042-S002-0612-01	P042-S002-1218-01
Sample Depth (inches)		0-2	2-6	6-12	12-18	12-18	18-24	0-2	2-6	6-12	12-18
CLP Sample No.		MBE142	MBE143	MBE144	MBE145	MBE166	MBE146	MBE147	MBE148	MBE149	MBE150
Sample Date		11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017
Matrix		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
TAL Metal											
Aluminum	77,000	9,020	10,100	12,400	13,300	13,200	13,100 J	8,290	8,850	8,020	10,400
Antimony	31	6.0 U	5.9 U	6.0 U	6.0 UJ	5.7 U	5.9 U	5.9 U	5.9 U	6.0 U	6.0 U
Arsenic	68	5.9	6.7	12.3	12.6	13.5	9.9	10.3	10.5	16.1	21.8
Barium	15,000	78.8	87.3	175	158	167	133 J	123	140	174	241
Beryllium	160	0.50 U	0.51	0.84	0.81	0.85	0.75	0.62	0.66	0.79	0.91
Cadmium	71	0.55	0.49 U	0.70	0.56	0.59	0.48 J	0.60	0.65	0.71	0.83
Calcium	NS	59900	34300	22200	14,700	15,600	12,100 J	11,100	12,700	14,100	13,400
Chromium	NS	12.8	13.9	21.6	20.1	21.2	23.3 J	15.5	16.6	16.4	20.8
Cobalt	23	5.0 U	4.9 U	7.1	6.7	7.0	6.3 J	5.0	5.4	5.6	6.7
Copper	3,100	22.6	22.6	46.7	38.1	41.9	24.6 J	33.3	39.0	46.7	50.0
Iron	55,000	12,400	13,200	19,100	17,900	18,300	16,300 J	13,200	14,500	16,100	16,500
Lead	400	95.8	110	263	250	347	145	174	193	211	283
Magnesium	NS	24,100	14,700	7,940	5,350	5,510	4,490 J	4,610	5,210	4,520	4,470
Manganese	1,800	612	559	672	660	693	781 J	434	500	457	641
Nickel	1,500	14.6	15.9	23.9	21.1	22.3	17.0	19.7	21.9	23.0	25.7
Potassium	NS	1,590	1,750	1,930	2,040	2,030	1,700 J	1,580	1,560	1,340	1,810
Selenium	390	0.79 J	0.95 J	1.5 J	1.5 J-	1.4 J	1.7 J-	1.5 J	1.7 J	1.8 J	1.9 J
Silver	390	1.0 U	0.98 U	0.16 J	0.055 J	0.092 J	0.99 UJ	0.98 U	0.98 U	1.0 U	1.0 U
Sodium	NS	498 U	492 U	498 U	497 U	473 U	496 U	492 U	491 U	501 U	498 U
Thallium	0.78	2.5 U	2.5 U	2.5 U	2.5 UJ	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	390	16.6	18.3	23.3	24.1	24.5	22.4 J	18.0	19.6	20.1	23.5
Zinc	23,000	167	156	270	251	262	156	215	228	241	304
Tin	47,000	5.0 U	4.9 U	8.8	8.5 J	17.2	4.0	7.8	8.3	10.2	10.3

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.
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.
Result exceeds the EPA RML.

Table 2I: Property P042, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 16, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P042-S002-1824-01	P042-S003-0002-01	P042-S003-0206-01	P042-S003-0612-01	P042-S003-1218-01	P042-S003-1824-01
Sample Depth (inches)		18-24	0-2	2-6	6-12	12-18	18-24
CLP Sample No.		MBE141	MBE151	MBE152	MBE155	MBE153	MBE154
Sample Date		11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017
Matrix		Soil	Soil	Soil	Soil	Soil	Soil
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TAL Metal							
Aluminum	77,000	12,600	7,770	8,200	9,520	9,420	10,000
Antimony	31	5.9 U	6.0 U	6.0 U	5.9 U	5.9 U	5.9 U
Arsenic	68	16.5	8.2	8.2	17.0	21.0	9.9
Barium	15,000	472	196	177	303	369	169
Beryllium	160	0.83	0.56	0.57	0.98	1.0	0.68
Cadmium	71	1.2	1.1	0.85	1.2	1.4	0.56
Calcium	NS	20,200	14,500	14,100	20,600	22,500	38,400
Chromium	NS	21.8	16.8	16.4	21.7	24.6	16.1
Cobalt	23	7.0	5.3	5.2	8.5	8.9	5.1
Copper	3,100	48.7	66.7	57.2	145	215	159
Iron	55,000	19,500	14,300	14,400	24,800	25,900	13,600
Lead	400	**516**	287	256	**428**	**574**	210
Magnesium	NS	6,710	4,660	4,710	4,780	4,920	8,780
Manganese	1,800	625	368	362	392	439	420
Nickel	1,500	25.0	21.4	20.5	31.3	33.0	16.2
Potassium	NS	2,250	1,450	1,560	1,540	1,590	2,030
Selenium	390	1.2 J	1.5 J	1.4 J	2.0 J	2.4 J	1.4 J
Silver	390	0.11 J	1.0 U	1.0 U	0.98 U	0.26 J	0.049 J
Sodium	NS	495 U	500 U	502 U	488 U	492 U	495 U
Thallium	0.78	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U	2.5 U
Vanadium	390	24.1	18.1	18.6	24.5	25.5	18.2
Zinc	23,000	405	399	346	525	672	256
Tin	47,000	11.9	14.0	14.6	17.7	28.6	13.1

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.
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.
Result exceeds the EPA RML.

Table 2J: Property P043, Validated Analytical Results Summary Table - TAL Metals plus Tin
Eighteenmile Creek Site
Lockport, Niagara County, New York
November 16, 2017

RST 3 Sample No.	EPA RML Residential Soil[1] (mg/kg)	P043-S001-0002-01	P043-S001-0206-01	P043-S001-0612-01	P043-S001-1218-01	P043-S001-1824-01	P043-S002-0002-01	P043-S002-0206-01	P043-S002-0612-01	P043-S002-1218-01	P043-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.		MBE156	MBE157	MBE158	MBE159	MBE160	MBE161	MBE162	MBE163	MBE164	MBE165
Sample Date		11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017	11/16/2017
Matrix		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
TAL Metal											
Aluminum	77,000	12,300	12,300	12,800	13,100	14,900	11,100	12,300	11,700	13,900	13,600
Antimony	31	6.0 U	5.9 U	6.0 U	6.0 U	6.0 U	5.8 U	6.0 U	6.0 U	5.9 U	6.0 U
Arsenic	68	14.1	14.2	12.4	10.0	9.5	12.8	12.2	12.4	12.5	10.5
Barium	15,000	97.7	106	94.4	98.5	104	143	138	130	156	132
Beryllium	160	0.84	0.85	0.82	0.76	0.85	0.91	0.85	0.84	0.94	0.81
Cadmium	71	0.59	0.61	0.50 U	0.50 U	0.50 U	1.0	0.79	0.58	0.50	0.50 U
Calcium	NS	6,740	6,650	6,030	6,310	4,770	10,400	8,590	11,600	16,400	32,400
Chromium	NS	18.9	18.9	17.7	19.0	17.8	19.5	19.1	19.5	18.4	16.9
Cobalt	23	6.7	6.7	7.4	6.4	7.1	6.9	7.0	6.8	7.7	6.3
Copper	3,100	33.8	36.4	31.6	22.5	24.5	44.5	39.0	36.3	29.3	23.3
Iron	55,000	16,500	16,300	15,500	15,500	16,700	15,300	15,900	15,200	16,000	15,500
Lead	400	147	151	103	60.0	34.9	366	294	196	161	96.1
Magnesium	NS	3,550	3,580	3,130	3,190	2,980	4,450	4,210	4,610	4,230	6,830
Manganese	1,800	528	536	508	652	870	599	645	594	1,030	833
Nickel	1,500	28.2	28.4	23.5	19.1	18.1	25.9	24.9	23.8	21.1	17.5
Potassium	NS	1,810	1,770	1,540	1,640	1,940	1,990	1,990	1,960	2,290	2,550
Selenium	390	1.9 J	1.9 J	1.5 J	1.6 J	1.6 J	2.1 J	2.0 J	1.7 J	1.7 J	1.5 J
Silver	390	1.0 U	0.99 U	1.0 U	1.0 U	1.0 U	0.13 J	0.99 U	0.10 J	0.99 U	1.0 U
Sodium	NS	501 U	495 U	502 U	498 U	499 U	484 U	497 U	497 U	494 U	498 U
Thallium	0.78	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U	2.5 U	2.5 U	2.5 U
Vanadium	390	25.0	25.2	25.0	23.1	23.7	24.4	25.2	23.8	26.6	23.3
Zinc	23,000	195	195	146	109	90.2	517	347	235	192	154
Tin	47,000	5.4	8.5	5.8	5.0 U	5.0	10.0	6.8	7.4	5.0 U	4.1 J

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.
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.
Result exceeds the EPA RML.

ATTACHMENT C

Photographic Documentation Log

Photographic Documentation Log
Eighteenmile Creek Assessment Site
Niagara County, New York
November 13 through November 17, 2017

Photograph 1: View facing west of the frontyard at Property P034 located in the vicinity of the Eighteenmile Creek Site (the Site). Weston Solutions, Inc. Removal Support Team 3 (RST3) performed soil sampling activities as part of a remedial investigation conducted by the U.S. Environmental Protection Agency (EPA) at ten residential properties located in the vicinity of the Site.

Photograph 2: View facing south at Property P040 located in the vicinity of the Site.

Photograph 3: View of the soil and material removed from a boring location at Property P040.

Photograph 4: View facing west of the frontyard at Property P039. Note the flags marking the approximate locations of underground utilities at the property.

Photograph 5: View facing northwest of the front and sideyards at Property P037.

Photograph 6: View facing west of the front and sideyards at Property P038.

Photograph 7: View facing west of the backyard at Property P038.

Photograph 8: View facing west of the frontyard at Property P040. Note the flags marking the approximate locations of underground utilities at the property.

Photograph 9: View of RST 3 personnel advancing a boring with a stainless steel auger at Property P034.

Photograph 10: View facing south of the frontyard at Property P042 located in the vicinity of the Site.

Photograph 11: View of the soil and material removed from a boring location at Property P035.

Photograph 12: View facing north of the backyard at Property P041.

ATTACHMENT D

Chain of Custody Record and FedEx Airbill

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 1 of 5

No: 2-111417-201443-0011
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	For Lab Use Only
P034-S001-0002-01	MBE0S3	Soil/	Composite	TAL + Tin(28)	1111 (4 C) (1)	P034-S001	11/14/2017 09:30	
P034-S001-0206-01	MBE0S4	Soil/	Composite	TAL + Tin(28)	1112 (4 C) (1)	P034-S001	11/14/2017 09:38	
P034-S001-0612-01	MBE0S5	Soil/	Composite	TAL + Tin(28)	1113 (4 C) (2)	P034-S001	11/14/2017 09:45	
P034-S001-0612-02	MBE0S6	Soil/	Composite	TAL + Tin(28)	1114 (4 C) (1)	P034-S001	11/14/2017 09:46	
P034-S001-1218-01	MBE0S7	Soil/	Composite	TAL + Tin(28)	1115 (4 C) (1)	P034-S001	11/14/2017 09:30	
P034-S001-1824-01	MBE0S8	Soil/	Composite	TAL + Tin(28)	1116 (4 C) (1)	P034-S001	11/14/2017 09:53	
P034-S002-0002-01	MBE0S9	Soil/	Composite	TAL + Tin(28)	1117 (4 C) (1)	P034-S002	11/14/2017 10:56	
P034-S002-0206-01	MBE0T0	Soil/	Composite	TAL + Tin(28)	1118 (4 C) (1)	P034-S002	11/14/2017 11:04	
P034-S002-0612-01	MBE0T1	Soil/	Composite	TAL + Tin(28)	1119 (4 C) (1)	P034-S002	11/14/2017 11:09	
P034-S002-1218-01	MBE0T2	Soil/	Composite	TAL + Tin(28)	1120 (4 C) (1)	P034-S002	11/14/2017 11:09	

Sample(s) to be used for Lab QC: P034-S001-0612-01 Tag 1113

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 1 of 5

No: 2-111417-201443-0011
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	For Lab Use Only
P034-S002-1824-01	MBE0T3	Soil/	Composite	TAL + Tin(28)	1121 (4 C) (1)	P034-S002	11/14/2017 11:36	
P035-S001-0002-01	MBE0T4	Soil/	Composite	TAL + Tin(28)	1122 (4 C) (1)	P035-S001	11/14/2017 12:47	
P035-S001-0206-01	MBE0T5	Soil/	Composite	TAL + Tin(28)	1123 (4 C) (1)	P035-S001	11/14/2017 13:06	
P035-S001-0612-01	MBE0T6	Soil/	Composite	TAL + Tin(28)	1124 (4 C) (1)	P035-S001	11/14/2017 13:52	
P035-S001-1218-01	MBE0T7	Soil/	Composite	TAL + Tin(28)	1125 (4 C) (1)	P035-S001	11/14/2017 13:55	
P035-S001-1824-01	MBE0T8	Soil/	Composite	TAL + Tin(28)	1126 (4 C) (1)	P035-S001	11/14/2017 14:00	
P035-S002-0002-01	MBE0T9	Soil/	Composite	TAL + Tin(28)	1127 (4 C) (1)	P035-S002	11/14/2017 12:57	
P035-S002-0206-01	MBE0W0	Soil/	Composite	TAL + Tin(28)	1128 (4 C) (1)	P035-S002	11/14/2017 12:18	
P035-S002-0612-01	MBE0W1	Soil/	Composite	TAL + Tin(28)	1129 (4 C) (1)	P035-S002	11/14/2017 12:30	
P035-S002-1218-01	MBE0W2	Soil/	Composite	TAL + Tin(28)	1130 (4 C) (1)	P035-S002	11/14/2017 12:48	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 1 of 5

No: 2-111417-201443-0011
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	For Lab Use Only
P035-S002-1824-01	MBE0W3	Soil/	Composite	TAL + Tin(28)	1131 (4 C) (1)	P035-S002	11/14/2017 12:57	
P036-S001-0002-01	MBE0W4	Soil/	Composite	TAL + Tin(28)	1132 (4 C) (1)	P036-S001	11/14/2017 15:05	
P036-S001-0206-01	MBE0W5	Soil/	Composite	TAL + Tin(28)	1133 (4 C) (2)	P036-S001	11/14/2017 15:23	
P036-S001-0206-02	MBE0W6	Soil/	Composite	TAL + Tin(28)	1134 (4 C) (1)	P036-S001	11/14/2017 15:25	
P036-S001-0612-01	MBE0W7	Soil/	Composite	TAL + Tin(28)	1135 (4 C) (1)	P036-S001	11/14/2017 16:06	

Sample(s) to be used for Lab QC: P036-S001-0206-01 Tag 1133

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 2 of 5

No: 2-111717-102039-0012
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	For Lab Use Only
P036-S001-1218-01	MBE0W8	Soil/	Composite	TAL + Tin(28)	1136 (4 C) (1)	P036-S001	11/14/2017 16:56	
P036-S001-1824-01	MBE0W9	Soil/	Composite	TAL + Tin(28)	1137 (4 C) (1)	P036-S001	11/14/2017 17:01	
P036-S002-0002-01	MBE0X0	Soil/	Composite	TAL + Tin(28)	1138 (4 C) (1)	P036-S002	11/14/2017 15:50	
P036-S002-0206-01	MBE0X2	Soil/	Composite	TAL + Tin(28)	1140 (4 C) (1)	P036-S002	11/14/2017 15:58	
P036-S002-0612-01	MBE0X3	Soil/	Composite	TAL + Tin(28)	1141 (4 C) (1)	P036-S002	11/14/2017 16:04	
P036-S002-1218-01	MBE0X4	Soil/	Composite	TAL + Tin(28)	1142 (4 C) (1)	P036-S002	11/14/2017 16:10	
P036-S002-1824-01	MBE0X5	Soil/	Composite	TAL + Tin(28)	1143 (4 C) (1)	P036-S002	11/14/2017 16:30	
P037-S001-0002-01	MBE0X8	Soil/	Composite	TAL + Tin(28)	1146 (4 C) (1)	P037-S001	11/15/2017 08:31	
P037-S001-0206-01	MBE0X9	Soil/	Composite	TAL + Tin(28)	1147 (4 C) (1)	P037-S001	11/15/2017 08:40	
P037-S001-0612-01	MBE0Y0	Soil/	Composite	TAL + Tin(28)	1148 (4 C) (1)	P037-S001	11/15/2017 08:50	

Special Instructions:	**Shipment for Case Complete? Y**
	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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 2 of 5

No: 2-111717-102039-0012
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	For Lab Use Only
P037-S001-1218-01	MBE0Y1	Soil/	Composite	TAL + Tin(28)	1149 (4 C) (1)	P037-S001	11/15/2017 09:03	
P037-S001-1824-01	MBE0Y2	Soil/	Composite	TAL + Tin(28)	1150 (4 C) (1)	P037-S001	11/15/2017 09:10	
P037-S002-0002-01	MBE0Y3	Soil/	Composite	TAL + Tin(28)	1151 (4 C) (1)	P037-S002	11/15/2017 09:15	
P037-S002-0206-01	MBE0Y4	Soil/	Composite	TAL + Tin(28)	1152 (4 C) (1)	P037-S002	11/15/2017 09:27	
P037-S002-0612-01	MBE0Y5	Soil/	Composite	TAL + Tin(28)	1153 (4 C) (1)	P037-S002	11/15/2017 09:34	
P037-S002-1218-01	MBE0Y6	Soil/	Composite	TAL + Tin(28)	1154 (4 C) (2)	P037-S002	11/15/2017 09:50	
P037-S002-1218-02	MBE0Y7	Soil/	Composite	TAL + Tin(28)	1155 (4 C) (1)	P037-S002	11/15/2017 09:55	
P037-S002-1824-01	MBE0Y8	Soil/	Composite	TAL + Tin(28)	1156 (4 C) (1)	P037-S002	11/15/2017 10:00	
P037-S003-0002-01	MBE0Y9	Soil/	Composite	TAL + Tin(28)	1157 (4 C) (1)	P037-S003	11/15/2017 09:36	
P037-S003-0206-01	MBE0Z0	Soil/	Composite	TAL + Tin(28)	1158 (4 C) (1)	P037-S003	11/15/2017 09:52	

Sample(s) to be used for Lab QC: P037-S002-1218-01 Tag 1154

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 2 of 5

No: 2-111717-102039-0012
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	For Lab Use Only
P037-S003-0612-01	MBE0Z1	Soil/	Composite	TAL + Tin(28)	1159 (4 C) (1)	P037-S003	11/15/2017 10:14	
P037-S003-1218-01	MBE0Z2	Soil/	Composite	TAL + Tin(28)	1160 (4 C) (1)	P037-S003	11/15/2017 10:41	
P037-S003-1824-01	MBE0Z3	Soil/	Composite	TAL + Tin(28)	1161 (4 C) (1)	P037-S003	11/15/2017 10:48	
P038-S001-0002-01	MBE0Z4	Soil/	Composite	TAL + Tin(28)	1162 (4 C) (1)	P038-S001	11/15/2017 11:43	
P038-S001-0206-01	MBE0Z5	Soil/	Composite	TAL + Tin(28)	1163 (4 C) (1)	P038-S001	11/15/2017 12:16	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 3 of 5

No: 2-111717-104520-0013
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	For Lab Use Only
RB-171114	MBE0X6	DI Water/	Grab	TAL + Tin(28)	1144 (HNO3 pH<2) (1)	Rinsate	11/14/2017 17:30	
P038-S001-0612-01	MBE0Z6	Soil/	Composite	TAL + Tin(28)	1164 (4 C) (1)	P038-S001	11/15/2017 12:16	
P038-S001-1218-01	MBE0Z7	Soil/	Composite	TAL + Tin(28)	1165 (4 C) (1)	P038-S001	11/15/2017 12:40	
P038-S001-1824-01	MBE0Z8	Soil/	Composite	TAL + Tin(28)	1166 (4 C) (1)	P038-S001	11/15/2017 12:40	
P038-S002-0002-01	MBE0Z9	Soil/	Composite	TAL + Tin(28)	1167 (4 C) (1)	P038-S002	11/15/2017 11:37	
P038-S002-0206-01	MBE100	Soil/	Composite	TAL + Tin(28)	1168 (4 C) (1)	P038-S002	11/15/2017 11:37	
P038-S002-0612-01	MBE101	Soil/	Composite	TAL + Tin(28)	1169 (4 C) (1)	P038-S002	11/15/2017 12:32	
P038-S002-1218-01	MBE102	Soil/	Composite	TAL + Tin(28)	1170 (4 C) (1)	P038-S002	11/15/2017 12:32	
P038-S002-1824-01	MBE103	Soil/	Composite	TAL + Tin(28)	1171 (4 C) (1)	P038-S002	11/15/2017 12:32	
P038-S003-0002-01	MBE104	Soil/	Composite	TAL + Tin(28)	1172 (4 C) (1)	P038-S002	11/15/2017 12:48	
P038-S003-0206-01	MBE105	Soil/	Composite	TAL + Tin(28)	1173 (4 C) (1)	P038-S003	11/15/2017 12:51	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 3 of 5

No: 2-111717-104520-0013
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	For Lab Use Only
P038-S003-0612-01	MBE106	Soil/	Composite	TAL + Tin(28)	1174 (4 C) (1)	P038-S003	11/15/2017 13:11	
P038-S003-1218-01	MBE107	Soil/	Composite	TAL + Tin(28)	1175 (4 C) (1)	P038-S003	11/15/2017 13:26	
P038-S003-1824-01	MBE108	Soil/	Composite	TAL + Tin(28)	1176 (4 C) (2)	P038-S003	11/15/2017 13:29	
P038-S003-1824-02	MBE109	Soil/	Composite	TAL + Tin(28)	1177 (4 C) (1)	P038-S003	11/15/2017 13:44	
P039-S001-0002-01	MBE110	Soil/	Composite	TAL + Tin(28)	1178 (4 C) (1)	P039-S001	11/15/2017 15:00	
P039-S001-0206-01	MBE111	Soil/	Composite	TAL + Tin(28)	1179 (4 C) (1)	P039-S001	11/15/2017 15:09	
P039-S001-0612-01	MBE112	Soil/	Composite	TAL + Tin(28)	1180 (4 C) (1)	P039-S001	11/15/2017 15:21	
P039-S001-1218-01	MBE113	Soil/	Composite	TAL + Tin(28)	1181 (4 C) (1)	P039-S001	11/15/2017 15:42	
P039-S001-1824-01	MBE114	Soil/	Composite	TAL + Tin(28)	1182 (4 C) (1)	P039-S001	11/15/2017 16:05	
P039-S002-0002-01	MBE115	Soil/	Composite	TAL + Tin(28)	1183 (4 C) (1)	P039-S002	11/15/2017 15:09	

Sample(s) to be used for Lab QC: P038-S003-1824-01 Tag 1176

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 3 of 5

No: 2-111717-104520-0013
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	For Lab Use Only
P039-S002-0206-01	MBE116	Soil/	Composite	TAL + Tin(28)	1184 (4 C) (1)	P039-S002	11/15/2017 15:15	
P039-S002-0612-01	MBE117	Soil/	Composite	TAL + Tin(28)	1185 (4 C) (1)	P039-S002	11/15/2017 15:25	
P039-S002-1218-01	MBE118	Soil/	Composite	TAL + Tin(28)	1186 (4 C) (1)	P039-S002	11/15/2017 15:42	
P039-S002-1824-01	MBE119	Soil/	Composite	TAL + Tin(28)	1187 (4 C) (1)	P039-S002	11/15/2017 16:10	
P040-S001-0002-01	MBE120	Soil/	Composite	TAL + Tin(28)	1188 (4 C) (1)	P040-S001	11/16/2017 08:07	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 4 of 5

No: 2-111717-105019-0014
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	For Lab Use Only
P040-S001-0206-01	MBE121	Soil/	Composite	TAL + Tin(28)	1189 (4 C) (1)	P040-S001	11/16/2017 08:10	
P040-S001-0612-01	MBE122	Soil/	Composite	TAL + Tin(28)	1190 (4 C) (1)	P040-S001	11/16/2017 08:42	
P040-S001-1218-01	MBE123	Soil/	Composite	TAL + Tin(28)	1191 (4 C) (1)	P040-S001	11/16/2017 09:05	
P040-S001-1824-01	MBE124	Soil/	Composite	TAL + Tin(28)	1192 (4 C) (1)	P040-S001	11/16/2017 09:11	
P040-S002-0002-01	MBE125	Soil/	Composite	TAL + Tin(28)	1193 (4 C) (1)	P040-S002	11/16/2017 07:59	
P040-S002-0206-01	MBE126	Soil/	Composite	TAL + Tin(28)	1194 (4 C) (1)	P040-S002	11/16/2017 08:03	
P040-S002-0612-01	MBE127	Soil/	Composite	TAL + Tin(28)	1195 (4 C) (2)	P040-S002	11/16/2017 08:15	
P040-S002-0612-02	MBE128	Soil/	Composite	TAL + Tin(28)	1196 (4 C) (1)	P040-S002	11/16/2017 08:20	
P040-S002-1218-01	MBE129	Soil/	Composite	TAL + Tin(28)	1197 (4 C) (1)	P040-S002	11/16/2017 08:49	
P040-S002-1824-01	MBE130	Soil/	Composite	TAL + Tin(28)	1198 (4 C) (1)	P040-S002	11/16/2017 08:51	

Sample(s) to be used for Lab QC: P040-S002-0612-01 Tag 1195

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 4 of 5

No: 2-111717-105019-0014
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	For Lab Use Only
P041-S001-0002-01	MBE131	Soil/	Composite	TAL + Tin(28)	1199 (4 C) (1)	P041-S001	11/16/2017 10:07	
P041-S001-0206-01	MBE132	Soil/	Composite	TAL + Tin(28)	1200 (4 C) (1)	P041-S001	11/16/2017 10:20	
P041-S001-0612-01	MBE133	Soil/	Composite	TAL + Tin(28)	1201 (4 C) (1)	P041-S001	11/16/2017 10:24	
P041-S001-1218-01	MBE134	Soil/	Composite	TAL + Tin(28)	1202 (4 C) (1)	P041-S001	11/16/2017 10:45	
P041-S001-1824-01	MBE135	Soil/	Composite	TAL + Tin(28)	1203 (4 C) (1)	P041-S001	11/16/2017 11:00	
P041-S002-0002-01	MBE136	Soil/	Composite	TAL + Tin(28)	1204 (4 C) (1)	P041-S002	11/16/2017 10:18	
P041-S002-0206-01	MBE137	Soil/	Composite	TAL + Tin(28)	1205 (4 C) (1)	P041-S002	11/16/2017 10:19	
P041-S002-0612-01	MBE138	Soil/	Composite	TAL + Tin(28)	1206 (4 C) (1)	P041-S002	11/16/2017 10:41	
P041-S002-1218-01	MBE139	Soil/	Composite	TAL + Tin(28)	1207 (4 C) (1)	P041-S002	11/16/2017 11:28	
P041-S002-1824-01	MBE140	Soil/	Composite	TAL + Tin(28)	1208 (4 C) (1)	P041-S002	11/16/2017 11:33	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 4 of 5

No: 2-111717-105019-0014
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	For Lab Use Only
P042-S002-1824-01	MBE141	Soil/	Composite	TAL + Tin(28)	1209 (4 C) (1)	P042-S002	11/16/2017 15:00	
P042-S001-0002-01	MBE142	Soil/	Composite	TAL + Tin(28)	1210 (4 C) (1)	P042-S001	11/16/2017 13:47	
P042-S001-0206-01	MBE143	Soil/	Composite	TAL + Tin(28)	1211 (4 C) (1)	P042-S001	11/16/2017 13:50	
P042-S001-0612-01	MBE144	Soil/	Composite	TAL + Tin(28)	1212 (4 C) (1)	P042-S001	11/16/2017 14:20	
P042-S001-1218-01	MBE145	Soil/	Composite	TAL + Tin(28)	1213 (4 C) (2)	P042-S001	11/16/2017 14:46	
P042-S001-1218-02	MBE166	Soil/	Composite	TAL + Tin(28)	1234 (4 C) (1)	P042-S001	11/16/2017 14:50	

Sample(s) to be used for Lab QC: P042-S001-1218-01 Tag 1213

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 5 of 5

No: 2-111717-105745-0015
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	For Lab Use Only
P042-S001-1824-01	MBE146	Soil/	Composite	TAL + Tin(28)	1214 (4 C) (1)	P042-S001	11/16/2017 15:00	
P042-S002-0002-01	MBE147	Soil/	Composite	TAL + Tin(28)	1215 (4 C) (1)	P042-S002	11/16/2017 13:40	
P042-S002-0206-01	MBE148	Soil/	Composite	TAL + Tin(28)	1216 (4 C) (1)	P042-S002	11/16/2017 14:00	
P042-S002-0612-01	MBE149	Soil/	Composite	TAL + Tin(28)	1217 (4 C) (1)	P042-S002	11/16/2017 14:25	
P042-S002-1218-01	MBE150	Soil/	Composite	TAL + Tin(28)	1218 (4 C) (1)	P042-S002	11/16/2017 14:45	
P042-S003-0002-01	MBE151	Soil/	Composite	TAL + Tin(28)	1219 (4 C) (1)	P042-S003	11/16/2017 15:20	
P042-S003-0206-01	MBE152	Soil/	Composite	TAL + Tin(28)	1220 (4 C) (1)	P042-S003	11/16/2017 15:26	
P042-S003-1218-01	MBE153	Soil/	Composite	TAL + Tin(28)	1221 (4 C) (1)	P042-S003	11/16/2017 15:51	
P042-S003-1824-01	MBE154	Soil/	Composite	TAL + Tin(28)	1222 (4 C) (1)	P042-S003	11/16/2017 16:05	
P042-S003-0612-01	MBE155	Soil/	Composite	TAL + Tin(28)	1223 (4 C) (1)	P042-S003	11/16/2017 15:49	

Special Instructions:	**Shipment for Case Complete? Y**
	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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 5 of 5

No: 2-111717-105745-0015
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	For Lab Use Only
P043-S001-0002-01	MBE156	Soil/	Composite	TAL + Tin(28)	1224 (4 C) (1)	P043-S001	11/16/2017 16:40	
P043-S001-0206-01	MBE157	Soil/	Composite	TAL + Tin(28)	1225 (4 C) (1)	P043-S001	11/16/2017 16:41	
P043-S001-0612-01	MBE158	Soil/	Composite	TAL + Tin(28)	1226 (4 C) (1)	P043-S001	11/16/2017 16:56	
P043-S001-1218-01	MBE159	Soil/	Composite	TAL + Tin(28)	1227 (4 C) (1)	P043-S001	11/16/2017 17:25	
P043-S001-1824-01	MBE160	Soil/	Composite	TAL + Tin(28)	1228 (4 C) (1)	P043-S001	11/16/2017 17:25	
P043-S002-0002-01	MBE161	Soil/	Composite	TAL + Tin(28)	1229 (4 C) (1)	P043-S002	11/16/2017 16:35	
P043-S002-0206-01	MBE162	Soil/	Composite	TAL + Tin(28)	1230 (4 C) (1)	P043-S002	11/16/2017 16:42	
P043-S002-0612-01	MBE163	Soil/	Composite	TAL + Tin(28)	1231 (4 C) (1)	P043-S002	11/16/2017 17:09	
P043-S002-1218-01	MBE164	Soil/	Composite	TAL + Tin(28)	1232 (4 C) (1)	P043-S002	11/16/2017 18:05	
P043-S002-1824-01	MBE165	Soil/	Composite	TAL + Tin(28)	1233 (4 C) (1)	P043-S002	11/16/2017 18:06	
RB-171115	MBE167	DI Water/	Grab	TAL + Tin(28)	1235 (HNO3 pH<2) (1)	Rinsate	11/15/2017 17:30	

Special Instructions:

Shipment for Case Complete? Y

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

USEPA CLP COC (LAB COPY)
DateShipped: 11/17/2017
Carrier Name: FedEx
AirbillNo: 8993 5598 3952

CHAIN OF CUSTODY RECORD

Case #: 47320
Cooler #: 5 of 5

No: 2-111717-105745-0015
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	For Lab Use Only
RB-171116	MBE168	DI Water/	Grab	TAL + Tin(28)	1236 (HNO3 pH<2) (1)	Rinsate	11/16/2017 17:45	

Special Instructions:

Shipment for Case Complete? Y

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

ATTACHMENT E

Validated Data Package

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteenmile Creek
Number of Samples: 20 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE0S3
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/14/2017
Validation SOP: HW-3a

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Metals (ICP-AES): All the associated samples have analytes that have been qualified "J", "J+" or "J-".

Minor Findings:
None.

COMMENT:	Concentrations of **Lead** exceeded the project action levels for one or more samples.

Reviewer Name(s): Raxa J. Shelley

Approver's Signature: **Date: 01/11/2018**

Name: **Narendra Kumar**

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.	

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 ±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.

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 MBE0S3, MBE0S4, MBE0S5, MBE0S6, MBE0S7, MBE0S8, MBE0S9, MBE0T0, MBE0T1, MBE0T2, MBE0T3, MBE0T4, MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

Beryllium MBE0S3, MBE0S4, MBE0S9, MBE0T9

Cobalt MBE0S3, MBE0S4, MBE0S9, MBE0T0

Selenium MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

Silver MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

Sodium MBE0S3, MBE0S4, MBE0S5, MBE0S6, MBE0S7, MBE0S8, MBE0S9, MBE0T0, MBE0T1, MBE0T2, MBE0T3, MBE0T4, MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

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 MBE0S3, MBE0S4, MBE0S5, MBE0S6, MBE0S7, MBE0S8, MBE0S9, MBE0T0, MBE0T1, MBE0T2, MBE0T3, MBE0T4

Beryllium MBE0S3, MBE0S4, MBE0S9, MBE0T9

Selenium MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

Sodium MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

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.

Antimony MBE0S3, MBE0S4, MBE0S5, MBE0S6, MBE0S7, MBE0S8, MBE0S9, MBE0T0, MBE0T1, MBE0T2, MBE0T3, MBE0T4, MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

Beryllium MBE0S3, MBE0S4, MBE0S9, MBE0T9

Rinse Blank MBE0X6:

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 samples are associated with Matrix Spike sample that has Silver 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 MBE0S5

The following samples are 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 MBE0S5

The following samples are 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.

Selenium MBE0S5

Thallium MBE0S5

Tin MBE0S5

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 ≥ 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

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 ≥ 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

Samples MBE0S5 and MBE0S6:
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.

The following samples are associated with a Laboratory Control Sample with %R less than 40%. Detects are qualified as J-. Non-detects are qualified as R.

Tin MBE0S3, MBE0S4, MBE0S5, MBE0S6, MBE0S7, MBE0S8, MBE0S9, MBE0T0, MBE0T1, MBE0T2, MBE0T3, MBE0T4, MBE0T5, MBE0T6, MBE0T7, MBE0T8, MBE0T9, MBE0W0, MBE0W1, MBE0W2

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.

The following soil/sediment samples are 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.

Cobalt MBE0S5

Tin MBE0S5

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: 47320	Contract: EPW14029	SDG: MBE0S3	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	36.3		mg/kg	36.3		1	YES	S3VEM
Antimony	Spike	10.9		mg/kg	10.9		1	YES	S3VEM
Arsenic	Spike	1.6		mg/kg	1.6		1	YES	S3VEM
Barium	Spike	37.4		mg/kg	37.4		1	YES	S3VEM
Beryllium	Spike	0.98		mg/kg	0.98		1	YES	S3VEM
Cadmium	Spike	0.96		mg/kg	0.96		1	YES	S3VEM
Calcium	Spike	979		mg/kg	979		1	YES	S3VEM
Chromium	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Cobalt	Spike	9.7		mg/kg	9.7		1	YES	S3VEM
Copper	Spike	4.4		mg/kg	4.4		1	YES	S3VEM
Iron	Spike	16.6		mg/kg	16.6		1	YES	S3VEM
Lead	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Magnesium	Spike	905		mg/kg	905		1	YES	S3VEM
Manganese	Spike	2.8		mg/kg	2.8		1	YES	S3VEM
Nickel	Spike	8.0		mg/kg	8.0		1	YES	S3VEM
Potassium	Spike	910		mg/kg	910		1	YES	S3VEM
Selenium	Spike	5.9		mg/kg	5.9		1	YES	S3VEM
Silver	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Sodium	Spike	924		mg/kg	924		1	YES	S3VEM
Thallium	Spike	4.3		mg/kg	4.3		1	YES	S3VEM
Vanadium	Spike	9.7		mg/kg	9.7		1	YES	S3VEM
Zinc	Spike	12.3		mg/kg	12.3		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10700		mg/kg	10700		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.40	J*	1	YES	S3VEM
Arsenic	Target	17.0		mg/kg	17.0	*	1	YES	S3VEM
Barium	Target	122		mg/kg	122	*	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.48	J	1	YES	S3VEM
Cadmium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Calcium	Target	8480		mg/kg	8480	*	1	YES	S3VEM
Chromium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	4.0	J*	1	YES	S3VEM
Copper	Target	34.1		mg/kg	34.1		1	YES	S3VEM
Iron	Target	13700		mg/kg	13700	*	1	YES	S3VEM
Lead	Target	301		mg/kg	301		1	YES	S3VEM
Magnesium	Target	3150		mg/kg	3150	*	1	YES	S3VEM
Manganese	Target	469		mg/kg	469	*	1	YES	S3VEM
Nickel	Target	16.9		mg/kg	16.9		1	YES	S3VEM
Potassium	Target	1070		mg/kg	1070		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.072	J	mg/kg	0.072	J*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	71.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	22.6		mg/kg	22.6	*	1	YES	S3VEM
Zinc	Target	198		mg/kg	198		1	YES	S3VEM
Tin	Target	5.4	J-	mg/kg	5.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **Lab Code: BON**

Sample Number: MBE0S4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:38:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9900		mg/kg	9900		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.62	J*	1	YES	S3VEM
Arsenic	Target	18.3		mg/kg	18.3	*	1	YES	S3VEM
Barium	Target	105		mg/kg	105	*	1	YES	S3VEM
Beryllium	Target	0.49	U	mg/kg	0.47	J	1	YES	S3VEM
Cadmium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Calcium	Target	7800		mg/kg	7800	*	1	YES	S3VEM
Chromium	Target	15.1		mg/kg	15.1	*	1	YES	S3VEM
Cobalt	Target	4.9	U	mg/kg	3.9	J*	1	YES	S3VEM
Copper	Target	28.4		mg/kg	28.4		1	YES	S3VEM
Iron	Target	13900		mg/kg	13900	*	1	YES	S3VEM
Lead	Target	233		mg/kg	233		1	YES	S3VEM
Magnesium	Target	3140		mg/kg	3140	*	1	YES	S3VEM
Manganese	Target	430		mg/kg	430	*	1	YES	S3VEM
Nickel	Target	15.1		mg/kg	15.1		1	YES	S3VEM
Potassium	Target	884		mg/kg	884		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	490	U	mg/kg	75.8	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	23.6		mg/kg	23.6	*	1	YES	S3VEM
Zinc	Target	172		mg/kg	172		1	YES	S3VEM
Tin	Target	5.1	J-	mg/kg	5.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10300		mg/kg	10300		1	YES	S3VEM
Antimony	Target	6.0	UJ	mg/kg	0.88	J*	1	YES	S3VEM
Arsenic	Target	19.9		mg/kg	19.9	*	1	YES	S3VEM
Barium	Target	126		mg/kg	126	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.80		mg/kg	0.80	*	1	YES	S3VEM
Calcium	Target	14700		mg/kg	14700	*	1	YES	S3VEM
Chromium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Cobalt	Target	5.9	J	mg/kg	5.9	*	1	YES	S3VEM
Copper	Target	38.2		mg/kg	38.2		1	YES	S3VEM
Iron	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Lead	Target	262		mg/kg	262		1	YES	S3VEM
Magnesium	Target	5220		mg/kg	5220	*	1	YES	S3VEM
Manganese	Target	561		mg/kg	561	*	1	YES	S3VEM
Nickel	Target	28.1		mg/kg	28.1		1	YES	S3VEM
Potassium	Target	1470		mg/kg	1470		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	501	U	mg/kg	101	J	1	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.5		mg/kg	23.5	*	1	YES	S3VEM
Zinc	Target	271		mg/kg	271		1	YES	S3VEM
Tin	Target	9.0	J-	mg/kg	9.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S5A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 09:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	9.6		mg/kg	9.6	*	1	YES	S3VEM
Selenium	Spike	6.6		mg/kg	6.6	*	1	YES	S3VEM
Tin	Spike	9.6		mg/kg	9.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S5D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 09:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10300		mg/kg	10300		1	YES	S3VEM
Antimony	Target	0.79	J	mg/kg	0.79	J	1	YES	S3VEM
Arsenic	Target	19.5		mg/kg	19.5		1	YES	S3VEM
Barium	Target	125		mg/kg	125		1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Cadmium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Calcium	Target	14500		mg/kg	14500		1	YES	S3VEM
Chromium	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Cobalt	Target	5.9		mg/kg	5.9		1	YES	S3VEM
Copper	Target	37.6		mg/kg	37.6		1	YES	S3VEM
Iron	Target	16300		mg/kg	16300		1	YES	S3VEM
Lead	Target	256		mg/kg	256		1	YES	S3VEM
Magnesium	Target	5180		mg/kg	5180		1	YES	S3VEM
Manganese	Target	561		mg/kg	561		1	YES	S3VEM
Nickel	Target	27.4		mg/kg	27.4		1	YES	S3VEM
Potassium	Target	1500		mg/kg	1500		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	101	J	mg/kg	101	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.3		mg/kg	23.3		1	YES	S3VEM
Zinc	Target	267		mg/kg	267		1	YES	S3VEM
Tin	Target	7.9		mg/kg	7.9		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **Lab Code: BON**

Sample Number: MBE0S5L	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	11300		mg/kg	11300		5	YES	S3VEM
Antimony	Target	30.1	U	mg/kg	30.1	U	5	YES	S3VEM
Arsenic	Target	19.1		mg/kg	19.1		5	YES	S3VEM
Barium	Target	140		mg/kg	140	*	5	YES	S3VEM
Beryllium	Target	0.82	J	mg/kg	0.82	J	5	YES	S3VEM
Cadmium	Target	0.89	J	mg/kg	0.89	J*	5	YES	S3VEM
Calcium	Target	16800		mg/kg	16800	*	5	YES	S3VEM
Chromium	Target	22.4		mg/kg	22.4	*	5	YES	S3VEM
Cobalt	Target	6.9	J	mg/kg	6.9	J*	5	YES	S3VEM
Copper	Target	41.0		mg/kg	41.0		5	YES	S3VEM
Iron	Target	19000		mg/kg	19000	*	5	YES	S3VEM
Lead	Target	260		mg/kg	260		5	YES	S3VEM
Magnesium	Target	5900		mg/kg	5900	*	5	YES	S3VEM
Manganese	Target	647		mg/kg	647	*	5	YES	S3VEM
Nickel	Target	27.6		mg/kg	27.6		5	YES	S3VEM
Potassium	Target	1610	J	mg/kg	1610	J	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	103	J	mg/kg	103	J	5	YES	S3VEM
Thallium	Target	12.5	U	mg/kg	12.5	U	5	YES	S3VEM
Vanadium	Target	26.0		mg/kg	26.0	*	5	YES	S3VEM
Zinc	Target	275		mg/kg	275		5	YES	S3VEM
Tin	Target	10.6		mg/kg	10.6	J*	5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S5S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 09:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	6.6		mg/kg	6.6		1	YES	S3VEM
Arsenic	Spike	26.5		mg/kg	26.5		1	YES	S3VEM
Barium	Spike	433		mg/kg	433		1	YES	S3VEM
Beryllium	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Cadmium	Spike	8.7		mg/kg	8.7		1	YES	S3VEM
Chromium	Spike	52.5		mg/kg	52.5		1	YES	S3VEM
Cobalt	Spike	84.7		mg/kg	84.7		1	YES	S3VEM
Copper	Spike	76.6		mg/kg	76.6		1	YES	S3VEM
Lead	Spike	255		mg/kg	255		1	YES	S3VEM
Manganese	Spike	641		mg/kg	641		1	YES	S3VEM
Nickel	Spike	124		mg/kg	124		1	YES	S3VEM
Selenium	Spike	16.1		mg/kg	16.1		1	YES	S3VEM
Silver	Spike	7.2		mg/kg	7.2		1	YES	S3VEM
Thallium	Spike	7.0		mg/kg	7.0		1	YES	S3VEM
Vanadium	Spike	101		mg/kg	101		1	YES	S3VEM
Zinc	Spike	361		mg/kg	361		1	YES	S3VEM
Tin	Spike	79.5		mg/kg	79.5		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:46:00
% 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	5.7	U	mg/kg	0.73	J*	1	YES	S3VEM
Arsenic	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Barium	Target	120		mg/kg	120	*	1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75		1	YES	S3VEM
Cadmium	Target	0.87		mg/kg	0.87	*	1	YES	S3VEM
Calcium	Target	14300		mg/kg	14300	*	1	YES	S3VEM
Chromium	Target	19.3		mg/kg	19.3	*	1	YES	S3VEM
Cobalt	Target	5.7		mg/kg	5.7	*	1	YES	S3VEM
Copper	Target	36.9		mg/kg	36.9		1	YES	S3VEM
Iron	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Lead	Target	274		mg/kg	274		1	YES	S3VEM
Magnesium	Target	5170		mg/kg	5170	*	1	YES	S3VEM
Manganese	Target	567		mg/kg	567	*	1	YES	S3VEM
Nickel	Target	26.8		mg/kg	26.8		1	YES	S3VEM
Potassium	Target	1440		mg/kg	1440		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.95	U	mg/kg	0.95	U*	1	YES	S3VEM
Sodium	Target	474	U	mg/kg	99.9	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	22.9		mg/kg	22.9	*	1	YES	S3VEM
Zinc	Target	279		mg/kg	279		1	YES	S3VEM
Tin	Target	7.8	J-	mg/kg	7.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10200		mg/kg	10200		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.63	J*	1	YES	S3VEM
Arsenic	Target	17.5		mg/kg	17.5	*	1	YES	S3VEM
Barium	Target	142		mg/kg	142	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.56		mg/kg	0.56	*	1	YES	S3VEM
Calcium	Target	14400		mg/kg	14400	*	1	YES	S3VEM
Chromium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM
Copper	Target	33.5		mg/kg	33.5		1	YES	S3VEM
Iron	Target	15000		mg/kg	15000	*	1	YES	S3VEM
Lead	Target	243		mg/kg	243		1	YES	S3VEM
Magnesium	Target	4630		mg/kg	4630	*	1	YES	S3VEM
Manganese	Target	522		mg/kg	522	*	1	YES	S3VEM
Nickel	Target	24.0		mg/kg	24.0		1	YES	S3VEM
Potassium	Target	1470		mg/kg	1470		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	105	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	206		mg/kg	206		1	YES	S3VEM
Tin	Target	5.7	J-	mg/kg	5.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S001	pH:	Sample Date: 11/14/2017	Sample Time: 09:53:00
% 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	5.9	U	mg/kg	0.76	J*	1	YES	S3VEM
Arsenic	Target	13.8		mg/kg	13.8	*	1	YES	S3VEM
Barium	Target	122		mg/kg	122	*	1	YES	S3VEM
Beryllium	Target	0.83		mg/kg	0.83		1	YES	S3VEM
Cadmium	Target	0.50		mg/kg	0.50	*	1	YES	S3VEM
Calcium	Target	22000		mg/kg	22000	*	1	YES	S3VEM
Chromium	Target	16.8		mg/kg	16.8	*	1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM
Copper	Target	33.0		mg/kg	33.0		1	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1	YES	S3VEM
Lead	Target	181		mg/kg	181		1	YES	S3VEM
Magnesium	Target	5190		mg/kg	5190	*	1	YES	S3VEM
Manganese	Target	726		mg/kg	726	*	1	YES	S3VEM
Nickel	Target	20.6		mg/kg	20.6		1	YES	S3VEM
Potassium	Target	2060		mg/kg	2060		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	94.5	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Zinc	Target	148		mg/kg	148		1	YES	S3VEM
Tin	Target	5.9	J-	mg/kg	5.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0S9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S002	pH:	Sample Date: 11/14/2017	Sample Time: 10:56:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9540		mg/kg	9540		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.39	J*	1	YES	S3VEM
Arsenic	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Barium	Target	116		mg/kg	116	*	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.40	J	1	YES	S3VEM
Cadmium	Target	0.66		mg/kg	0.66	*	1	YES	S3VEM
Calcium	Target	6160		mg/kg	6160	*	1	YES	S3VEM
Chromium	Target	15.9		mg/kg	15.9	*	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	3.6	J*	1	YES	S3VEM
Copper	Target	36.4		mg/kg	36.4		1	YES	S3VEM
Iron	Target	11000		mg/kg	11000	*	1	YES	S3VEM
Lead	Target	154		mg/kg	154		1	YES	S3VEM
Magnesium	Target	2210		mg/kg	2210	*	1	YES	S3VEM
Manganese	Target	248		mg/kg	248	*	1	YES	S3VEM
Nickel	Target	12.4		mg/kg	12.4		1	YES	S3VEM
Potassium	Target	1180		mg/kg	1180		1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.50	J	mg/kg	0.50	J*	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	88.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	18.5		mg/kg	18.5	*	1	YES	S3VEM
Zinc	Target	213		mg/kg	213		1	YES	S3VEM
Tin	Target	8.2	J-	mg/kg	8.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **Lab Code: BON**

Sample Number: MBE0T0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S002	pH:	Sample Date: 11/14/2017	Sample Time: 11:04:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9970		mg/kg	9970		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.67	J*	1	YES	S3VEM
Arsenic	Target	7.9		mg/kg	7.9	*	1	YES	S3VEM
Barium	Target	138		mg/kg	138	*	1	YES	S3VEM
Beryllium	Target	0.58		mg/kg	0.58		1	YES	S3VEM
Cadmium	Target	0.94		mg/kg	0.94	*	1	YES	S3VEM
Calcium	Target	5410		mg/kg	5410	*	1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	*	1	YES	S3VEM
Copper	Target	37.7		mg/kg	37.7		1	YES	S3VEM
Iron	Target	13700		mg/kg	13700	*	1	YES	S3VEM
Lead	Target	267		mg/kg	267		1	YES	S3VEM
Magnesium	Target	2440		mg/kg	2440	*	1	YES	S3VEM
Manganese	Target	291		mg/kg	291	*	1	YES	S3VEM
Nickel	Target	17.9		mg/kg	17.9		1	YES	S3VEM
Potassium	Target	1430		mg/kg	1430		1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.24	J	mg/kg	0.24	J*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	90.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.2		mg/kg	21.2	*	1	YES	S3VEM
Zinc	Target	324		mg/kg	324		1	YES	S3VEM
Tin	Target	11.8	J-	mg/kg	11.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S002	pH:	Sample Date: 11/14/2017	Sample Time: 11:09:00
% 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	5.9	U	mg/kg	0.68	J*	1	YES	S3VEM
Arsenic	Target	12.1		mg/kg	12.1	*	1	YES	S3VEM
Barium	Target	197		mg/kg	197	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3	*	1	YES	S3VEM
Calcium	Target	9320		mg/kg	9320	*	1	YES	S3VEM
Chromium	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	60.6		mg/kg	60.6		1	YES	S3VEM
Iron	Target	15300		mg/kg	15300	*	1	YES	S3VEM
Lead	Target	433		mg/kg	433		1	YES	S3VEM
Magnesium	Target	3400		mg/kg	3400	*	1	YES	S3VEM
Manganese	Target	390		mg/kg	390	*	1	YES	S3VEM
Nickel	Target	27.4		mg/kg	27.4		1	YES	S3VEM
Potassium	Target	1710		mg/kg	1710		1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.15	J	mg/kg	0.15	J*	1	YES	S3VEM
Sodium	Target	493	U	mg/kg	125	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.0		mg/kg	24.0	*	1	YES	S3VEM
Zinc	Target	573		mg/kg	573		1	YES	S3VEM
Tin	Target	18.0	J-	mg/kg	18.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S002	pH:	Sample Date: 11/14/2017	Sample Time: 11:09:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9660		mg/kg	9660		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	23.0		mg/kg	23.0	*	1	YES	S3VEM
Barium	Target	275		mg/kg	275	*	1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9	*	1	YES	S3VEM
Calcium	Target	10700		mg/kg	10700	*	1	YES	S3VEM
Chromium	Target	27.4		mg/kg	27.4	*	1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	71.7		mg/kg	71.7		1	YES	S3VEM
Iron	Target	19100		mg/kg	19100	*	1	YES	S3VEM
Lead	Target	455		mg/kg	455		1	YES	S3VEM
Magnesium	Target	2970		mg/kg	2970	*	1	YES	S3VEM
Manganese	Target	375		mg/kg	375	*	1	YES	S3VEM
Nickel	Target	33.3		mg/kg	33.3		1	YES	S3VEM
Potassium	Target	1520		mg/kg	1520		1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J*	1	YES	S3VEM
Silver	Target	0.18	J	mg/kg	0.18	J*	1	YES	S3VEM
Sodium	Target	496	U	mg/kg	156	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	28.9		mg/kg	28.9	*	1	YES	S3VEM
Zinc	Target	722		mg/kg	722		1	YES	S3VEM
Tin	Target	23.1	J-	mg/kg	23.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **Lab Code: BON**

Sample Number: MBE0T3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P034-S002	pH:	Sample Date: 11/14/2017	Sample Time: 11:36:00
% 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	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	20.6		mg/kg	20.6	*	1	YES	S3VEM
Barium	Target	248		mg/kg	248	*	1	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8	*	1	YES	S3VEM
Calcium	Target	11200		mg/kg	11200	*	1	YES	S3VEM
Chromium	Target	24.8		mg/kg	24.8	*	1	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4	*	1	YES	S3VEM
Copper	Target	70.3		mg/kg	70.3		1	YES	S3VEM
Iron	Target	18100		mg/kg	18100	*	1	YES	S3VEM
Lead	Target	426		mg/kg	426		1	YES	S3VEM
Magnesium	Target	3010		mg/kg	3010	*	1	YES	S3VEM
Manganese	Target	383		mg/kg	383	*	1	YES	S3VEM
Nickel	Target	31.0		mg/kg	31.0		1	YES	S3VEM
Potassium	Target	1550		mg/kg	1550		1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J*	1	YES	S3VEM
Silver	Target	0.18	J	mg/kg	0.18	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	147	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	27.5		mg/kg	27.5	*	1	YES	S3VEM
Zinc	Target	708		mg/kg	708		1	YES	S3VEM
Tin	Target	20.0	J-	mg/kg	20.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S001	pH:	Sample Date: 11/14/2017	Sample Time: 12:47:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8870		mg/kg	8870		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.86	J*	1	YES	S3VEM
Arsenic	Target	10.6		mg/kg	10.6	*	1	YES	S3VEM
Barium	Target	127		mg/kg	127	*	1	YES	S3VEM
Beryllium	Target	0.68		mg/kg	0.68		1	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1	YES	S3VEM
Calcium	Target	21900		mg/kg	21900	*	1	YES	S3VEM
Chromium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Cobalt	Target	5.7		mg/kg	5.7	*	1	YES	S3VEM
Copper	Target	68.7		mg/kg	68.7		1	YES	S3VEM
Iron	Target	14400		mg/kg	14400	*	1	YES	S3VEM
Lead	Target	268		mg/kg	268		1	YES	S3VEM
Magnesium	Target	7640		mg/kg	7640	*	1	YES	S3VEM
Manganese	Target	454		mg/kg	454	*	1	YES	S3VEM
Nickel	Target	31.2		mg/kg	31.2		1	YES	S3VEM
Potassium	Target	1580		mg/kg	1580		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.088	J	mg/kg	0.088	J*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	92.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.4		mg/kg	19.4	*	1	YES	S3VEM
Zinc	Target	386		mg/kg	386		1	YES	S3VEM
Tin	Target	10.3	J-	mg/kg	10.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **Lab Code: BON**

Sample Number: MBE0T5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S001	pH:	Sample Date: 11/14/2017	Sample Time: 13:06:00
% 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	0.96	J*	1	YES	S3VEM
Arsenic	Target	11.4		mg/kg	11.4	*	1	YES	S3VEM
Barium	Target	140		mg/kg	140	*	1	YES	S3VEM
Beryllium	Target	0.73		mg/kg	0.73		1	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3	*	1	YES	S3VEM
Calcium	Target	25600		mg/kg	25600	*	1	YES	S3VEM
Chromium	Target	20.6		mg/kg	20.6	*	1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM
Copper	Target	63.9		mg/kg	63.9		1	YES	S3VEM
Iron	Target	16700		mg/kg	16700	*	1	YES	S3VEM
Lead	Target	282		mg/kg	282		1	YES	S3VEM
Magnesium	Target	8620		mg/kg	8620	*	1	YES	S3VEM
Manganese	Target	546		mg/kg	546	*	1	YES	S3VEM
Nickel	Target	32.4		mg/kg	32.4		1	YES	S3VEM
Potassium	Target	1760		mg/kg	1760		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.15	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	99.6	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.1		mg/kg	21.1	*	1	YES	S3VEM
Zinc	Target	348		mg/kg	348		1	YES	S3VEM
Tin	Target	9.8	J-	mg/kg	9.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S001	pH:	Sample Date: 11/14/2017	Sample Time: 13:52:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9330		mg/kg	9330		1	YES	S3VEM
Antimony	Target	5.7	U	mg/kg	0.97	J*	1	YES	S3VEM
Arsenic	Target	16.7		mg/kg	16.7	*	1	YES	S3VEM
Barium	Target	370		mg/kg	370	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79		1	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1	YES	S3VEM
Calcium	Target	24000		mg/kg	24000	*	1	YES	S3VEM
Chromium	Target	28.1		mg/kg	28.1	*	1	YES	S3VEM
Cobalt	Target	6.5		mg/kg	6.5	*	1	YES	S3VEM
Copper	Target	150		mg/kg	150		1	YES	S3VEM
Iron	Target	18100		mg/kg	18100	*	1	YES	S3VEM
Lead	Target	351		mg/kg	351		1	YES	S3VEM
Magnesium	Target	7480		mg/kg	7480	*	1	YES	S3VEM
Manganese	Target	502		mg/kg	502	*	1	YES	S3VEM
Nickel	Target	29.2		mg/kg	29.2		1	YES	S3VEM
Potassium	Target	1350		mg/kg	1350		1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.95	U	mg/kg	0.76	J*	1	YES	S3VEM
Sodium	Target	476	U	mg/kg	193	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Zinc	Target	427		mg/kg	427		1	YES	S3VEM
Tin	Target	29.4	J-	mg/kg	29.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S001	pH:	Sample Date: 11/14/2017	Sample Time: 13:55:00
% 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	5.8	U	mg/kg	0.73	J*	1	YES	S3VEM
Arsenic	Target	12.6		mg/kg	12.6	*	1	YES	S3VEM
Barium	Target	162		mg/kg	162	*	1	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1	YES	S3VEM
Cadmium	Target	0.88		mg/kg	0.88	*	1	YES	S3VEM
Calcium	Target	33700		mg/kg	33700	*	1	YES	S3VEM
Chromium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	80.2		mg/kg	80.2		1	YES	S3VEM
Iron	Target	16700		mg/kg	16700	*	1	YES	S3VEM
Lead	Target	201		mg/kg	201		1	YES	S3VEM
Magnesium	Target	8430		mg/kg	8430	*	1	YES	S3VEM
Manganese	Target	581		mg/kg	581	*	1	YES	S3VEM
Nickel	Target	23.9		mg/kg	23.9		1	YES	S3VEM
Potassium	Target	2040		mg/kg	2040		1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.97	U	mg/kg	0.33	J*	1	YES	S3VEM
Sodium	Target	487	U	mg/kg	131	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	21.7		mg/kg	21.7	*	1	YES	S3VEM
Zinc	Target	262		mg/kg	262		1	YES	S3VEM
Tin	Target	10.5	J-	mg/kg	10.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S001	pH:	Sample Date: 11/14/2017	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	10100		mg/kg	10100		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.99	J*	1	YES	S3VEM
Arsenic	Target	12.0		mg/kg	12.0	*	1	YES	S3VEM
Barium	Target	192		mg/kg	192	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.92		mg/kg	0.92	*	1	YES	S3VEM
Calcium	Target	36100		mg/kg	36100	*	1	YES	S3VEM
Chromium	Target	21.7		mg/kg	21.7	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	72.3		mg/kg	72.3		1	YES	S3VEM
Iron	Target	14000		mg/kg	14000	*	1	YES	S3VEM
Lead	Target	225		mg/kg	225		1	YES	S3VEM
Magnesium	Target	7290		mg/kg	7290	*	1	YES	S3VEM
Manganese	Target	504		mg/kg	504	*	1	YES	S3VEM
Nickel	Target	23.5		mg/kg	23.5		1	YES	S3VEM
Potassium	Target	1570		mg/kg	1570		1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.23	J*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	220	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Zinc	Target	274		mg/kg	274		1	YES	S3VEM
Tin	Target	12.8	J-	mg/kg	12.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0T9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S002	pH:	Sample Date: 11/14/2017	Sample Time: 12:57:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7890		mg/kg	7890		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.70	J*	1	YES	S3VEM
Arsenic	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Barium	Target	148		mg/kg	148	*	1	YES	S3VEM
Beryllium	Target	0.49		mg/kg	0.49		1	YES	S3VEM
Cadmium	Target	0.80		mg/kg	0.80	*	1	YES	S3VEM
Calcium	Target	24200		mg/kg	24200	*	1	YES	S3VEM
Chromium	Target	16.4		mg/kg	16.4	*	1	YES	S3VEM
Cobalt	Target	5.0		mg/kg	5.0	*	1	YES	S3VEM
Copper	Target	70.5		mg/kg	70.5		1	YES	S3VEM
Iron	Target	13900		mg/kg	13900	*	1	YES	S3VEM
Lead	Target	226		mg/kg	226		1	YES	S3VEM
Magnesium	Target	6580		mg/kg	6580	*	1	YES	S3VEM
Manganese	Target	500		mg/kg	500	*	1	YES	S3VEM
Nickel	Target	17.3		mg/kg	17.3		1	YES	S3VEM
Potassium	Target	1610		mg/kg	1610		1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.17	J*	1	YES	S3VEM
Sodium	Target	493	U	mg/kg	114	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.0		mg/kg	19.0	*	1	YES	S3VEM
Zinc	Target	319		mg/kg	319		1	YES	S3VEM
Tin	Target	9.2	J-	mg/kg	9.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0W0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S002	pH:	Sample Date: 11/14/2017	Sample Time: 12:18:00
% 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	5.9	U	mg/kg	0.79	J*	1	YES	S3VEM
Arsenic	Target	9.3		mg/kg	9.3	*	1	YES	S3VEM
Barium	Target	226		mg/kg	226	*	1	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	26900		mg/kg	26900	*	1	YES	S3VEM
Chromium	Target	22.9		mg/kg	22.9	*	1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	116		mg/kg	116		1	YES	S3VEM
Iron	Target	16400		mg/kg	16400	*	1	YES	S3VEM
Lead	Target	338		mg/kg	338		1	YES	S3VEM
Magnesium	Target	7460		mg/kg	7460	*	1	YES	S3VEM
Manganese	Target	658		mg/kg	658	*	1	YES	S3VEM
Nickel	Target	23.4		mg/kg	23.4		1	YES	S3VEM
Potassium	Target	2150		mg/kg	2150		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.44	J*	1	YES	S3VEM
Sodium	Target	494	U	mg/kg	119	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.4		mg/kg	21.4	*	1	YES	S3VEM
Zinc	Target	577		mg/kg	577		1	YES	S3VEM
Tin	Target	13.0	J-	mg/kg	13.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0W1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S002	pH:	Sample Date: 11/14/2017	Sample Time: 12:30:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10800		mg/kg	10800		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	11.2		mg/kg	11.2	*	1	YES	S3VEM
Barium	Target	262		mg/kg	262	*	1	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	37500		mg/kg	37500	*	1	YES	S3VEM
Chromium	Target	22.1		mg/kg	22.1	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	106		mg/kg	106		1	YES	S3VEM
Iron	Target	16700		mg/kg	16700	*	1	YES	S3VEM
Lead	Target	385		mg/kg	385		1	YES	S3VEM
Magnesium	Target	7690		mg/kg	7690	*	1	YES	S3VEM
Manganese	Target	653		mg/kg	653	*	1	YES	S3VEM
Nickel	Target	22.5		mg/kg	22.5		1	YES	S3VEM
Potassium	Target	2170		mg/kg	2170		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.38	J*	1	YES	S3VEM
Sodium	Target	499	U	mg/kg	149	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	514		mg/kg	514		1	YES	S3VEM
Tin	Target	14.5	J-	mg/kg	14.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

Sample Number: MBE0W2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S002	pH:	Sample Date: 11/14/2017	Sample Time: 12:48:00
% 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	5.8	U	mg/kg	0.89	J*	1	YES	S3VEM
Arsenic	Target	11.6		mg/kg	11.6	*	1	YES	S3VEM
Barium	Target	266		mg/kg	266	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	32400		mg/kg	32400	*	1	YES	S3VEM
Chromium	Target	23.4		mg/kg	23.4	*	1	YES	S3VEM
Cobalt	Target	7.3		mg/kg	7.3	*	1	YES	S3VEM
Copper	Target	139		mg/kg	139		1	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1	YES	S3VEM
Lead	Target	395		mg/kg	395		1	YES	S3VEM
Magnesium	Target	7720		mg/kg	7720	*	1	YES	S3VEM
Manganese	Target	666		mg/kg	666	*	1	YES	S3VEM
Nickel	Target	24.8		mg/kg	24.8		1	YES	S3VEM
Potassium	Target	2230		mg/kg	2230		1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.96	U	mg/kg	0.41	J*	1	YES	S3VEM
Sodium	Target	482	U	mg/kg	147	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	22.3		mg/kg	22.3	*	1	YES	S3VEM
Zinc	Target	512		mg/kg	512		1	YES	S3VEM
Tin	Target	16.6	J-	mg/kg	16.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0S3** | **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	-1.1	J	mg/kg	-1.1	J	1	YES	S3VEM
Antimony	Target	0.29	J	mg/kg	0.29	J	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target			mg/kg	-0.12	J	1	YES	S3VEM
Beryllium	Target	0.010	J	mg/kg	0.010	J	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.0086	J	1	YES	S3VEM
Calcium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Chromium	Target	0.049	J	mg/kg	0.049	J	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target			mg/kg	-0.060	J	1	YES	S3VEM
Iron	Target			mg/kg	-0.75	J	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target			mg/kg	-3.3	J	1	YES	S3VEM
Manganese	Target			mg/kg	-0.049	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	2.4	J	mg/kg	2.4	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			mg/kg	-2.1	J	1	YES	S3VEM
Thallium	Target			mg/kg	-0.38	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	1.1		mg/kg	1.1	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0S3	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteenmile Creek
Number of Samples: 10 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE0W3
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/14/2017-11/15/2017
Validation SOP: HW-3a

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Metals (ICP-AES): Sample MBE0W5 has analytes that have been qualified "J", "J+" or "J-".

Minor Findings:
None.

COMMENT:	Concentrations of **Lead and Manganese** exceeded the project action levels for one or more samples.

Reviewer Name(s): Raxa J. Shelley

Approver's Signature: **Date: 01/11/2018**

Name: **Narendra Kumar**

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.	

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 ±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.

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.

Silver, Selenium, Sodium
MBE0W3, MBE0W4, MBE0W5, MBE0W6, MBE0W7, MBE0Z1, MBE0Z2, MBE0Z3, MBE0Z4, MBE0Z5

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.

Silver, Sodium
MBE0W3, MBE0W4, MBE0W5, MBE0W6, MBE0W7, MBE0Z1, MBE0Z2, MBE0Z3, MBE0Z4, MBE0Z5

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.

Silver, Sodium
MBE0W3, MBE0W4, MBE0W5, MBE0W6, MBE0W7, MBE0Z1, MBE0Z2, MBE0Z3, MBE0Z4, MBE0Z5

Rinse Blank MBE0X6, MBE167:

The following samples have analyte results greater than or equal to MDLs and less than or equal to CRQLs. The associated rinse 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
MBE0Z1, MBE0Z2, MBE0Z3, MBE0Z4, MBE0Z5

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 samples are 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.

Thallium MBE0W5

Tin MBE0W5

The following samples are associated with Matrix Spike sample that has Silver 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 MBE0W5

The following samples are 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 MBE0W5

The following samples are 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.

Zinc MBE0W5

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 ≥ 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

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 ≥ 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

Samples MBE0W5 and MBE0W6:
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 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.

The following soil/sediment samples are 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.

Beryllium MBE0W5

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: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **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	42.6		mg/kg	42.6		1	YES	S3VEM
Antimony	Spike	10.8		mg/kg	10.8		1	YES	S3VEM
Arsenic	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Barium	Spike	39.2		mg/kg	39.2		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	1090		mg/kg	1090		1	YES	S3VEM
Chromium	Spike	2.2		mg/kg	2.2		1	YES	S3VEM
Cobalt	Spike	10.0		mg/kg	10.0		1	YES	S3VEM
Copper	Spike	5.2		mg/kg	5.2		1	YES	S3VEM
Iron	Spike	22.3		mg/kg	22.3		1	YES	S3VEM
Lead	Spike	2.1		mg/kg	2.1		1	YES	S3VEM
Magnesium	Spike	979		mg/kg	979		1	YES	S3VEM
Manganese	Spike	3.1		mg/kg	3.1		1	YES	S3VEM
Nickel	Spike	8.5		mg/kg	8.5		1	YES	S3VEM
Potassium	Spike	959		mg/kg	959		1	YES	S3VEM
Selenium	Spike	7.1		mg/kg	7.1		1	YES	S3VEM
Silver	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Sodium	Spike	942		mg/kg	942		1	YES	S3VEM
Thallium	Spike	4.6		mg/kg	4.6		1	YES	S3VEM
Vanadium	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Zinc	Spike	11.7		mg/kg	11.7		1	YES	S3VEM
Tin	Spike	10.1		mg/kg	10.1		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P035-S002	pH:	Sample Date: 11/14/2017	Sample Time: 12:57:00
% 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	0.77	J	mg/kg	0.77	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0		1	YES	S3VEM
Barium	Target	217		mg/kg	217		1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75	*	1	YES	S3VEM
Cadmium	Target	0.67		mg/kg	0.67		1	YES	S3VEM
Calcium	Target	39700		mg/kg	39700	D	2	YES	S3VEM
Chromium	Target	19.0		mg/kg	19.0		1	YES	S3VEM
Cobalt	Target	6.0		mg/kg	6.0		1	YES	S3VEM
Copper	Target	67.5		mg/kg	67.5		1	YES	S3VEM
Iron	Target	16400		mg/kg	16400		1	YES	S3VEM
Lead	Target	256		mg/kg	256		1	YES	S3VEM
Magnesium	Target	7980		mg/kg	7980		1	YES	S3VEM
Manganese	Target	763		mg/kg	763		1	YES	S3VEM
Nickel	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Potassium	Target	2170		mg/kg	2170		1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	1.3	J	1	YES	S3VEM
Silver	Target	0.94	U	mg/kg	0.52	J*	1	YES	S3VEM
Sodium	Target	468	U	mg/kg	105	J	1	YES	S3VEM
Thallium	Target	2.3	U	mg/kg	2.3	U*	1	YES	S3VEM
Vanadium	Target	19.5		mg/kg	19.5		1	YES	S3VEM
Zinc	Target	283		mg/kg	283	*	1	YES	S3VEM
Tin	Target	12.5		mg/kg	12.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 15:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8900		mg/kg	8900		1	YES	S3VEM
Antimony	Target	0.50	J	mg/kg	0.50	J*	1	YES	S3VEM
Arsenic	Target	10.1		mg/kg	10.1		1	YES	S3VEM
Barium	Target	91.9		mg/kg	91.9		1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62	*	1	YES	S3VEM
Cadmium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Calcium	Target	24800		mg/kg	24800		1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7		1	YES	S3VEM
Cobalt	Target	5.2		mg/kg	5.2		1	YES	S3VEM
Copper	Target	39.4		mg/kg	39.4		1	YES	S3VEM
Iron	Target	14800		mg/kg	14800		1	YES	S3VEM
Lead	Target	315		mg/kg	315		1	YES	S3VEM
Magnesium	Target	10700		mg/kg	10700		1	YES	S3VEM
Manganese	Target	502		mg/kg	502		1	YES	S3VEM
Nickel	Target	25.8		mg/kg	25.8	*	1	YES	S3VEM
Potassium	Target	1680		mg/kg	1680		1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.5	J	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.29	J*	1	YES	S3VEM
Sodium	Target	489	U	mg/kg	87.7	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	19.0		mg/kg	19.0		1	YES	S3VEM
Zinc	Target	358		mg/kg	358	*	1	YES	S3VEM
Tin	Target	8.1		mg/kg	8.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0W5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 15:23:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9340		mg/kg	9340		1	YES	S3VEM
Antimony	Target	0.66	J	mg/kg	0.66	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0		1	YES	S3VEM
Barium	Target	89.2		mg/kg	89.2		1	YES	S3VEM
Beryllium	Target	0.65	J	mg/kg	0.65	*	1	YES	S3VEM
Cadmium	Target	0.90		mg/kg	0.90		1	YES	S3VEM
Calcium	Target	24900		mg/kg	24900		1	YES	S3VEM
Chromium	Target	17.5		mg/kg	17.5		1	YES	S3VEM
Cobalt	Target	5.2		mg/kg	5.2		1	YES	S3VEM
Copper	Target	39.5		mg/kg	39.5		1	YES	S3VEM
Iron	Target	15100		mg/kg	15100		1	YES	S3VEM
Lead	Target	304		mg/kg	304		1	YES	S3VEM
Magnesium	Target	10700		mg/kg	10700		1	YES	S3VEM
Manganese	Target	521		mg/kg	521		1	YES	S3VEM
Nickel	Target	26.0		mg/kg	26.0	*	1	YES	S3VEM
Potassium	Target	1540		mg/kg	1540		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	1.0	UJ	mg/kg	0.32	J*	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	88.0	J	1	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.6		mg/kg	19.6		1	YES	S3VEM
Zinc	Target	341	J	mg/kg	341	*	1	YES	S3VEM
Tin	Target	8.1	J-	mg/kg	8.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0W5A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 15:23:00
% 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
Thallium	Spike	3.7		mg/kg	3.7	*	1	YES	S3VEM
Zinc	Spike	619		mg/kg	619		1	YES	S3VEM
Tin	Spike	8.4		mg/kg	8.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W5D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 15:23:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9100		mg/kg	9100		1	YES	S3VEM
Antimony	Target	0.42	J	mg/kg	0.42	J	1	YES	S3VEM
Arsenic	Target	10.6		mg/kg	10.6		1	YES	S3VEM
Barium	Target	87.5		mg/kg	87.5		1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1	YES	S3VEM
Cadmium	Target	0.87		mg/kg	0.87		1	YES	S3VEM
Calcium	Target	24200		mg/kg	24200		1	YES	S3VEM
Chromium	Target	16.6		mg/kg	16.6		1	YES	S3VEM
Cobalt	Target	5.0		mg/kg	5.0		1	YES	S3VEM
Copper	Target	37.9		mg/kg	37.9		1	YES	S3VEM
Iron	Target	14600		mg/kg	14600		1	YES	S3VEM
Lead	Target	289		mg/kg	289		1	YES	S3VEM
Magnesium	Target	10300		mg/kg	10300		1	YES	S3VEM
Manganese	Target	499		mg/kg	499		1	YES	S3VEM
Nickel	Target	24.7		mg/kg	24.7		1	YES	S3VEM
Potassium	Target	1530		mg/kg	1530		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	0.32	J	mg/kg	0.32	J	1	YES	S3VEM
Sodium	Target	85.0	J	mg/kg	85.0	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	19.1		mg/kg	19.1		1	YES	S3VEM
Zinc	Target	326		mg/kg	326		1	YES	S3VEM
Tin	Target	7.5		mg/kg	7.5		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W5L	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	9470		mg/kg	9470		5	YES	S3VEM
Antimony	Target	30.1	U	mg/kg	30.1	U	5	YES	S3VEM
Arsenic	Target	9.9		mg/kg	9.9		5	YES	S3VEM
Barium	Target	89.7	J	mg/kg	89.7	J	5	YES	S3VEM
Beryllium	Target	0.46	J	mg/kg	0.46	J*	5	YES	S3VEM
Cadmium	Target	0.93	J	mg/kg	0.93	J	5	YES	S3VEM
Calcium	Target	26300		mg/kg	26300		5	YES	S3VEM
Chromium	Target	18.2		mg/kg	18.2		5	YES	S3VEM
Cobalt	Target	5.6	J	mg/kg	5.6	J	5	YES	S3VEM
Copper	Target	39.4		mg/kg	39.4		5	YES	S3VEM
Iron	Target	16000		mg/kg	16000		5	YES	S3VEM
Lead	Target	272		mg/kg	272		5	YES	S3VEM
Magnesium	Target	11100		mg/kg	11100		5	YES	S3VEM
Manganese	Target	541		mg/kg	541		5	YES	S3VEM
Nickel	Target	22.8		mg/kg	22.8	*	5	YES	S3VEM
Potassium	Target	1580	J	mg/kg	1580	J	5	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J	5	YES	S3VEM
Silver	Target	0.59	J	mg/kg	0.59	J	5	YES	S3VEM
Sodium	Target	89.9	J	mg/kg	89.9	J	5	YES	S3VEM
Thallium	Target	12.5	U	mg/kg	12.5	U	5	YES	S3VEM
Vanadium	Target	20.1	J	mg/kg	20.1	J	5	YES	S3VEM
Zinc	Target	309		mg/kg	309		5	YES	S3VEM
Tin	Target	8.2		mg/kg	8.2	J	5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0W5S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/14/2017	Sample Time: 15:23:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	6.5		mg/kg	6.5		1	YES	S3VEM
Arsenic	Spike	17.8		mg/kg	17.8		1	YES	S3VEM
Barium	Spike	402		mg/kg	402		1	YES	S3VEM
Beryllium	Spike	11.0		mg/kg	11.0		1	YES	S3VEM
Cadmium	Spike	8.7		mg/kg	8.7		1	YES	S3VEM
Chromium	Spike	50.0		mg/kg	50.0		1	YES	S3VEM
Cobalt	Spike	82.7		mg/kg	82.7		1	YES	S3VEM
Copper	Spike	82.5		mg/kg	82.5		1	YES	S3VEM
Lead	Spike	299		mg/kg	299		1	YES	S3VEM
Manganese	Spike	590		mg/kg	590		1	YES	S3VEM
Nickel	Spike	123		mg/kg	123		1	YES	S3VEM
Selenium	Spike	17.7		mg/kg	17.7		1	YES	S3VEM
Silver	Spike	7.5		mg/kg	7.5		1	YES	S3VEM
Thallium	Spike	7.4		mg/kg	7.4		1	YES	S3VEM
Vanadium	Spike	101		mg/kg	101		1	YES	S3VEM
Zinc	Spike	416		mg/kg	416		1	YES	S3VEM
Tin	Spike	75.9		mg/kg	75.9		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 15:25:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9170		mg/kg	9170		1	YES	S3VEM
Antimony	Target	0.54	J	mg/kg	0.54	J*	1	YES	S3VEM
Arsenic	Target	10.8		mg/kg	10.8		1	YES	S3VEM
Barium	Target	87.5		mg/kg	87.5		1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63	*	1	YES	S3VEM
Cadmium	Target	0.86		mg/kg	0.86		1	YES	S3VEM
Calcium	Target	25700		mg/kg	25700		1	YES	S3VEM
Chromium	Target	16.5		mg/kg	16.5		1	YES	S3VEM
Cobalt	Target	5.1		mg/kg	5.1		1	YES	S3VEM
Copper	Target	38.1		mg/kg	38.1		1	YES	S3VEM
Iron	Target	14900		mg/kg	14900		1	YES	S3VEM
Lead	Target	294		mg/kg	294		1	YES	S3VEM
Magnesium	Target	11000		mg/kg	11000		1	YES	S3VEM
Manganese	Target	505		mg/kg	505		1	YES	S3VEM
Nickel	Target	25.2		mg/kg	25.2	*	1	YES	S3VEM
Potassium	Target	1530		mg/kg	1530		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.3	J	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.32	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	84.4	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.5		mg/kg	19.5		1	YES	S3VEM
Zinc	Target	326		mg/kg	326	*	1	YES	S3VEM
Tin	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0W7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 16:06:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9480		mg/kg	9480		1	YES	S3VEM
Antimony	Target	0.55	J	mg/kg	0.55	J*	1	YES	S3VEM
Arsenic	Target	15.2		mg/kg	15.2		1	YES	S3VEM
Barium	Target	98.5		mg/kg	98.5		1	YES	S3VEM
Beryllium	Target	0.73		mg/kg	0.73	*	1	YES	S3VEM
Cadmium	Target	0.89		mg/kg	0.89		1	YES	S3VEM
Calcium	Target	23900		mg/kg	23900		1	YES	S3VEM
Chromium	Target	17.6		mg/kg	17.6		1	YES	S3VEM
Cobalt	Target	5.5		mg/kg	5.5		1	YES	S3VEM
Copper	Target	44.4		mg/kg	44.4		1	YES	S3VEM
Iron	Target	16200		mg/kg	16200		1	YES	S3VEM
Lead	Target	338		mg/kg	338		1	YES	S3VEM
Magnesium	Target	9880		mg/kg	9880		1	YES	S3VEM
Manganese	Target	535		mg/kg	535		1	YES	S3VEM
Nickel	Target	27.5		mg/kg	27.5	*	1	YES	S3VEM
Potassium	Target	1520		mg/kg	1520		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.37	J*	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	93.2	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	20.5		mg/kg	20.5		1	YES	S3VEM
Zinc	Target	314		mg/kg	314	*	1	YES	S3VEM
Tin	Target	9.0		mg/kg	9.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0Z1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S003	pH:	Sample Date: 11/15/2017	Sample Time: 10:14:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13100		mg/kg	13100		1	YES	S3VEM
Antimony	Target	0.59	J	mg/kg	0.59	J*	1	YES	S3VEM
Arsenic	Target	19.2		mg/kg	19.2		1	YES	S3VEM
Barium	Target	140		mg/kg	140		1	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Cadmium	Target	0.91		mg/kg	0.91		1	YES	S3VEM
Calcium	Target	10600		mg/kg	10600		1	YES	S3VEM
Chromium	Target	21.7		mg/kg	21.7		1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6		1	YES	S3VEM
Copper	Target	56.7		mg/kg	56.7		1	YES	S3VEM
Iron	Target	19600		mg/kg	19600		1	YES	S3VEM
Lead	Target	166		mg/kg	166		1	YES	S3VEM
Magnesium	Target	3280		mg/kg	3280		1	YES	S3VEM
Manganese	Target	2070		mg/kg	2070	D	2	YES	S3VEM
Nickel	Target	29.6		mg/kg	29.6	*	1	YES	S3VEM
Potassium	Target	2340		mg/kg	2340		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.2	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.58	J*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	62.1	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.2		mg/kg	24.2		1	YES	S3VEM
Zinc	Target	245		mg/kg	245	*	1	YES	S3VEM
Tin	Target	8.9		mg/kg	8.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0Z2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S003	pH:	Sample Date: 11/15/2017	Sample Time: 10:41:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13800		mg/kg	13800		1	YES	S3VEM
Antimony	Target	0.45	J	mg/kg	0.45	J*	1	YES	S3VEM
Arsenic	Target	13.5		mg/kg	13.5		1	YES	S3VEM
Barium	Target	87.7		mg/kg	87.7		1	YES	S3VEM
Beryllium	Target	0.96		mg/kg	0.96	*	1	YES	S3VEM
Cadmium	Target	0.60		mg/kg	0.60		1	YES	S3VEM
Calcium	Target	27000		mg/kg	27000		1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7		1	YES	S3VEM
Cobalt	Target	7.9		mg/kg	7.9		1	YES	S3VEM
Copper	Target	35.6		mg/kg	35.6		1	YES	S3VEM
Iron	Target	19900		mg/kg	19900		1	YES	S3VEM
Lead	Target	77.2		mg/kg	77.2		1	YES	S3VEM
Magnesium	Target	4910		mg/kg	4910		1	YES	S3VEM
Manganese	Target	1430		mg/kg	1430		1	YES	S3VEM
Nickel	Target	25.5		mg/kg	25.5	*	1	YES	S3VEM
Potassium	Target	2530		mg/kg	2530		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.5	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.44	J*	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	65.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	22.7		mg/kg	22.7		1	YES	S3VEM
Zinc	Target	139		mg/kg	139	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	3.0	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **Lab Code: BON**

Sample Number: MBE0Z3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S003	pH:	Sample Date: 11/15/2017	Sample Time: 10:48:00
% 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	5.7	U	mg/kg	5.7	U*	1	YES	S3VEM
Arsenic	Target	7.6		mg/kg	7.6		1	YES	S3VEM
Barium	Target	50.6		mg/kg	50.6		1	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72	*	1	YES	S3VEM
Cadmium	Target	0.35	J	mg/kg	0.35	J	1	YES	S3VEM
Calcium	Target	90500		mg/kg	90500	D	4	YES	S3VEM
Chromium	Target	13.5		mg/kg	13.5		1	YES	S3VEM
Cobalt	Target	6.0		mg/kg	6.0		1	YES	S3VEM
Copper	Target	28.4		mg/kg	28.4		1	YES	S3VEM
Iron	Target	15100		mg/kg	15100		1	YES	S3VEM
Lead	Target	37.1		mg/kg	37.1		1	YES	S3VEM
Magnesium	Target	8860		mg/kg	8860		1	YES	S3VEM
Manganese	Target	737		mg/kg	737		1	YES	S3VEM
Nickel	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Potassium	Target	2560		mg/kg	2560		1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	0.74	J	1	YES	S3VEM
Silver	Target	0.95	U	mg/kg	0.25	J*	1	YES	S3VEM
Sodium	Target	477	U	mg/kg	83.9	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	17.7		mg/kg	17.7		1	YES	S3VEM
Zinc	Target	69.8		mg/kg	69.8	*	1	YES	S3VEM
Tin	Target	4.8	U	mg/kg	1.5	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0Z4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S001	pH:	Sample Date: 11/15/2017	Sample Time: 11:43:00
% 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	0.64	J	mg/kg	0.64	J*	1	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7		1	YES	S3VEM
Barium	Target	176		mg/kg	176		1	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72	*	1	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Target	15100		mg/kg	15100		1	YES	S3VEM
Chromium	Target	16.9		mg/kg	16.9		1	YES	S3VEM
Cobalt	Target	6.0		mg/kg	6.0		1	YES	S3VEM
Copper	Target	37.0		mg/kg	37.0		1	YES	S3VEM
Iron	Target	17200		mg/kg	17200		1	YES	S3VEM
Lead	Target	552		mg/kg	552		1	YES	S3VEM
Magnesium	Target	5800		mg/kg	5800		1	YES	S3VEM
Manganese	Target	880		mg/kg	880		1	YES	S3VEM
Nickel	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Potassium	Target	2230		mg/kg	2230		1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.7	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.36	J*	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	73.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	20.6		mg/kg	20.6		1	YES	S3VEM
Zinc	Target	408		mg/kg	408	*	1	YES	S3VEM
Tin	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

Sample Number: MBE0Z5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S001	pH:	Sample Date: 11/15/2017	Sample Time: 12:16:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10900		mg/kg	10900		1	YES	S3VEM
Antimony	Target	0.46	J	mg/kg	0.46	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0		1	YES	S3VEM
Barium	Target	161		mg/kg	161		1	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77	*	1	YES	S3VEM
Cadmium	Target	0.98		mg/kg	0.98		1	YES	S3VEM
Calcium	Target	14300		mg/kg	14300		1	YES	S3VEM
Chromium	Target	17.8		mg/kg	17.8		1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1	YES	S3VEM
Copper	Target	39.8		mg/kg	39.8		1	YES	S3VEM
Iron	Target	17500		mg/kg	17500		1	YES	S3VEM
Lead	Target	478		mg/kg	478		1	YES	S3VEM
Magnesium	Target	5550		mg/kg	5550		1	YES	S3VEM
Manganese	Target	900		mg/kg	900		1	YES	S3VEM
Nickel	Target	26.3		mg/kg	26.3	*	1	YES	S3VEM
Potassium	Target	2190		mg/kg	2190		1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	1.8	J	1	YES	S3VEM
Silver	Target	0.94	U	mg/kg	0.34	J*	1	YES	S3VEM
Sodium	Target	468	U	mg/kg	77.2	J	1	YES	S3VEM
Thallium	Target	2.3	U	mg/kg	2.3	U*	1	YES	S3VEM
Vanadium	Target	21.6		mg/kg	21.6		1	YES	S3VEM
Zinc	Target	350		mg/kg	350	*	1	YES	S3VEM
Tin	Target	7.2		mg/kg	7.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W3** | **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	1.8	J	mg/kg	1.8	J	1	YES	S3VEM
Antimony	Target	-0.22	J	mg/kg	-0.22	J	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target			mg/kg	-0.054	J	1	YES	S3VEM
Beryllium	Target			mg/kg	-0.031	J	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.0057	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	0.13	J	mg/kg	0.13	J	1	YES	S3VEM
Iron	Target	0.61	J	mg/kg	0.61	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	0.039	J	mg/kg	0.039	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	7.4	J	mg/kg	7.4	J	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	3.5	U	1	YES	S3VEM
Silver	Target	0.074	J	mg/kg	0.074	J	1	YES	S3VEM
Sodium	Target	2.4	J	mg/kg	2.4	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target			mg/kg	-0.052	J	1	YES	S3VEM
Zinc	Target			mg/kg	-0.066	J	1	YES	S3VEM
Tin	Target	0.94		mg/kg	0.94	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W3	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteenmile Creek
Number of Samples: 20 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE0W8
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/14/17 to 11/15/17
Validation SOP: HW-3a (Rev 1)

QAPP
Contractor: Weston Solutions
Reference: DCN: RST3-04-D-0090

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:
Sample MBE0Y6 has analytes that have been qualified J, J+ or J-.

Minor Findings:
None

COMMENT: Concentration of **Lead** exceeded the project action levels for one or more samples.

Reviewer Name(s): Dharmesh Patel

Approver's Signature: **Date: 01/11/2018**

Name: **Narendra Kumar**

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.	

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 ±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.

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 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.

Selenium MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.
Sodium MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.

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 MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.
Cadmium MBE0Y8.
Selenium MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.
Silver MBE0W8, MBE0W9, MBE0Y0, MBE0Y1, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y9, MBE0Z0.
Sodium MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.

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.

Antimony MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.
Selenium MBE0W8, MBE0W9, MBE0X0, MBE0X2, MBE0X3, MBE0X4, MBE0X5, MBE0X8, MBE0X9, MBE0Y0, MBE0Y1, MBE0Y2, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y8, MBE0Y9, MBE0Z0.
Silver MBE0W8, MBE0W9, MBE0Y0, MBE0Y1, MBE0Y3, MBE0Y4, MBE0Y5, MBE0Y6, MBE0Y7, MBE0Y9, MBE0Z0.
Tin MBE0Y4, MBE0Y6, MBE0Y7, MBE0Y8.

Field Blanks: MBE0X6, MBE167

No additional qualification required 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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 greater than or equal to 75%. Detected analytes are qualified J. Non-detected analytes are qualified UJ.

Antimony MBE0Y6.

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.

Cadmium, Selenium, Tin MBE0Y6.

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

Chromium, Cobalt, Vanadium MBE0Y6.

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 ≥ 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: MBE0Y6/MBE0Y7.

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 ≥ 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% but less than 120% and initial sample results are greater than 50xMDLs. The Detected analytes are qualified J.

Aluminum, Barium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Potassium and Vanadium MBE0Y6.

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: 47320	Contract: EPW14029	SDG: MBE0W8	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	38.5		mg/kg	38.5		1	YES	S3VEM
Antimony	Spike	11.6		mg/kg	11.6		1	YES	S3VEM
Arsenic	Spike	1.6		mg/kg	1.6		1	YES	S3VEM
Barium	Spike	38.7		mg/kg	38.7		1	YES	S3VEM
Beryllium	Spike	0.91		mg/kg	0.91		1	YES	S3VEM
Cadmium	Spike	0.95		mg/kg	0.95		1	YES	S3VEM
Calcium	Spike	1030		mg/kg	1030		1	YES	S3VEM
Chromium	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Cobalt	Spike	9.9		mg/kg	9.9		1	YES	S3VEM
Copper	Spike	4.8		mg/kg	4.8		1	YES	S3VEM
Iron	Spike	20.9		mg/kg	20.9		1	YES	S3VEM
Lead	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Magnesium	Spike	989		mg/kg	989		1	YES	S3VEM
Manganese	Spike	3.2		mg/kg	3.2		1	YES	S3VEM
Nickel	Spike	8.1		mg/kg	8.1		1	YES	S3VEM
Potassium	Spike	923		mg/kg	923		1	YES	S3VEM
Selenium	Spike	6.6		mg/kg	6.6		1	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Sodium	Spike	961		mg/kg	961		1	YES	S3VEM
Thallium	Spike	4.3		mg/kg	4.3		1	YES	S3VEM
Vanadium	Spike	9.8		mg/kg	9.8		1	YES	S3VEM
Zinc	Spike	11.7		mg/kg	11.7		1	YES	S3VEM
Tin	Spike	10.0		mg/kg	10.0		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0W8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 16:56:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9960		mg/kg	9960	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.80	J*	1	YES	S3VEM
Arsenic	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Barium	Target	110		mg/kg	110	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Calcium	Target	23300		mg/kg	23300	*	1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	40.1		mg/kg	40.1	*	1	YES	S3VEM
Iron	Target	16200		mg/kg	16200	*	1	YES	S3VEM
Lead	Target	231		mg/kg	231	*	1	YES	S3VEM
Magnesium	Target	8230		mg/kg	8230	*	1	YES	S3VEM
Manganese	Target	575		mg/kg	575	*	1	YES	S3VEM
Nickel	Target	24.4		mg/kg	24.4		1	YES	S3VEM
Potassium	Target	1770		mg/kg	1770	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.2	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.10	J	1	YES	S3VEM
Sodium	Target	499	U	mg/kg	119	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	20.5		mg/kg	20.5	*	1	YES	S3VEM
Zinc	Target	224		mg/kg	224	*	1	YES	S3VEM
Tin	Target	9.5		mg/kg	9.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0W9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S001	pH:	Sample Date: 11/14/2017	Sample Time: 17:01:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10300		mg/kg	10300	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.70	J*	1	YES	S3VEM
Arsenic	Target	14.2		mg/kg	14.2		1	YES	S3VEM
Barium	Target	120		mg/kg	120	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1	YES	S3VEM
Cadmium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Calcium	Target	33700		mg/kg	33700	*	1	YES	S3VEM
Chromium	Target	17.2		mg/kg	17.2	*	1	YES	S3VEM
Cobalt	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM
Copper	Target	51.9		mg/kg	51.9	*	1	YES	S3VEM
Iron	Target	13700		mg/kg	13700	*	1	YES	S3VEM
Lead	Target	307		mg/kg	307	*	1	YES	S3VEM
Magnesium	Target	10500		mg/kg	10500	*	1	YES	S3VEM
Manganese	Target	635		mg/kg	635	*	1	YES	S3VEM
Nickel	Target	19.6		mg/kg	19.6		1	YES	S3VEM
Potassium	Target	1910		mg/kg	1910	*	1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.21	J	1	YES	S3VEM
Sodium	Target	490	U	mg/kg	147	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	18.3		mg/kg	18.3	*	1	YES	S3VEM
Zinc	Target	259		mg/kg	259	*	1	YES	S3VEM
Tin	Target	12.4		mg/kg	12.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0X0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S002	pH:	Sample Date: 11/14/2017	Sample Time: 15:50:00
% 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	5.6	U	mg/kg	0.96	J*	1	YES	S3VEM
Arsenic	Target	11.8		mg/kg	11.8		1	YES	S3VEM
Barium	Target	173		mg/kg	173	*	1	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1	YES	S3VEM
Cadmium	Target	0.86		mg/kg	0.86	*	1	YES	S3VEM
Calcium	Target	8740		mg/kg	8740	*	1	YES	S3VEM
Chromium	Target	19.6		mg/kg	19.6	*	1	YES	S3VEM
Cobalt	Target	6.3		mg/kg	6.3	*	1	YES	S3VEM
Copper	Target	55.4		mg/kg	55.4	*	1	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1	YES	S3VEM
Lead	Target	415		mg/kg	415	*	1	YES	S3VEM
Magnesium	Target	3330		mg/kg	3330	*	1	YES	S3VEM
Manganese	Target	598		mg/kg	598	*	1	YES	S3VEM
Nickel	Target	26.0		mg/kg	26.0		1	YES	S3VEM
Potassium	Target	1820		mg/kg	1820	*	1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.94	U	mg/kg	0.94	U	1	YES	S3VEM
Sodium	Target	469	U	mg/kg	83.3	J*	1	YES	S3VEM
Thallium	Target	2.3	U	mg/kg	2.3	U	1	YES	S3VEM
Vanadium	Target	22.8		mg/kg	22.8	*	1	YES	S3VEM
Zinc	Target	455		mg/kg	455	*	1	YES	S3VEM
Tin	Target	8.4		mg/kg	8.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0X2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S002	pH:	Sample Date: 11/14/2017	Sample Time: 15:58:00
% 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	5.8	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	11.9		mg/kg	11.9		1	YES	S3VEM
Barium	Target	166		mg/kg	166	*	1	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64		1	YES	S3VEM
Cadmium	Target	0.87		mg/kg	0.87	*	1	YES	S3VEM
Calcium	Target	8380		mg/kg	8380	*	1	YES	S3VEM
Chromium	Target	18.9		mg/kg	18.9	*	1	YES	S3VEM
Cobalt	Target	6.0		mg/kg	6.0	*	1	YES	S3VEM
Copper	Target	52.7		mg/kg	52.7	*	1	YES	S3VEM
Iron	Target	16900		mg/kg	16900	*	1	YES	S3VEM
Lead	Target	410		mg/kg	410	*	1	YES	S3VEM
Magnesium	Target	3360		mg/kg	3360	*	1	YES	S3VEM
Manganese	Target	593		mg/kg	593	*	1	YES	S3VEM
Nickel	Target	25.6		mg/kg	25.6		1	YES	S3VEM
Potassium	Target	1690		mg/kg	1690	*	1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.97	U	mg/kg	0.97	U	1	YES	S3VEM
Sodium	Target	484	U	mg/kg	88.7	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	22.4		mg/kg	22.4	*	1	YES	S3VEM
Zinc	Target	396		mg/kg	396	*	1	YES	S3VEM
Tin	Target	8.7		mg/kg	8.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0X3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S002	pH:	Sample Date: 11/14/2017	Sample Time: 16:04:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11500		mg/kg	11500	*	1	YES	S3VEM
Antimony	Target	5.6	U	mg/kg	0.60	J*	1	YES	S3VEM
Arsenic	Target	13.3		mg/kg	13.3		1	YES	S3VEM
Barium	Target	130		mg/kg	130	*	1	YES	S3VEM
Beryllium	Target	0.65		mg/kg	0.65		1	YES	S3VEM
Cadmium	Target	0.68		mg/kg	0.68	*	1	YES	S3VEM
Calcium	Target	10800		mg/kg	10800	*	1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Cobalt	Target	6.1		mg/kg	6.1	*	1	YES	S3VEM
Copper	Target	50.0		mg/kg	50.0	*	1	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1	YES	S3VEM
Lead	Target	291		mg/kg	291	*	1	YES	S3VEM
Magnesium	Target	4270		mg/kg	4270	*	1	YES	S3VEM
Manganese	Target	801		mg/kg	801	*	1	YES	S3VEM
Nickel	Target	24.6		mg/kg	24.6		1	YES	S3VEM
Potassium	Target	1700		mg/kg	1700	*	1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.94	U	mg/kg	0.94	U	1	YES	S3VEM
Sodium	Target	471	U	mg/kg	77.3	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	22.1		mg/kg	22.1	*	1	YES	S3VEM
Zinc	Target	276		mg/kg	276	*	1	YES	S3VEM
Tin	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0X4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S002	pH:	Sample Date: 11/14/2017	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	11400		mg/kg	11400	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	0.66	J*	1	YES	S3VEM
Arsenic	Target	13.6		mg/kg	13.6		1	YES	S3VEM
Barium	Target	122		mg/kg	122	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1	YES	S3VEM
Cadmium	Target	0.61		mg/kg	0.61	*	1	YES	S3VEM
Calcium	Target	23600		mg/kg	23600	*	1	YES	S3VEM
Chromium	Target	17.0		mg/kg	17.0	*	1	YES	S3VEM
Cobalt	Target	6.0		mg/kg	6.0	*	1	YES	S3VEM
Copper	Target	50.6		mg/kg	50.6	*	1	YES	S3VEM
Iron	Target	16800		mg/kg	16800	*	1	YES	S3VEM
Lead	Target	271		mg/kg	271	*	1	YES	S3VEM
Magnesium	Target	5800		mg/kg	5800	*	1	YES	S3VEM
Manganese	Target	760		mg/kg	760	*	1	YES	S3VEM
Nickel	Target	22.0		mg/kg	22.0		1	YES	S3VEM
Potassium	Target	2040		mg/kg	2040	*	1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.96	U	mg/kg	0.96	U	1	YES	S3VEM
Sodium	Target	482	U	mg/kg	90.2	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Zinc	Target	232		mg/kg	232	*	1	YES	S3VEM
Tin	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0X5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P036-S002	pH:	Sample Date: 11/14/2017	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	11800		mg/kg	11800	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.91	J*	1	YES	S3VEM
Arsenic	Target	16.6		mg/kg	16.6		1	YES	S3VEM
Barium	Target	144		mg/kg	144	*	1	YES	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1	YES	S3VEM
Cadmium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Calcium	Target	30000		mg/kg	30000	*	1	YES	S3VEM
Chromium	Target	19.3		mg/kg	19.3	*	1	YES	S3VEM
Cobalt	Target	9.1		mg/kg	9.1	*	1	YES	S3VEM
Copper	Target	46.5		mg/kg	46.5	*	1	YES	S3VEM
Iron	Target	14900		mg/kg	14900	*	1	YES	S3VEM
Lead	Target	295		mg/kg	295	*	1	YES	S3VEM
Magnesium	Target	4920		mg/kg	4920	*	1	YES	S3VEM
Manganese	Target	581		mg/kg	581	*	1	YES	S3VEM
Nickel	Target	26.7		mg/kg	26.7		1	YES	S3VEM
Potassium	Target	2090		mg/kg	2090	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	164	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	26.3		mg/kg	26.3	*	1	YES	S3VEM
Zinc	Target	225		mg/kg	225	*	1	YES	S3VEM
Tin	Target	10.5		mg/kg	10.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0X8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S001	pH:	Sample Date: 11/15/2017	Sample Time: 08:31:00
% 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	0.74	J*	1	YES	S3VEM
Arsenic	Target	12.4		mg/kg	12.4		1	YES	S3VEM
Barium	Target	190		mg/kg	190	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70		1	YES	S3VEM
Cadmium	Target	0.82		mg/kg	0.82	*	1	YES	S3VEM
Calcium	Target	9570		mg/kg	9570	*	1	YES	S3VEM
Chromium	Target	18.3		mg/kg	18.3	*	1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM
Copper	Target	36.1		mg/kg	36.1	*	1	YES	S3VEM
Iron	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Lead	Target	464		mg/kg	464	*	1	YES	S3VEM
Magnesium	Target	4590		mg/kg	4590	*	1	YES	S3VEM
Manganese	Target	777		mg/kg	777	*	1	YES	S3VEM
Nickel	Target	23.5		mg/kg	23.5		1	YES	S3VEM
Potassium	Target	1960		mg/kg	1960	*	1	YES	S3VEM
Selenium	Target	3.5	U	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	83.7	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.4		mg/kg	22.4	*	1	YES	S3VEM
Zinc	Target	377		mg/kg	377	*	1	YES	S3VEM
Tin	Target	7.5		mg/kg	7.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0X9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S001	pH:	Sample Date: 11/15/2017	Sample Time: 08:40:00
% 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	0.88	J*	1	YES	S3VEM
Arsenic	Target	14.0		mg/kg	14.0		1	YES	S3VEM
Barium	Target	215		mg/kg	215	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.82		mg/kg	0.82	*	1	YES	S3VEM
Calcium	Target	11500		mg/kg	11500	*	1	YES	S3VEM
Chromium	Target	18.1		mg/kg	18.1	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	42.3		mg/kg	42.3	*	1	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1	YES	S3VEM
Lead	Target	502		mg/kg	502	*	1	YES	S3VEM
Magnesium	Target	4540		mg/kg	4540	*	1	YES	S3VEM
Manganese	Target	815		mg/kg	815	*	1	YES	S3VEM
Nickel	Target	23.2		mg/kg	23.2		1	YES	S3VEM
Potassium	Target	1890		mg/kg	1890	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	110	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.5		mg/kg	23.5	*	1	YES	S3VEM
Zinc	Target	368		mg/kg	368	*	1	YES	S3VEM
Tin	Target	9.0		mg/kg	9.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S001	pH:	Sample Date: 11/15/2017	Sample Time: 08:50:00
% 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	0.88	J*	1	YES	S3VEM
Arsenic	Target	13.1		mg/kg	13.1		1	YES	S3VEM
Barium	Target	218		mg/kg	218	*	1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75		1	YES	S3VEM
Cadmium	Target	0.96		mg/kg	0.96	*	1	YES	S3VEM
Calcium	Target	10200		mg/kg	10200	*	1	YES	S3VEM
Chromium	Target	18.5		mg/kg	18.5	*	1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	45.0		mg/kg	45.0	*	1	YES	S3VEM
Iron	Target	16600		mg/kg	16600	*	1	YES	S3VEM
Lead	Target	560		mg/kg	560	*	1	YES	S3VEM
Magnesium	Target	4480		mg/kg	4480	*	1	YES	S3VEM
Manganese	Target	795		mg/kg	795	*	1	YES	S3VEM
Nickel	Target	24.7		mg/kg	24.7		1	YES	S3VEM
Potassium	Target	1760		mg/kg	1760	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.051	J	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	94.8	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	424		mg/kg	424	*	1	YES	S3VEM
Tin	Target	9.5		mg/kg	9.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y1	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S001	pH:	Sample Date: 11/15/2017	Sample Time: 09:03:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11700		mg/kg	11700	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.66	J*	1	YES	S3VEM
Arsenic	Target	13.9		mg/kg	13.9		1	YES	S3VEM
Barium	Target	319		mg/kg	319	*	1	YES	S3VEM
Beryllium	Target	0.77		mg/kg	0.77		1	YES	S3VEM
Cadmium	Target	0.91		mg/kg	0.91	*	1	YES	S3VEM
Calcium	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Chromium	Target	21.1		mg/kg	21.1	*	1	YES	S3VEM
Cobalt	Target	7.3		mg/kg	7.3	*	1	YES	S3VEM
Copper	Target	59.8		mg/kg	59.8	*	1	YES	S3VEM
Iron	Target	17600		mg/kg	17600	*	1	YES	S3VEM
Lead	Target	879		mg/kg	879	*	1	YES	S3VEM
Magnesium	Target	4800		mg/kg	4800	*	1	YES	S3VEM
Manganese	Target	798		mg/kg	798	*	1	YES	S3VEM
Nickel	Target	23.1		mg/kg	23.1		1	YES	S3VEM
Potassium	Target	1910		mg/kg	1910	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.18	J	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	151	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	24.5		mg/kg	24.5	*	1	YES	S3VEM
Zinc	Target	489		mg/kg	489	*	1	YES	S3VEM
Tin	Target	16.6		mg/kg	16.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y2	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S001	pH:	Sample Date: 11/15/2017	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	10500		mg/kg	10500	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.69	J*	1	YES	S3VEM
Arsenic	Target	11.4		mg/kg	11.4		1	YES	S3VEM
Barium	Target	192		mg/kg	192	*	1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63		1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	36000		mg/kg	36000	*	1	YES	S3VEM
Chromium	Target	17.0		mg/kg	17.0	*	1	YES	S3VEM
Cobalt	Target	5.9		mg/kg	5.9	*	1	YES	S3VEM
Copper	Target	31.6		mg/kg	31.6	*	1	YES	S3VEM
Iron	Target	16400		mg/kg	16400	*	1	YES	S3VEM
Lead	Target	451		mg/kg	451	*	1	YES	S3VEM
Magnesium	Target	14000		mg/kg	14000	*	1	YES	S3VEM
Manganese	Target	762		mg/kg	762	*	1	YES	S3VEM
Nickel	Target	20.2		mg/kg	20.2		1	YES	S3VEM
Potassium	Target	1960		mg/kg	1960	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	118	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Zinc	Target	507		mg/kg	507	*	1	YES	S3VEM
Tin	Target	5.3		mg/kg	5.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0Y3	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	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	11600		mg/kg	11600	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.81	J*	1	YES	S3VEM
Arsenic	Target	11.9		mg/kg	11.9		1	YES	S3VEM
Barium	Target	119		mg/kg	119	*	1	YES	S3VEM
Beryllium	Target	0.72		mg/kg	0.72		1	YES	S3VEM
Cadmium	Target	0.82		mg/kg	0.82	*	1	YES	S3VEM
Calcium	Target	16900		mg/kg	16900	*	1	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	31.5		mg/kg	31.5	*	1	YES	S3VEM
Iron	Target	17100		mg/kg	17100	*	1	YES	S3VEM
Lead	Target	198		mg/kg	198	*	1	YES	S3VEM
Magnesium	Target	4380		mg/kg	4380	*	1	YES	S3VEM
Manganese	Target	1230		mg/kg	1230	*	1	YES	S3VEM
Nickel	Target	22.0		mg/kg	22.0		1	YES	S3VEM
Potassium	Target	2550		mg/kg	2550	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.073	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	68.2	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Zinc	Target	299		mg/kg	299	*	1	YES	S3VEM
Tin	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0Y4	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	Sample Time: 09:27:00
% 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	5.9	U	mg/kg	0.59	J*	1	YES	S3VEM
Arsenic	Target	10.4		mg/kg	10.4		1	YES	S3VEM
Barium	Target	104		mg/kg	104	*	1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63		1	YES	S3VEM
Cadmium	Target	0.71		mg/kg	0.71	*	1	YES	S3VEM
Calcium	Target	10600		mg/kg	10600	*	1	YES	S3VEM
Chromium	Target	14.8		mg/kg	14.8	*	1	YES	S3VEM
Cobalt	Target	5.9		mg/kg	5.9	*	1	YES	S3VEM
Copper	Target	26.5		mg/kg	26.5	*	1	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1	YES	S3VEM
Lead	Target	152		mg/kg	152	*	1	YES	S3VEM
Magnesium	Target	3360		mg/kg	3360	*	1	YES	S3VEM
Manganese	Target	1040		mg/kg	1040	*	1	YES	S3VEM
Nickel	Target	17.9		mg/kg	17.9		1	YES	S3VEM
Potassium	Target	2010		mg/kg	2010	*	1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.046	J	1	YES	S3VEM
Sodium	Target	490	U	mg/kg	58.4	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.3		mg/kg	21.3	*	1	YES	S3VEM
Zinc	Target	244		mg/kg	244	*	1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	4.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0Y5	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	Sample Time: 09:34:00
% 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	0.67	J*	1	YES	S3VEM
Arsenic	Target	13.9		mg/kg	13.9		1	YES	S3VEM
Barium	Target	116		mg/kg	116	*	1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.96		mg/kg	0.96	*	1	YES	S3VEM
Calcium	Target	24300		mg/kg	24300	*	1	YES	S3VEM
Chromium	Target	16.0		mg/kg	16.0	*	1	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Copper	Target	32.2		mg/kg	32.2	*	1	YES	S3VEM
Iron	Target	17500		mg/kg	17500	*	1	YES	S3VEM
Lead	Target	183		mg/kg	183	*	1	YES	S3VEM
Magnesium	Target	4500		mg/kg	4500	*	1	YES	S3VEM
Manganese	Target	1360		mg/kg	1360	*	1	YES	S3VEM
Nickel	Target	21.3		mg/kg	21.3		1	YES	S3VEM
Potassium	Target	2440		mg/kg	2440	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.095	J	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	70.3	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	374		mg/kg	374	*	1	YES	S3VEM
Tin	Target	5.9		mg/kg	5.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	Sample Time: 09:50:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11900	J	mg/kg	11900	*	1	YES	S3VEM
Antimony	Target	6.0	UJ	mg/kg	0.48	J*	1	YES	S3VEM
Arsenic	Target	12.6		mg/kg	12.6		1	YES	S3VEM
Barium	Target	112	J	mg/kg	112	*	1	YES	S3VEM
Beryllium	Target	0.73		mg/kg	0.73		1	YES	S3VEM
Cadmium	Target	0.71	J-	mg/kg	0.71	*	1	YES	S3VEM
Calcium	Target	46000	J	mg/kg	46000	D*	2	YES	S3VEM
Chromium	Target	14.8	J	mg/kg	14.8	*	1	YES	S3VEM
Cobalt	Target	6.2	J	mg/kg	6.2	*	1	YES	S3VEM
Copper	Target	32.8	J	mg/kg	32.8	*	1	YES	S3VEM
Iron	Target	16900	J	mg/kg	16900	*	1	YES	S3VEM
Lead	Target	163		mg/kg	163	*	1	YES	S3VEM
Magnesium	Target	6540	J	mg/kg	6540	*	1	YES	S3VEM
Manganese	Target	1370	J	mg/kg	1370	*	1	YES	S3VEM
Nickel	Target	18.1		mg/kg	18.1		1	YES	S3VEM
Potassium	Target	2580	J	mg/kg	2580	*	1	YES	S3VEM
Selenium	Target	3.5	UJ	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.073	J	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	75.2	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	20.0	J	mg/kg	20.0	*	1	YES	S3VEM
Zinc	Target	264		mg/kg	264	*	1	YES	S3VEM
Tin	Target	5.0	UJ	mg/kg	4.2	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y6A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 09:50:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	10.1		mg/kg	10.1		1	YES	S3VEM
Cadmium	Spike	1.4		mg/kg	1.4	*	1	YES	S3VEM
Chromium	Spike	38.2		mg/kg	38.2		1	YES	S3VEM
Cobalt	Spike	22.0		mg/kg	22.0	*	1	YES	S3VEM
Selenium	Spike	6.5		mg/kg	6.5	*	1	YES	S3VEM
Vanadium	Spike	55.6		mg/kg	55.6		1	YES	S3VEM
Tin	Spike	4.5		mg/kg	4.5	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y6D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 09:50:00
% 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	0.44	J	mg/kg	0.44	J	1	YES	S3VEM
Arsenic	Target	12.9		mg/kg	12.9		1	YES	S3VEM
Barium	Target	110		mg/kg	110		1	YES	S3VEM
Beryllium	Target	0.71		mg/kg	0.71		1	YES	S3VEM
Cadmium	Target	0.72		mg/kg	0.72		1	YES	S3VEM
Calcium	Target	47200		mg/kg	47200	D	2	YES	S3VEM
Chromium	Target	14.5		mg/kg	14.5		1	YES	S3VEM
Cobalt	Target	6.3		mg/kg	6.3		1	YES	S3VEM
Copper	Target	32.9		mg/kg	32.9		1	YES	S3VEM
Iron	Target	16900		mg/kg	16900		1	YES	S3VEM
Lead	Target	167		mg/kg	167		1	YES	S3VEM
Magnesium	Target	6530		mg/kg	6530		1	YES	S3VEM
Manganese	Target	1380		mg/kg	1380		1	YES	S3VEM
Nickel	Target	18.3		mg/kg	18.3		1	YES	S3VEM
Potassium	Target	2330		mg/kg	2330		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J	1	YES	S3VEM
Silver	Target	0.087	J	mg/kg	0.087	J	1	YES	S3VEM
Sodium	Target	72.7	J	mg/kg	72.7	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	18.9		mg/kg	18.9		1	YES	S3VEM
Zinc	Target	263		mg/kg	263		1	YES	S3VEM
Tin	Target	4.5		mg/kg	4.5	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y6L	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	14700		mg/kg	14700	*	5	YES	S3VEM
Antimony	Target	29.8	U	mg/kg	29.8	U	5	YES	S3VEM
Arsenic	Target	13.2		mg/kg	13.2		5	YES	S3VEM
Barium	Target	138		mg/kg	138	*	5	YES	S3VEM
Beryllium	Target	0.80	J	mg/kg	0.80	J	5	YES	S3VEM
Cadmium	Target	0.96	J	mg/kg	0.96	J*	5	YES	S3VEM
Calcium	Target	55400		mg/kg	55400	D*	10	YES	S3VEM
Chromium	Target	20.0		mg/kg	20.0	*	5	YES	S3VEM
Cobalt	Target	8.6	J	mg/kg	8.6	J*	5	YES	S3VEM
Copper	Target	41.8		mg/kg	41.8	*	5	YES	S3VEM
Iron	Target	22300		mg/kg	22300	*	5	YES	S3VEM
Lead	Target	183		mg/kg	183	*	5	YES	S3VEM
Magnesium	Target	8430		mg/kg	8430	*	5	YES	S3VEM
Manganese	Target	1780		mg/kg	1780	*	5	YES	S3VEM
Nickel	Target	19.8		mg/kg	19.8	J	5	YES	S3VEM
Potassium	Target	3140		mg/kg	3140	*	5	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J	5	YES	S3VEM
Silver	Target	0.35	J	mg/kg	0.35	J	5	YES	S3VEM
Sodium	Target	252	J	mg/kg	252	J*	5	YES	S3VEM
Thallium	Target	12.4	U	mg/kg	12.4	U	5	YES	S3VEM
Vanadium	Target	26.0		mg/kg	26.0	*	5	YES	S3VEM
Zinc	Target	294		mg/kg	294	*	5	YES	S3VEM
Tin	Target	5.7		mg/kg	5.7	J*	5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y6S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 09:50:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	5.3	J	mg/kg	5.3	J	1	YES	S3VEM
Arsenic	Spike	20.0		mg/kg	20.0		1	YES	S3VEM
Barium	Spike	429		mg/kg	429		1	YES	S3VEM
Beryllium	Spike	9.8		mg/kg	9.8		1	YES	S3VEM
Cadmium	Spike	7.8		mg/kg	7.8		1	YES	S3VEM
Chromium	Spike	44.4		mg/kg	44.4		1	YES	S3VEM
Cobalt	Spike	78.8		mg/kg	78.8		1	YES	S3VEM
Copper	Spike	72.9		mg/kg	72.9		1	YES	S3VEM
Lead	Spike	167		mg/kg	167		1	YES	S3VEM
Manganese	Spike	1460		mg/kg	1460		1	YES	S3VEM
Nickel	Spike	112		mg/kg	112		1	YES	S3VEM
Selenium	Spike	15.9		mg/kg	15.9		1	YES	S3VEM
Silver	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Thallium	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Vanadium	Spike	92.4		mg/kg	92.4		1	YES	S3VEM
Zinc	Spike	346		mg/kg	346		1	YES	S3VEM
Tin	Spike	67.2		mg/kg	67.2		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0Y7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	Sample Time: 09:55:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11500		mg/kg	11500	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	0.53	J*	1	YES	S3VEM
Arsenic	Target	12.8		mg/kg	12.8		1	YES	S3VEM
Barium	Target	108		mg/kg	108	*	1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75		1	YES	S3VEM
Cadmium	Target	0.72		mg/kg	0.72	*	1	YES	S3VEM
Calcium	Target	45600		mg/kg	45600	D*	2	YES	S3VEM
Chromium	Target	14.5		mg/kg	14.5	*	1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	32.0		mg/kg	32.0	*	1	YES	S3VEM
Iron	Target	17500		mg/kg	17500	*	1	YES	S3VEM
Lead	Target	148		mg/kg	148	*	1	YES	S3VEM
Magnesium	Target	6150		mg/kg	6150	*	1	YES	S3VEM
Manganese	Target	1440		mg/kg	1440	*	1	YES	S3VEM
Nickel	Target	18.8		mg/kg	18.8		1	YES	S3VEM
Potassium	Target	2370		mg/kg	2370	*	1	YES	S3VEM
Selenium	Target	3.4	U	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.97	U	mg/kg	0.14	J	1	YES	S3VEM
Sodium	Target	487	U	mg/kg	71.5	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	19.4		mg/kg	19.4	*	1	YES	S3VEM
Zinc	Target	249		mg/kg	249	*	1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	4.6	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S002	pH:	Sample Date: 11/15/2017	Sample Time: 10:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10100		mg/kg	10100	*	1	YES	S3VEM
Antimony	Target	5.6	U	mg/kg	0.29	J*	1	YES	S3VEM
Arsenic	Target	6.9		mg/kg	6.9		1	YES	S3VEM
Barium	Target	54.6		mg/kg	54.6	*	1	YES	S3VEM
Beryllium	Target	0.56		mg/kg	0.56		1	YES	S3VEM
Cadmium	Target	0.47	U	mg/kg	0.36	J*	1	YES	S3VEM
Calcium	Target	77400		mg/kg	77400	D*	3	YES	S3VEM
Chromium	Target	11.5		mg/kg	11.5	*	1	YES	S3VEM
Cobalt	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM
Copper	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Iron	Target	14800		mg/kg	14800	*	1	YES	S3VEM
Lead	Target	36.7		mg/kg	36.7	*	1	YES	S3VEM
Magnesium	Target	9780		mg/kg	9780	*	1	YES	S3VEM
Manganese	Target	842		mg/kg	842	*	1	YES	S3VEM
Nickel	Target	15.8		mg/kg	15.8		1	YES	S3VEM
Potassium	Target	2310		mg/kg	2310	*	1	YES	S3VEM
Selenium	Target	3.3	U	mg/kg	0.88	J*	1	YES	S3VEM
Silver	Target	0.94	U	mg/kg	0.94	U	1	YES	S3VEM
Sodium	Target	469	U	mg/kg	81.9	J*	1	YES	S3VEM
Thallium	Target	2.3	U	mg/kg	2.3	U	1	YES	S3VEM
Vanadium	Target	16.2		mg/kg	16.2	*	1	YES	S3VEM
Zinc	Target	89.2		mg/kg	89.2	*	1	YES	S3VEM
Tin	Target	4.7	U	mg/kg	1.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

Sample Number: MBE0Y9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S003	pH:	Sample Date: 11/15/2017	Sample Time: 09:36:00
% 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	0.63	J*	1	YES	S3VEM
Arsenic	Target	15.0		mg/kg	15.0		1	YES	S3VEM
Barium	Target	154		mg/kg	154	*	1	YES	S3VEM
Beryllium	Target	0.80		mg/kg	0.80		1	YES	S3VEM
Cadmium	Target	0.91		mg/kg	0.91	*	1	YES	S3VEM
Calcium	Target	13200		mg/kg	13200	*	1	YES	S3VEM
Chromium	Target	20.4		mg/kg	20.4	*	1	YES	S3VEM
Cobalt	Target	7.5		mg/kg	7.5	*	1	YES	S3VEM
Copper	Target	50.2		mg/kg	50.2	*	1	YES	S3VEM
Iron	Target	18300		mg/kg	18300	*	1	YES	S3VEM
Lead	Target	166		mg/kg	166	*	1	YES	S3VEM
Magnesium	Target	4790		mg/kg	4790	*	1	YES	S3VEM
Manganese	Target	1370		mg/kg	1370	*	1	YES	S3VEM
Nickel	Target	25.5		mg/kg	25.5		1	YES	S3VEM
Potassium	Target	2490		mg/kg	2490	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	0.16	J	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	62.7	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM
Zinc	Target	309		mg/kg	309	*	1	YES	S3VEM
Tin	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **Lab Code: BON**

Sample Number: MBE0Z0	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P037-S003	pH:	Sample Date: 11/15/2017	Sample Time: 09:52:00
% 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	0.87	J*	1	YES	S3VEM
Arsenic	Target	17.6		mg/kg	17.6		1	YES	S3VEM
Barium	Target	207		mg/kg	207	*	1	YES	S3VEM
Beryllium	Target	0.92		mg/kg	0.92		1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	11200		mg/kg	11200	*	1	YES	S3VEM
Chromium	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	105		mg/kg	105	*	1	YES	S3VEM
Iron	Target	20000		mg/kg	20000	*	1	YES	S3VEM
Lead	Target	184		mg/kg	184	*	1	YES	S3VEM
Magnesium	Target	4120		mg/kg	4120	*	1	YES	S3VEM
Manganese	Target	1580		mg/kg	1580	*	1	YES	S3VEM
Nickel	Target	29.2		mg/kg	29.2		1	YES	S3VEM
Potassium	Target	2460		mg/kg	2460	*	1	YES	S3VEM
Selenium	Target	3.5	U	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.23	J	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	65.7	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	346		mg/kg	346	*	1	YES	S3VEM
Tin	Target	6.5		mg/kg	6.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0W8** | **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	0.37	J	mg/kg	0.37	J	1	YES	S3VEM
Arsenic	Target			mg/kg	-0.18	J	1	YES	S3VEM
Barium	Target	20.0	U	mg/kg	20.0	U	1	YES	S3VEM
Beryllium	Target	0.0024	J	mg/kg	0.0024	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	0.085	J	mg/kg	0.085	J	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target	0.097	J	mg/kg	0.097	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	5.6	J	mg/kg	5.6	J	1	YES	S3VEM
Selenium	Target	0.42	J	mg/kg	0.42	J	1	YES	S3VEM
Silver	Target	0.049	J	mg/kg	0.049	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Thallium	Target			mg/kg	-0.22	J	1	YES	S3VEM
Vanadium	Target	0.052	J	mg/kg	0.052	J	1	YES	S3VEM
Zinc	Target	0.076	J	mg/kg	0.076	J	1	YES	S3VEM
Tin	Target	1.1		mg/kg	1.1	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0W8	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteenmile Creek
Number of Samples: 3 (Water)
Analysis: Metals (ICP-AES)

SDG No.: MBE0X6
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/14/2017-11/16/2017
Validation SOP: HW-3a

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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): Raxa J. Shelley

Approver's Signature: **Date: 01/11/2018**

Name: **Narendra Kumar**

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.	

DATA ASSESSMENT

ANALYSIS: METALS ICP-AES (MA# 2731.1)

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 ±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.

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 qualifiers are applied because samples are rinse 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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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.

Not applicable.

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 ≥ 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.

Not applicable.

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 ≥ 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.

Not applicable.

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: 47320 | **Contract: EPW14029** | **SDG: MBE0X6** | **Lab Code: BON**

Sample Number: LCS01	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
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	392		ug/L	392		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	411		ug/L	411		1	YES	S3VEM
Beryllium	Spike	9.7		ug/L	9.7		1	YES	S3VEM
Cadmium	Spike	10.3		ug/L	10.3		1	YES	S3VEM
Calcium	Spike	10200		ug/L	10200		1	YES	S3VEM
Chromium	Spike	20.9		ug/L	20.9		1	YES	S3VEM
Cobalt	Spike	100		ug/L	100		1	YES	S3VEM
Copper	Spike	46.3		ug/L	46.3		1	YES	S3VEM
Iron	Spike	204		ug/L	204		1	YES	S3VEM
Lead	Spike	18.6		ug/L	18.6		1	YES	S3VEM
Magnesium	Spike	9600		ug/L	9600		1	YES	S3VEM
Manganese	Spike	29.9		ug/L	29.9		1	YES	S3VEM
Nickel	Spike	79.6		ug/L	79.6		1	YES	S3VEM
Potassium	Spike	9490		ug/L	9490		1	YES	S3VEM
Selenium	Spike	72.5		ug/L	72.5		1	YES	S3VEM
Silver	Spike	20.0		ug/L	20.0		1	YES	S3VEM
Sodium	Spike	9670		ug/L	9670		1	YES	S3VEM
Thallium	Spike	46.8		ug/L	46.8		1	YES	S3VEM
Vanadium	Spike	100		ug/L	100		1	YES	S3VEM
Zinc	Spike	125		ug/L	125		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0X6** | **Lab Code: BON**

Sample Number: LCS02	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
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	12.2		ug/L	12.2		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0X6	Lab Code: BON

Sample Number: MBE0X6	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
Sample Location: Rinsate	pH: 1.	Sample Date: 11/14/2017	Sample Time: 17:30:00
% 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	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	5000	U	ug/L	5000	U	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	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: 47320 | **Contract: EPW14029** | **SDG: MBE0X6** | **Lab Code: BON**

Sample Number: MBE167	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
Sample Location: Rinsate	pH: 1.	Sample Date: 11/15/2017	Sample Time: 17:30:00
% 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	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	5000	U	ug/L	5000	U	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	20.3	J	ug/L	20.3	J	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	267	J	ug/L	267	J	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: 47320 | **Contract: EPW14029** | **SDG: MBE0X6** | **Lab Code: BON**

Sample Number: MBE168	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
Sample Location: Rinsate	pH: 1.	Sample Date: 11/16/2017	Sample Time: 17:45:00
% 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	5000	U	ug/L	5000	U	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	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: 47320 | **Contract: EPW14029** | **SDG: MBE0X6** | **Lab Code: BON**

Sample Number: PBW01	Method: Metals by ICP-AES	Matrix: Water	MA Number: 2731.2
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	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			ug/L	-1.9	J	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			ug/L	-29	J	1	YES	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	1	YES	S3VEM
Cobalt	Target			ug/L	-0.30	J	1	YES	S3VEM
Copper	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Iron	Target			ug/L	-9.7	J	1	YES	S3VEM
Lead	Target			ug/L	-2.1	J	1	YES	S3VEM
Magnesium	Target	5000	U	ug/L	5000	U	1	YES	S3VEM
Manganese	Target			ug/L	-1.3	J	1	YES	S3VEM
Nickel	Target	40.0	U	ug/L	40.0	U	1	YES	S3VEM
Potassium	Target			ug/L	-62	J	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			ug/L	-29	J	1	YES	S3VEM
Thallium	Target	25.0	U	ug/L	25.0	U	1	YES	S3VEM
Vanadium	Target			ug/L	-0.63	J	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: 47320	Contract: EPW14029	SDG: MBE0X6	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteeenmile Creek
Number of Samples: 20 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE0Z6
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/15/2017
Validation SOP: HW-3a (Rev 1)

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Sample MBE108 has analytes that have been qualified J, J+ or J-.

Minor Findings:
None

COMMENT:	Concentrations of **Lead and Manganese** exceeded the project action levels for one or more samples.

Reviewer Name(s): Jianwei Huang

Approver's Signature: **Date: 01/08/2018**

Name: **Narendra Kumar**

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.	

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 ±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.

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 MBE111, MBE104, MBE113, MBE102, MBE101, MBE110, MBE100, MBE109, MBE114, MBE112, MBE103, MBE0Z9, MBE0Z7, MBE0Z8, MBE107, MBE108, MBE105, MBE106, MBE115, MBE0Z6

Sodium MBE0Z6, MBE0Z9, MBE105, MBE109, MBE110, MBE115, MBE112, MBE100, MBE113, MBE114, MBE108, MBE106, MBE111, MBE101, MBE104, MBE0Z8, MBE102, MBE0Z7, MBE103, MBE107

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 MBE113, MBE105, MBE0Z6, MBE102, MBE110, MBE101, MBE100, MBE103, MBE0Z7, MBE107, MBE111, MBE109, MBE114, MBE112, MBE115, MBE104, MBE0Z9, MBE0Z8, MBE108, MBE106

Sodium MBE108, MBE106, MBE107, MBE111, MBE109, MBE0Z6, MBE115, MBE101, MBE0Z8, MBE104, MBE102, MBE0Z7, MBE0Z9, MBE112, MBE110, MBE103, MBE100, MBE113, MBE114, MBE105

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.

Antimony MBE113, MBE0Z6, MBE105, MBE108, MBE0Z8, MBE0Z9, MBE106, MBE102, MBE110, MBE101, MBE100, MBE104, MBE115, MBE112, MBE114, MBE109, MBE111, MBE107, MBE0Z7, MBE103

Tin MBE114, MBE109, MBE103, MBE108, MBE107

Field Blank MBE167 in SDG MBE0X6

No additional qualification is required for the field blank contamination.

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 Silver spike analyte %R within 30 - 74% and the post digestion spike is not required. Detects are qualified as J-. Nondetects are qualified as UJ.

Silver MBE108

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. Nondetects are qualified as UJ.

Antimony MBE108

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-. Nondetects are qualified as UJ.

Arsenic, Beryllium, Cadmium, Cobalt, Selenium, Vanadium and Zinc MBE108

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 ≥ 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 (MBE108/MBE109)

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 ≥ 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.

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 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. Nondetects are not qualified.

Aluminum, Barium, Beryllium, Calcium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium and Vanadium MBE108

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: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **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	44.1		mg/kg	44.1		1	YES	S3VEM
Antimony	Spike	12.4		mg/kg	12.4		1	YES	S3VEM
Arsenic	Spike	1.9		mg/kg	1.9		1	YES	S3VEM
Barium	Spike	40.4		mg/kg	40.4		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	1090		mg/kg	1090		1	YES	S3VEM
Chromium	Spike	2.3		mg/kg	2.3		1	YES	S3VEM
Cobalt	Spike	10.5		mg/kg	10.5		1	YES	S3VEM
Copper	Spike	4.7		mg/kg	4.7		1	YES	S3VEM
Iron	Spike	23.5		mg/kg	23.5		1	YES	S3VEM
Lead	Spike	2.2		mg/kg	2.2		1	YES	S3VEM
Magnesium	Spike	1050		mg/kg	1050		1	YES	S3VEM
Manganese	Spike	3.4		mg/kg	3.4		1	YES	S3VEM
Nickel	Spike	8.4		mg/kg	8.4		1	YES	S3VEM
Potassium	Spike	1040		mg/kg	1040		1	YES	S3VEM
Selenium	Spike	7.2		mg/kg	7.2		1	YES	S3VEM
Silver	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Sodium	Spike	1030		mg/kg	1030		1	YES	S3VEM
Thallium	Spike	5.2		mg/kg	5.2		1	YES	S3VEM
Vanadium	Spike	10.1		mg/kg	10.1		1	YES	S3VEM
Zinc	Spike	12.9		mg/kg	12.9		1	YES	S3VEM
Tin	Spike	10.8		mg/kg	10.8		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE0Z6	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S001	pH:	Sample Date: 11/15/2017	Sample Time: 12:16:00
% 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	5.9	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	12.1		mg/kg	12.1	*	1	YES	S3VEM
Barium	Target	195		mg/kg	195	*	1	YES	S3VEM
Beryllium	Target	0.69		mg/kg	0.69	*	1	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1	YES	S3VEM
Calcium	Target	16100		mg/kg	16100	*	1	YES	S3VEM
Chromium	Target	23.9		mg/kg	23.9		1	YES	S3VEM
Cobalt	Target	7.5		mg/kg	7.5	*	1	YES	S3VEM
Copper	Target	50.7		mg/kg	50.7	*	1	YES	S3VEM
Iron	Target	19400		mg/kg	19400	*	1	YES	S3VEM
Lead	Target	547		mg/kg	547	*	1	YES	S3VEM
Magnesium	Target	5580		mg/kg	5580	*	1	YES	S3VEM
Manganese	Target	1040		mg/kg	1040	*	1	YES	S3VEM
Nickel	Target	27.0		mg/kg	27.0	*	1	YES	S3VEM
Potassium	Target	2200		mg/kg	2200	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.37	J	mg/kg	0.37	J*	1	YES	S3VEM
Sodium	Target	489	U	mg/kg	110	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Zinc	Target	289		mg/kg	289	*	1	YES	S3VEM
Tin	Target	10.9		mg/kg	10.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE0Z7	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S001	pH:	Sample Date: 11/15/2017	Sample Time: 12:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12200		mg/kg	12200	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.85	J*	1	YES	S3VEM
Arsenic	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Barium	Target	129		mg/kg	129	*	1	YES	S3VEM
Beryllium	Target	0.56		mg/kg	0.56	*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	10500		mg/kg	10500	*	1	YES	S3VEM
Chromium	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	30.9		mg/kg	30.9	*	1	YES	S3VEM
Iron	Target	17700		mg/kg	17700	*	1	YES	S3VEM
Lead	Target	279		mg/kg	279	*	1	YES	S3VEM
Magnesium	Target	4330		mg/kg	4330	*	1	YES	S3VEM
Manganese	Target	817		mg/kg	817	*	1	YES	S3VEM
Nickel	Target	20.2		mg/kg	20.2	*	1	YES	S3VEM
Potassium	Target	1840		mg/kg	1840	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.30	J	mg/kg	0.30	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	90.1	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM
Zinc	Target	167		mg/kg	167	*	1	YES	S3VEM
Tin	Target	10.9		mg/kg	10.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE0Z8	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S001	pH:	Sample Date: 11/15/2017	Sample Time: 12:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11400		mg/kg	11400	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.91	J*	1	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7	*	1	YES	S3VEM
Barium	Target	155		mg/kg	155	*	1	YES	S3VEM
Beryllium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1	YES	S3VEM
Calcium	Target	16600		mg/kg	16600	*	1	YES	S3VEM
Chromium	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1	YES	S3VEM
Copper	Target	34.8		mg/kg	34.8	*	1	YES	S3VEM
Iron	Target	19900		mg/kg	19900	*	1	YES	S3VEM
Lead	Target	435		mg/kg	435	*	1	YES	S3VEM
Magnesium	Target	5120		mg/kg	5120	*	1	YES	S3VEM
Manganese	Target	1210		mg/kg	1210	*	1	YES	S3VEM
Nickel	Target	22.0		mg/kg	22.0	*	1	YES	S3VEM
Potassium	Target	2120		mg/kg	2120	*	1	YES	S3VEM
Selenium	Target	1.3	J	mg/kg	1.3	J*	1	YES	S3VEM
Silver	Target	0.40	J	mg/kg	0.40	J*	1	YES	S3VEM
Sodium	Target	491	U	mg/kg	108	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	20.9		mg/kg	20.9	*	1	YES	S3VEM
Zinc	Target	179		mg/kg	179	*	1	YES	S3VEM
Tin	Target	28.2		mg/kg	28.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE0Z9	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 11:37:00
% 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	5.9	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	10.6		mg/kg	10.6	*	1	YES	S3VEM
Barium	Target	198		mg/kg	198	*	1	YES	S3VEM
Beryllium	Target	0.65		mg/kg	0.65	*	1	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1	YES	S3VEM
Calcium	Target	17600		mg/kg	17600	*	1	YES	S3VEM
Chromium	Target	24.7		mg/kg	24.7		1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	42.7		mg/kg	42.7	*	1	YES	S3VEM
Iron	Target	19100		mg/kg	19100	*	1	YES	S3VEM
Lead	Target	659		mg/kg	659	*	1	YES	S3VEM
Magnesium	Target	5640		mg/kg	5640	*	1	YES	S3VEM
Manganese	Target	1130		mg/kg	1130	*	1	YES	S3VEM
Nickel	Target	27.4		mg/kg	27.4	*	1	YES	S3VEM
Potassium	Target	2660		mg/kg	2660	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.31	J	mg/kg	0.31	J*	1	YES	S3VEM
Sodium	Target	494	U	mg/kg	69.7	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.4		mg/kg	22.4	*	1	YES	S3VEM
Zinc	Target	365		mg/kg	365	*	1	YES	S3VEM
Tin	Target	7.7		mg/kg	7.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE100	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 11:37:00
% 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	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	10.2		mg/kg	10.2	*	1	YES	S3VEM
Barium	Target	236		mg/kg	236	*	1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63	*	1	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1	YES	S3VEM
Calcium	Target	17100		mg/kg	17100	*	1	YES	S3VEM
Chromium	Target	25.8		mg/kg	25.8		1	YES	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Copper	Target	45.0		mg/kg	45.0	*	1	YES	S3VEM
Iron	Target	19300		mg/kg	19300	*	1	YES	S3VEM
Lead	Target	747		mg/kg	747	*	1	YES	S3VEM
Magnesium	Target	5560		mg/kg	5560	*	1	YES	S3VEM
Manganese	Target	1070		mg/kg	1070	*	1	YES	S3VEM
Nickel	Target	26.2		mg/kg	26.2	*	1	YES	S3VEM
Potassium	Target	2370		mg/kg	2370	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.41	J	mg/kg	0.41	J*	1	YES	S3VEM
Sodium	Target	491	U	mg/kg	75.4	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.7		mg/kg	22.7	*	1	YES	S3VEM
Zinc	Target	402		mg/kg	402	*	1	YES	S3VEM
Tin	Target	9.3		mg/kg	9.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE101	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 12:32:00
% 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	5.8	U	mg/kg	0.85	J*	1	YES	S3VEM
Arsenic	Target	10.5		mg/kg	10.5	*	1	YES	S3VEM
Barium	Target	243		mg/kg	243	*	1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62	*	1	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1	YES	S3VEM
Calcium	Target	16200		mg/kg	16200	*	1	YES	S3VEM
Chromium	Target	27.1		mg/kg	27.1		1	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Copper	Target	57.6		mg/kg	57.6	*	1	YES	S3VEM
Iron	Target	18800		mg/kg	18800	*	1	YES	S3VEM
Lead	Target	805		mg/kg	805	*	1	YES	S3VEM
Magnesium	Target	4930		mg/kg	4930	*	1	YES	S3VEM
Manganese	Target	938		mg/kg	938	*	1	YES	S3VEM
Nickel	Target	28.1		mg/kg	28.1	*	1	YES	S3VEM
Potassium	Target	2030		mg/kg	2030	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.35	J	mg/kg	0.35	J*	1	YES	S3VEM
Sodium	Target	484	U	mg/kg	77.0	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	23.1		mg/kg	23.1	*	1	YES	S3VEM
Zinc	Target	437		mg/kg	437	*	1	YES	S3VEM
Tin	Target	8.4		mg/kg	8.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE102	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 12:32:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13500		mg/kg	13500	*	1	YES	S3VEM
Antimony	Target	5.3	U	mg/kg	0.98	J*	1	YES	S3VEM
Arsenic	Target	13.5		mg/kg	13.5	*	1	YES	S3VEM
Barium	Target	333		mg/kg	333	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	17000		mg/kg	17000	*	1	YES	S3VEM
Chromium	Target	27.9		mg/kg	27.9		1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	87.0		mg/kg	87.0	*	1	YES	S3VEM
Iron	Target	20800		mg/kg	20800	*	1	YES	S3VEM
Lead	Target	1450		mg/kg	1450	*	1	YES	S3VEM
Magnesium	Target	4420		mg/kg	4420	*	1	YES	S3VEM
Manganese	Target	1160		mg/kg	1160	*	1	YES	S3VEM
Nickel	Target	25.5		mg/kg	25.5	*	1	YES	S3VEM
Potassium	Target	2260		mg/kg	2260	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.39	J	mg/kg	0.39	J*	1	YES	S3VEM
Sodium	Target	442	U	mg/kg	156	J	1	YES	S3VEM
Thallium	Target	2.2	U	mg/kg	2.2	U	1	YES	S3VEM
Vanadium	Target	26.3		mg/kg	26.3	*	1	YES	S3VEM
Zinc	Target	400		mg/kg	400	*	1	YES	S3VEM
Tin	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE103	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 12:32:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14100		mg/kg	14100	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.76	J*	1	YES	S3VEM
Arsenic	Target	12.2		mg/kg	12.2	*	1	YES	S3VEM
Barium	Target	108		mg/kg	108	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Calcium	Target	7700		mg/kg	7700	*	1	YES	S3VEM
Chromium	Target	21.5		mg/kg	21.5		1	YES	S3VEM
Cobalt	Target	8.6		mg/kg	8.6	*	1	YES	S3VEM
Copper	Target	30.4		mg/kg	30.4	*	1	YES	S3VEM
Iron	Target	20500		mg/kg	20500	*	1	YES	S3VEM
Lead	Target	147		mg/kg	147	*	1	YES	S3VEM
Magnesium	Target	3250		mg/kg	3250	*	1	YES	S3VEM
Manganese	Target	2290		mg/kg	2290	D*	2	YES	S3VEM
Nickel	Target	20.5		mg/kg	20.5	*	1	YES	S3VEM
Potassium	Target	2310		mg/kg	2310	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.34	J	mg/kg	0.34	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	55.7	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	106		mg/kg	106	*	1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	2.9	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE104	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S002	pH:	Sample Date: 11/15/2017	Sample Time: 12:48:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12100		mg/kg	12100	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	10.8		mg/kg	10.8	*	1	YES	S3VEM
Barium	Target	379		mg/kg	379	*	1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63	*	1	YES	S3VEM
Cadmium	Target	1.9		mg/kg	1.9	*	1	YES	S3VEM
Calcium	Target	15800		mg/kg	15800	*	1	YES	S3VEM
Chromium	Target	25.9		mg/kg	25.9		1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	49.6		mg/kg	49.6	*	1	YES	S3VEM
Iron	Target	19200		mg/kg	19200	*	1	YES	S3VEM
Lead	Target	942		mg/kg	942	*	1	YES	S3VEM
Magnesium	Target	5200		mg/kg	5200	*	1	YES	S3VEM
Manganese	Target	1250		mg/kg	1250	*	1	YES	S3VEM
Nickel	Target	29.0		mg/kg	29.0	*	1	YES	S3VEM
Potassium	Target	2550		mg/kg	2550	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.40	J	mg/kg	0.40	J*	1	YES	S3VEM
Sodium	Target	484	U	mg/kg	82.1	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	23.1		mg/kg	23.1	*	1	YES	S3VEM
Zinc	Target	454		mg/kg	454	*	1	YES	S3VEM
Tin	Target	9.6		mg/kg	9.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE105	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S003	pH:	Sample Date: 11/15/2017	Sample Time: 12:51:00
% 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	0.99	J*	1	YES	S3VEM
Arsenic	Target	10.6		mg/kg	10.6	*	1	YES	S3VEM
Barium	Target	429		mg/kg	429	*	1	YES	S3VEM
Beryllium	Target	0.64		mg/kg	0.64	*	1	YES	S3VEM
Cadmium	Target	1.8		mg/kg	1.8	*	1	YES	S3VEM
Calcium	Target	19200		mg/kg	19200	*	1	YES	S3VEM
Chromium	Target	25.7		mg/kg	25.7		1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	50.5		mg/kg	50.5	*	1	YES	S3VEM
Iron	Target	20500		mg/kg	20500	*	1	YES	S3VEM
Lead	Target	885		mg/kg	885	*	1	YES	S3VEM
Magnesium	Target	5980		mg/kg	5980	*	1	YES	S3VEM
Manganese	Target	1100		mg/kg	1100	*	1	YES	S3VEM
Nickel	Target	27.7		mg/kg	27.7	*	1	YES	S3VEM
Potassium	Target	2580		mg/kg	2580	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.36	J	mg/kg	0.36	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	94.3	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	24.2		mg/kg	24.2	*	1	YES	S3VEM
Zinc	Target	434		mg/kg	434	*	1	YES	S3VEM
Tin	Target	12.1		mg/kg	12.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE106	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S003	pH:	Sample Date: 11/15/2017	Sample Time: 13:11:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14300		mg/kg	14300	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.85	J*	1	YES	S3VEM
Arsenic	Target	11.3		mg/kg	11.3	*	1	YES	S3VEM
Barium	Target	223		mg/kg	223	*	1	YES	S3VEM
Beryllium	Target	0.71		mg/kg	0.71	*	1	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3	*	1	YES	S3VEM
Calcium	Target	12200		mg/kg	12200	*	1	YES	S3VEM
Chromium	Target	25.0		mg/kg	25.0		1	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4	*	1	YES	S3VEM
Copper	Target	41.2		mg/kg	41.2	*	1	YES	S3VEM
Iron	Target	20600		mg/kg	20600	*	1	YES	S3VEM
Lead	Target	557		mg/kg	557	*	1	YES	S3VEM
Magnesium	Target	4390		mg/kg	4390	*	1	YES	S3VEM
Manganese	Target	1430		mg/kg	1430	*	1	YES	S3VEM
Nickel	Target	24.7		mg/kg	24.7	*	1	YES	S3VEM
Potassium	Target	2690		mg/kg	2690	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	78.5	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Zinc	Target	253		mg/kg	253	*	1	YES	S3VEM
Tin	Target	10.4		mg/kg	10.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE107	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S003	pH:	Sample Date: 11/15/2017	Sample Time: 13:26:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13700		mg/kg	13700	*	1	YES	S3VEM
Antimony	Target	5.7	U	mg/kg	0.88	J*	1	YES	S3VEM
Arsenic	Target	10.7		mg/kg	10.7	*	1	YES	S3VEM
Barium	Target	163		mg/kg	163	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	7260		mg/kg	7260	*	1	YES	S3VEM
Chromium	Target	21.8		mg/kg	21.8		1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	35.9		mg/kg	35.9	*	1	YES	S3VEM
Iron	Target	21000		mg/kg	21000	*	1	YES	S3VEM
Lead	Target	311		mg/kg	311	*	1	YES	S3VEM
Magnesium	Target	3040		mg/kg	3040	*	1	YES	S3VEM
Manganese	Target	2290		mg/kg	2290	D*	2	YES	S3VEM
Nickel	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Potassium	Target	2770		mg/kg	2770	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.40	J	mg/kg	0.40	J*	1	YES	S3VEM
Sodium	Target	478	U	mg/kg	53.8	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	22.3		mg/kg	22.3	*	1	YES	S3VEM
Zinc	Target	154		mg/kg	154	*	1	YES	S3VEM
Tin	Target	4.8	U	mg/kg	4.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE108	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S003	pH:	Sample Date: 11/15/2017	Sample Time: 13:29:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13900	J	mg/kg	13900	*	1	YES	S3VEM
Antimony	Target	5.9	UJ	mg/kg	0.79	J*	1	YES	S3VEM
Arsenic	Target	9.5	J-	mg/kg	9.5	*	1	YES	S3VEM
Barium	Target	131	J	mg/kg	131	*	1	YES	S3VEM
Beryllium	Target	0.69	J-	mg/kg	0.69	*	1	YES	S3VEM
Cadmium	Target	1.1	J-	mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	22500	J	mg/kg	22500	*	1	YES	S3VEM
Chromium	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Cobalt	Target	8.3	J-	mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	26.3	J	mg/kg	26.3	*	1	YES	S3VEM
Iron	Target	22600	J	mg/kg	22600	*	1	YES	S3VEM
Lead	Target	174	J	mg/kg	174	*	1	YES	S3VEM
Magnesium	Target	5250	J	mg/kg	5250	*	1	YES	S3VEM
Manganese	Target	2550	J	mg/kg	2550	D*	2	YES	S3VEM
Nickel	Target	21.4	J	mg/kg	21.4	*	1	YES	S3VEM
Potassium	Target	2720	J	mg/kg	2720	*	1	YES	S3VEM
Selenium	Target	1.8	J-	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.52	J-	mg/kg	0.52	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	60.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.3	J-	mg/kg	23.3	*	1	YES	S3VEM
Zinc	Target	112	J-	mg/kg	112	*	1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	3.1	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE108A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 13:29:00
% 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
Arsenic	Spike	19.9		mg/kg	19.9	*	1	YES	S3VEM
Beryllium	Spike	1.4		mg/kg	1.4	*	1	YES	S3VEM
Cadmium	Spike	1.8		mg/kg	1.8	*	1	YES	S3VEM
Cobalt	Spike	15.3		mg/kg	15.3	*	1	YES	S3VEM
Selenium	Spike	6.7		mg/kg	6.7	*	1	YES	S3VEM
Vanadium	Spike	31.0		mg/kg	31.0	*	1	YES	S3VEM
Zinc	Spike	214		mg/kg	214	*	1	YES	S3VEM
Tin	Spike	3.1		mg/kg	3.1	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE108D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 13:29:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14100		mg/kg	14100		1	YES	S3VEM
Antimony	Target	0.78	J	mg/kg	0.78	J	1	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7		1	YES	S3VEM
Barium	Target	133		mg/kg	133		1	YES	S3VEM
Beryllium	Target	0.71		mg/kg	0.71		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2		1	YES	S3VEM
Calcium	Target	22100		mg/kg	22100		1	YES	S3VEM
Chromium	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3		1	YES	S3VEM
Copper	Target	28.8		mg/kg	28.8		1	YES	S3VEM
Iron	Target	21900		mg/kg	21900		1	YES	S3VEM
Lead	Target	177		mg/kg	177		1	YES	S3VEM
Manganese	Target	2630		mg/kg	2630	D	2	YES	S3VEM
Nickel	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Potassium	Target	2690		mg/kg	2690		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	0.46	J	mg/kg	0.46	J	1	YES	S3VEM
Sodium	Target	58.2	J	mg/kg	58.2	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.5		mg/kg	23.5		1	YES	S3VEM
Zinc	Target	113		mg/kg	113		1	YES	S3VEM
Tin	Target	3.2		mg/kg	3.2	J	1	YES	S3VEM

Sample Summary Report

Case: 47320 **Contract: EPW14029** **SDG: MBE0Z6** **Lab Code: BON**

Sample Number: MBE108L	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	18100		mg/kg	18100	*	5	YES	S3VEM
Antimony	Target	29.7	U	mg/kg	29.7	U	5	YES	S3VEM
Arsenic	Target	9.0		mg/kg	9.0		5	YES	S3VEM
Barium	Target	172		mg/kg	172	*	5	YES	S3VEM
Beryllium	Target	0.88	J	mg/kg	0.88	J*	5	YES	S3VEM
Cadmium	Target	0.97	J	mg/kg	0.97	J*	5	YES	S3VEM
Calcium	Target	30100		mg/kg	30100	*	5	YES	S3VEM
Chromium	Target	23.1		mg/kg	23.1		5	YES	S3VEM
Cobalt	Target	7.4	J	mg/kg	7.4	J*	5	YES	S3VEM
Copper	Target	34.9		mg/kg	34.9	*	5	YES	S3VEM
Iron	Target	30000		mg/kg	30000	*	5	YES	S3VEM
Lead	Target	115		mg/kg	115	*	5	YES	S3VEM
Magnesium	Target	7000		mg/kg	7000	*	5	YES	S3VEM
Manganese	Target	3050		mg/kg	3050	D*	10	YES	S3VEM
Nickel	Target	13.9	J	mg/kg	13.9	J*	5	YES	S3VEM
Potassium	Target	3600		mg/kg	3600	*	5	YES	S3VEM
Selenium	Target	2.2	J	mg/kg	2.2	J	5	YES	S3VEM
Silver	Target	0.66	J	mg/kg	0.66	J	5	YES	S3VEM
Sodium	Target	62.3	J	mg/kg	62.3	J	5	YES	S3VEM
Thallium	Target	12.4	U	mg/kg	12.4	U	5	YES	S3VEM
Vanadium	Target	31.0		mg/kg	31.0	*	5	YES	S3VEM
Zinc	Target	99.3		mg/kg	99.3	*	5	YES	S3VEM
Tin	Target	2.8		mg/kg	2.8	J*	5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE108S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/15/2017	Sample Time: 13:29:00
% 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	J	mg/kg	5.0	J	1	YES	S3VEM
Arsenic	Spike	15.1		mg/kg	15.1		1	YES	S3VEM
Barium	Spike	433		mg/kg	433		1	YES	S3VEM
Beryllium	Spike	8.0		mg/kg	8.0		1	YES	S3VEM
Cadmium	Spike	8.1		mg/kg	8.1		1	YES	S3VEM
Chromium	Spike	61.2		mg/kg	61.2		1	YES	S3VEM
Cobalt	Spike	77.8		mg/kg	77.8		1	YES	S3VEM
Copper	Spike	63.9		mg/kg	63.9		1	YES	S3VEM
Lead	Spike	179		mg/kg	179		1	YES	S3VEM
Manganese	Spike	2680		mg/kg	2680	D	2	YES	S3VEM
Nickel	Spike	120		mg/kg	120		1	YES	S3VEM
Selenium	Spike	14.9		mg/kg	14.9		1	YES	S3VEM
Silver	Spike	7.2		mg/kg	7.2		1	YES	S3VEM
Thallium	Spike	8.6		mg/kg	8.6		1	YES	S3VEM
Vanadium	Spike	93.3		mg/kg	93.3		1	YES	S3VEM
Zinc	Spike	180		mg/kg	180		1	YES	S3VEM
Tin	Spike	60.3		mg/kg	60.3		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE109	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P038-S003	pH:	Sample Date: 11/15/2017	Sample Time: 13:44:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14200		mg/kg	14200	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.64	J*	1	YES	S3VEM
Arsenic	Target	9.3		mg/kg	9.3	*	1	YES	S3VEM
Barium	Target	123		mg/kg	123	*	1	YES	S3VEM
Beryllium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	22000		mg/kg	22000	*	1	YES	S3VEM
Chromium	Target	21.4		mg/kg	21.4		1	YES	S3VEM
Cobalt	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Copper	Target	27.0		mg/kg	27.0	*	1	YES	S3VEM
Iron	Target	21900		mg/kg	21900	*	1	YES	S3VEM
Lead	Target	169		mg/kg	169	*	1	YES	S3VEM
Magnesium	Target	5100		mg/kg	5100	*	1	YES	S3VEM
Manganese	Target	2640		mg/kg	2640	D*	2	YES	S3VEM
Nickel	Target	21.4		mg/kg	21.4	*	1	YES	S3VEM
Potassium	Target	2730		mg/kg	2730	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.41	J	mg/kg	0.41	J*	1	YES	S3VEM
Sodium	Target	494	U	mg/kg	57.3	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	110		mg/kg	110	*	1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	3.0	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE110	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S001	pH:	Sample Date: 11/15/2017	Sample Time: 15:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9930		mg/kg	9930	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Barium	Target	94.6		mg/kg	94.6	*	1	YES	S3VEM
Beryllium	Target	0.53		mg/kg	0.53	*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	21700		mg/kg	21700	*	1	YES	S3VEM
Chromium	Target	19.8		mg/kg	19.8		1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	31.5		mg/kg	31.5	*	1	YES	S3VEM
Iron	Target	16100		mg/kg	16100	*	1	YES	S3VEM
Lead	Target	297		mg/kg	297	*	1	YES	S3VEM
Magnesium	Target	10300		mg/kg	10300	*	1	YES	S3VEM
Manganese	Target	990		mg/kg	990	*	1	YES	S3VEM
Nickel	Target	24.0		mg/kg	24.0	*	1	YES	S3VEM
Potassium	Target	1920		mg/kg	1920	*	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	497	U	mg/kg	75.2	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	19.2		mg/kg	19.2	*	1	YES	S3VEM
Zinc	Target	153		mg/kg	153	*	1	YES	S3VEM
Tin	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **Lab Code: BON**

Sample Number: MBE111	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S001	pH:	Sample Date: 11/15/2017	Sample Time: 15:09:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9120		mg/kg	9120	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	8.1		mg/kg	8.1	*	1	YES	S3VEM
Barium	Target	85.9		mg/kg	85.9	*	1	YES	S3VEM
Beryllium	Target	0.48	J	mg/kg	0.48	J*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	49400		mg/kg	49400	D*	2	YES	S3VEM
Chromium	Target	18.3		mg/kg	18.3		1	YES	S3VEM
Cobalt	Target	5.7		mg/kg	5.7	*	1	YES	S3VEM
Copper	Target	40.1		mg/kg	40.1	*	1	YES	S3VEM
Iron	Target	15100		mg/kg	15100	*	1	YES	S3VEM
Lead	Target	305		mg/kg	305	*	1	YES	S3VEM
Magnesium	Target	20400		mg/kg	20400	*	1	YES	S3VEM
Manganese	Target	966		mg/kg	966	*	1	YES	S3VEM
Nickel	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Potassium	Target	1690		mg/kg	1690	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.24	J	mg/kg	0.24	J*	1	YES	S3VEM
Sodium	Target	489	U	mg/kg	92.3	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	17.4		mg/kg	17.4	*	1	YES	S3VEM
Zinc	Target	154		mg/kg	154	*	1	YES	S3VEM
Tin	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE112	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S001	pH:	Sample Date: 11/15/2017	Sample Time: 15:21:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9390		mg/kg	9390	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	2.0	J*	1	YES	S3VEM
Arsenic	Target	8.1		mg/kg	8.1	*	1	YES	S3VEM
Barium	Target	94.4		mg/kg	94.4	*	1	YES	S3VEM
Beryllium	Target	0.52		mg/kg	0.52	*	1	YES	S3VEM
Cadmium	Target	0.96		mg/kg	0.96	*	1	YES	S3VEM
Calcium	Target	21300		mg/kg	21300	*	1	YES	S3VEM
Chromium	Target	20.1		mg/kg	20.1		1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	44.8		mg/kg	44.8	*	1	YES	S3VEM
Iron	Target	17000		mg/kg	17000	*	1	YES	S3VEM
Lead	Target	505		mg/kg	505	*	1	YES	S3VEM
Magnesium	Target	9290		mg/kg	9290	*	1	YES	S3VEM
Manganese	Target	1020		mg/kg	1020	*	1	YES	S3VEM
Nickel	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Potassium	Target	1690		mg/kg	1690	*	1	YES	S3VEM
Selenium	Target	1.0	J	mg/kg	1.0	J*	1	YES	S3VEM
Silver	Target	0.23	J	mg/kg	0.23	J*	1	YES	S3VEM
Sodium	Target	484	U	mg/kg	97.4	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	21.1		mg/kg	21.1	*	1	YES	S3VEM
Zinc	Target	117		mg/kg	117	*	1	YES	S3VEM
Tin	Target	7.7		mg/kg	7.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE113	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S001	pH:	Sample Date: 11/15/2017	Sample Time: 15:42:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11700		mg/kg	11700	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	9.0		mg/kg	9.0	*	1	YES	S3VEM
Barium	Target	111		mg/kg	111	*	1	YES	S3VEM
Beryllium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Cadmium	Target	0.86		mg/kg	0.86	*	1	YES	S3VEM
Calcium	Target	10800		mg/kg	10800	*	1	YES	S3VEM
Chromium	Target	21.2		mg/kg	21.2		1	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1	YES	S3VEM
Copper	Target	42.8		mg/kg	42.8	*	1	YES	S3VEM
Iron	Target	17200		mg/kg	17200	*	1	YES	S3VEM
Lead	Target	373		mg/kg	373	*	1	YES	S3VEM
Magnesium	Target	5120		mg/kg	5120	*	1	YES	S3VEM
Manganese	Target	1000		mg/kg	1000	*	1	YES	S3VEM
Nickel	Target	21.0		mg/kg	21.0	*	1	YES	S3VEM
Potassium	Target	2140		mg/kg	2140	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.20	J	mg/kg	0.20	J*	1	YES	S3VEM
Sodium	Target	485	U	mg/kg	78.9	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	24.3		mg/kg	24.3	*	1	YES	S3VEM
Zinc	Target	116		mg/kg	116	*	1	YES	S3VEM
Tin	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE114	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S001	pH:	Sample Date: 11/15/2017	Sample Time: 16:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12700		mg/kg	12700	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.81	J*	1	YES	S3VEM
Arsenic	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Barium	Target	98.5		mg/kg	98.5	*	1	YES	S3VEM
Beryllium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Cadmium	Target	0.76		mg/kg	0.76	*	1	YES	S3VEM
Calcium	Target	7070		mg/kg	7070	*	1	YES	S3VEM
Chromium	Target	20.9		mg/kg	20.9		1	YES	S3VEM
Cobalt	Target	7.2		mg/kg	7.2	*	1	YES	S3VEM
Copper	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Iron	Target	17900		mg/kg	17900	*	1	YES	S3VEM
Lead	Target	114		mg/kg	114	*	1	YES	S3VEM
Magnesium	Target	3850		mg/kg	3850	*	1	YES	S3VEM
Manganese	Target	1300		mg/kg	1300	*	1	YES	S3VEM
Nickel	Target	18.3		mg/kg	18.3	*	1	YES	S3VEM
Potassium	Target	2190		mg/kg	2190	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	64.0	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	64.6		mg/kg	64.6	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	3.2	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

Sample Number: MBE115	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S002	pH:	Sample Date: 11/15/2017	Sample Time: 15:09:00
% 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	5.9	U	mg/kg	0.74	J*	1	YES	S3VEM
Arsenic	Target	7.6		mg/kg	7.6	*	1	YES	S3VEM
Barium	Target	138		mg/kg	138	*	1	YES	S3VEM
Beryllium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	18500		mg/kg	18500	*	1	YES	S3VEM
Chromium	Target	21.4		mg/kg	21.4		1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	36.4		mg/kg	36.4	*	1	YES	S3VEM
Iron	Target	15400		mg/kg	15400	*	1	YES	S3VEM
Lead	Target	297		mg/kg	297	*	1	YES	S3VEM
Magnesium	Target	5220		mg/kg	5220	*	1	YES	S3VEM
Manganese	Target	755		mg/kg	755	*	1	YES	S3VEM
Nickel	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Potassium	Target	2650		mg/kg	2650	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J*	1	YES	S3VEM
Sodium	Target	489	U	mg/kg	105	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	20.5		mg/kg	20.5	*	1	YES	S3VEM
Zinc	Target	200		mg/kg	200	*	1	YES	S3VEM
Tin	Target	6.2		mg/kg	6.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE0Z6** | **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	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Antimony	Target	0.23	J	mg/kg	0.23	J	1	YES	S3VEM
Arsenic	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Barium	Target	0.044	J	mg/kg	0.044	J	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Calcium	Target	5.0	J	mg/kg	5.0	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			mg/kg	-0.047	J	1	YES	S3VEM
Iron	Target	2.4	J	mg/kg	2.4	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	0.14	J	mg/kg	0.14	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	8.4	J	mg/kg	8.4	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			mg/kg	-1.7	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: 47320	Contract: EPW14029	SDG: MBE0Z6	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteeenmile Creek
Number of Samples: 11 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE116
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/16/2017
Validation SOP: HW-3a (Rev 1)

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Sample MBE145 has analytes that have been qualified J, J+ or J-.

Minor Findings:
None

COMMENT: Concentrations of **Lead** exceeded the project action level for one or more samples.

Reviewer Name(s): Jianwei Huang

Approver's Signature: **Date: 01/08/2018**

Name: **Narendra Kumar**

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.	

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 ±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.

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 MBE120, MBE143, MBE145, MBE118, MBE116, MBE117, MBE142, MBE144, MBE119, MBE166, MBE141
Beryllium MBE142
Cadmium MBE143
Cobalt MBE143, MBE142
Sodium MBE166, MBE120, MBE143, MBE141, MBE119, MBE145, MBE117, MBE116, MBE118, MBE142, MBE144

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 MBE144, MBE166, MBE117, MBE141, MBE142, MBE143, MBE119, MBE116, MBE118, MBE120, MBE145
Beryllium MBE142

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 MBE142, MBE143

Field Blank MBE168 in SDG MBE0X6

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 less than 75%. Detects are qualified as J-. Nondetects are qualified as UJ.

Thallium MBE145

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. Nondetects are qualified as UJ.

Antimony MBE145

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-. Nondetects are qualified as UJ.

Selenium MBE145

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 ≥ 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 (MBE145/MBE166)

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 ≥ 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.

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.

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: 47320	Contract: EPW14029	SDG: MBE116	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	40.6		mg/kg	40.6		1	YES	S3VEM
Antimony	Spike	12.2		mg/kg	12.2		1	YES	S3VEM
Arsenic	Spike	1.7		mg/kg	1.7		1	YES	S3VEM
Barium	Spike	41.2		mg/kg	41.2		1	YES	S3VEM
Beryllium	Spike	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Spike	1.0		mg/kg	1.0		1	YES	S3VEM
Calcium	Spike	1030		mg/kg	1030		1	YES	S3VEM
Chromium	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Cobalt	Spike	10.4		mg/kg	10.4		1	YES	S3VEM
Copper	Spike	4.8		mg/kg	4.8		1	YES	S3VEM
Iron	Spike	20.1		mg/kg	20.1		1	YES	S3VEM
Lead	Spike	2.2		mg/kg	2.2		1	YES	S3VEM
Magnesium	Spike	988		mg/kg	988		1	YES	S3VEM
Manganese	Spike	3.1		mg/kg	3.1		1	YES	S3VEM
Nickel	Spike	8.5		mg/kg	8.5		1	YES	S3VEM
Potassium	Spike	978		mg/kg	978		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	994		mg/kg	994		1	YES	S3VEM
Thallium	Spike	4.5		mg/kg	4.5		1	YES	S3VEM
Vanadium	Spike	10.0		mg/kg	10.0		1	YES	S3VEM
Zinc	Spike	12.6		mg/kg	12.6		1	YES	S3VEM
Tin	Spike	10.7		mg/kg	10.7		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE116	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S002	pH:	Sample Date: 11/15/2017	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	11400		mg/kg	11400		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.60	J*	1	YES	S3VEM
Arsenic	Target	10.0		mg/kg	10.0		1	YES	S3VEM
Barium	Target	142		mg/kg	142		1	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67		1	YES	S3VEM
Cadmium	Target	0.82		mg/kg	0.82	*	1	YES	S3VEM
Calcium	Target	20300		mg/kg	20300		1	YES	S3VEM
Chromium	Target	17.5		mg/kg	17.5	*	1	YES	S3VEM
Cobalt	Target	6.3		mg/kg	6.3	*	1	YES	S3VEM
Copper	Target	37.8		mg/kg	37.8		1	YES	S3VEM
Iron	Target	15100		mg/kg	15100		1	YES	S3VEM
Lead	Target	305		mg/kg	305		1	YES	S3VEM
Magnesium	Target	5280		mg/kg	5280		1	YES	S3VEM
Manganese	Target	685		mg/kg	685		1	YES	S3VEM
Nickel	Target	22.9		mg/kg	22.9		1	YES	S3VEM
Potassium	Target	2410		mg/kg	2410		1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U	1	YES	S3VEM
Sodium	Target	496	U	mg/kg	104	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	20.8		mg/kg	20.8		1	YES	S3VEM
Zinc	Target	263		mg/kg	263		1	YES	S3VEM
Tin	Target	6.3		mg/kg	6.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE116** | **Lab Code: BON**

Sample Number: MBE117	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S002	pH:	Sample Date: 11/15/2017	Sample Time: 15:25:00
% 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	0.55	J*	1	YES	S3VEM
Arsenic	Target	14.4		mg/kg	14.4		1	YES	S3VEM
Barium	Target	222		mg/kg	222		1	YES	S3VEM
Beryllium	Target	0.78		mg/kg	0.78		1	YES	S3VEM
Cadmium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Calcium	Target	34600		mg/kg	34600		1	YES	S3VEM
Chromium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	47.2		mg/kg	47.2		1	YES	S3VEM
Iron	Target	16500		mg/kg	16500		1	YES	S3VEM
Lead	Target	592		mg/kg	592		1	YES	S3VEM
Magnesium	Target	6140		mg/kg	6140		1	YES	S3VEM
Manganese	Target	882		mg/kg	882		1	YES	S3VEM
Nickel	Target	24.4		mg/kg	24.4		1	YES	S3VEM
Potassium	Target	2750		mg/kg	2750		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.13	J	mg/kg	0.13	J	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	122	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Zinc	Target	286		mg/kg	286		1	YES	S3VEM
Tin	Target	8.8		mg/kg	8.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE118	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S002	pH:	Sample Date: 11/15/2017	Sample Time: 15:42:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13600		mg/kg	13600		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.87	J*	1	YES	S3VEM
Arsenic	Target	20.0		mg/kg	20.0		1	YES	S3VEM
Barium	Target	282		mg/kg	282		1	YES	S3VEM
Beryllium	Target	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Target	1.3		mg/kg	1.3	*	1	YES	S3VEM
Calcium	Target	25200		mg/kg	25200		1	YES	S3VEM
Chromium	Target	24.3		mg/kg	24.3	*	1	YES	S3VEM
Cobalt	Target	8.9		mg/kg	8.9	*	1	YES	S3VEM
Copper	Target	89.5		mg/kg	89.5		1	YES	S3VEM
Iron	Target	19800		mg/kg	19800		1	YES	S3VEM
Lead	Target	816		mg/kg	816		1	YES	S3VEM
Magnesium	Target	4930		mg/kg	4930		1	YES	S3VEM
Manganese	Target	1060		mg/kg	1060		1	YES	S3VEM
Nickel	Target	28.6		mg/kg	28.6		1	YES	S3VEM
Potassium	Target	2860		mg/kg	2860		1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.18	J	mg/kg	0.18	J	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	156	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	26.5		mg/kg	26.5		1	YES	S3VEM
Zinc	Target	517		mg/kg	517		1	YES	S3VEM
Tin	Target	24.2		mg/kg	24.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE119	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P039-S002	pH:	Sample Date: 11/15/2017	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	13800		mg/kg	13800		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.68	J*	1	YES	S3VEM
Arsenic	Target	15.1		mg/kg	15.1		1	YES	S3VEM
Barium	Target	177		mg/kg	177		1	YES	S3VEM
Beryllium	Target	0.88		mg/kg	0.88		1	YES	S3VEM
Cadmium	Target	0.52		mg/kg	0.52	*	1	YES	S3VEM
Calcium	Target	15100		mg/kg	15100		1	YES	S3VEM
Chromium	Target	20.2		mg/kg	20.2	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	53.2		mg/kg	53.2		1	YES	S3VEM
Iron	Target	19400		mg/kg	19400		1	YES	S3VEM
Lead	Target	342		mg/kg	342		1	YES	S3VEM
Magnesium	Target	3610		mg/kg	3610		1	YES	S3VEM
Manganese	Target	1380		mg/kg	1380		1	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1	YES	S3VEM
Potassium	Target	2660		mg/kg	2660		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.047	J	mg/kg	0.047	J	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	90.5	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.6		mg/kg	24.6		1	YES	S3VEM
Zinc	Target	240		mg/kg	240		1	YES	S3VEM
Tin	Target	10.6		mg/kg	10.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE120	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S001	pH:	Sample Date: 11/16/2017	Sample Time: 08:07:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9890		mg/kg	9890		1	YES	S3VEM
Antimony	Target	5.5	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	29.9		mg/kg	29.9		1	YES	S3VEM
Barium	Target	274		mg/kg	274		1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0		1	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0	*	1	YES	S3VEM
Calcium	Target	17700		mg/kg	17700		1	YES	S3VEM
Chromium	Target	24.2		mg/kg	24.2	*	1	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7	*	1	YES	S3VEM
Copper	Target	86.5		mg/kg	86.5		1	YES	S3VEM
Iron	Target	16900		mg/kg	16900		1	YES	S3VEM
Lead	Target	602		mg/kg	602		1	YES	S3VEM
Magnesium	Target	5570		mg/kg	5570		1	YES	S3VEM
Manganese	Target	433		mg/kg	433		1	YES	S3VEM
Nickel	Target	37.0		mg/kg	37.0		1	YES	S3VEM
Potassium	Target	1540		mg/kg	1540		1	YES	S3VEM
Selenium	Target	1.9	J	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.14	J	mg/kg	0.14	J	1	YES	S3VEM
Sodium	Target	462	U	mg/kg	106	J	1	YES	S3VEM
Thallium	Target	2.3	U	mg/kg	2.3	U*	1	YES	S3VEM
Vanadium	Target	23.9		mg/kg	23.9		1	YES	S3VEM
Zinc	Target	513		mg/kg	513		1	YES	S3VEM
Tin	Target	15.7		mg/kg	15.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE141	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S002	pH:	Sample Date: 11/16/2017	Sample Time: 15:00:00
% 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	5.9	U	mg/kg	0.91	J*	1	YES	S3VEM
Arsenic	Target	16.5		mg/kg	16.5		1	YES	S3VEM
Barium	Target	472		mg/kg	472		1	YES	S3VEM
Beryllium	Target	0.83		mg/kg	0.83		1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	20200		mg/kg	20200		1	YES	S3VEM
Chromium	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Copper	Target	48.7		mg/kg	48.7		1	YES	S3VEM
Iron	Target	19500		mg/kg	19500		1	YES	S3VEM
Lead	Target	516		mg/kg	516		1	YES	S3VEM
Magnesium	Target	6710		mg/kg	6710		1	YES	S3VEM
Manganese	Target	625		mg/kg	625		1	YES	S3VEM
Nickel	Target	25.0		mg/kg	25.0		1	YES	S3VEM
Potassium	Target	2250		mg/kg	2250		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.11	J	mg/kg	0.11	J	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	96.2	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.1		mg/kg	24.1		1	YES	S3VEM
Zinc	Target	405		mg/kg	405		1	YES	S3VEM
Tin	Target	11.9		mg/kg	11.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE142	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 13:47:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9020		mg/kg	9020		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.42	J*	1	YES	S3VEM
Arsenic	Target	5.9		mg/kg	5.9		1	YES	S3VEM
Barium	Target	78.8		mg/kg	78.8		1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.46	J	1	YES	S3VEM
Cadmium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Calcium	Target	59900		mg/kg	59900	D	2	YES	S3VEM
Chromium	Target	12.8		mg/kg	12.8	*	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	4.4	J*	1	YES	S3VEM
Copper	Target	22.6		mg/kg	22.6		1	YES	S3VEM
Iron	Target	12400		mg/kg	12400		1	YES	S3VEM
Lead	Target	95.8		mg/kg	95.8		1	YES	S3VEM
Magnesium	Target	24100		mg/kg	24100		1	YES	S3VEM
Manganese	Target	612		mg/kg	612		1	YES	S3VEM
Nickel	Target	14.6		mg/kg	14.6		1	YES	S3VEM
Potassium	Target	1590		mg/kg	1590		1	YES	S3VEM
Selenium	Target	0.79	J	mg/kg	0.79	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	86.1	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	16.6		mg/kg	16.6		1	YES	S3VEM
Zinc	Target	167		mg/kg	167		1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	3.8	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE143	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 13:50:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10100		mg/kg	10100		1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.31	J*	1	YES	S3VEM
Arsenic	Target	6.7		mg/kg	6.7		1	YES	S3VEM
Barium	Target	87.3		mg/kg	87.3		1	YES	S3VEM
Beryllium	Target	0.51		mg/kg	0.51		1	YES	S3VEM
Cadmium	Target	0.49	U	mg/kg	0.45	J*	1	YES	S3VEM
Calcium	Target	34300		mg/kg	34300		1	YES	S3VEM
Chromium	Target	13.9		mg/kg	13.9	*	1	YES	S3VEM
Cobalt	Target	4.9	U	mg/kg	4.7	J*	1	YES	S3VEM
Copper	Target	22.6		mg/kg	22.6		1	YES	S3VEM
Iron	Target	13200		mg/kg	13200		1	YES	S3VEM
Lead	Target	110		mg/kg	110		1	YES	S3VEM
Magnesium	Target	14700		mg/kg	14700		1	YES	S3VEM
Manganese	Target	559		mg/kg	559		1	YES	S3VEM
Nickel	Target	15.9		mg/kg	15.9		1	YES	S3VEM
Potassium	Target	1750		mg/kg	1750		1	YES	S3VEM
Selenium	Target	0.95	J	mg/kg	0.95	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	78.0	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	18.3		mg/kg	18.3		1	YES	S3VEM
Zinc	Target	156		mg/kg	156		1	YES	S3VEM
Tin	Target	4.9	U	mg/kg	3.7	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE144	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 14:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12400		mg/kg	12400		1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.77	J*	1	YES	S3VEM
Arsenic	Target	12.3		mg/kg	12.3		1	YES	S3VEM
Barium	Target	175		mg/kg	175		1	YES	S3VEM
Beryllium	Target	0.84		mg/kg	0.84		1	YES	S3VEM
Cadmium	Target	0.70		mg/kg	0.70	*	1	YES	S3VEM
Calcium	Target	22200		mg/kg	22200		1	YES	S3VEM
Chromium	Target	21.6		mg/kg	21.6	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	46.7		mg/kg	46.7		1	YES	S3VEM
Iron	Target	19100		mg/kg	19100		1	YES	S3VEM
Lead	Target	263		mg/kg	263		1	YES	S3VEM
Magnesium	Target	7940		mg/kg	7940		1	YES	S3VEM
Manganese	Target	672		mg/kg	672		1	YES	S3VEM
Nickel	Target	23.9		mg/kg	23.9		1	YES	S3VEM
Potassium	Target	1930		mg/kg	1930		1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.16	J	mg/kg	0.16	J	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	98.4	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.3		mg/kg	23.3		1	YES	S3VEM
Zinc	Target	270		mg/kg	270		1	YES	S3VEM
Tin	Target	8.8		mg/kg	8.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE145	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 14:46:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13300		mg/kg	13300		1	YES	S3VEM
Antimony	Target	6.0	UJ	mg/kg	0.66	J*	1	YES	S3VEM
Arsenic	Target	12.6		mg/kg	12.6		1	YES	S3VEM
Barium	Target	158		mg/kg	158		1	YES	S3VEM
Beryllium	Target	0.81		mg/kg	0.81		1	YES	S3VEM
Cadmium	Target	0.56		mg/kg	0.56	*	1	YES	S3VEM
Calcium	Target	14700		mg/kg	14700		1	YES	S3VEM
Chromium	Target	20.1		mg/kg	20.1	*	1	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7	*	1	YES	S3VEM
Copper	Target	38.1		mg/kg	38.1		1	YES	S3VEM
Iron	Target	17900		mg/kg	17900		1	YES	S3VEM
Lead	Target	250		mg/kg	250		1	YES	S3VEM
Magnesium	Target	5350		mg/kg	5350		1	YES	S3VEM
Manganese	Target	660		mg/kg	660		1	YES	S3VEM
Nickel	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Potassium	Target	2040		mg/kg	2040		1	YES	S3VEM
Selenium	Target	1.5	J-	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.055	J	mg/kg	0.055	J	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	86.3	J	1	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.1		mg/kg	24.1		1	YES	S3VEM
Zinc	Target	251		mg/kg	251		1	YES	S3VEM
Tin	Target	8.5	J	mg/kg	8.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE145A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 14:46:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Selenium	Spike	6.4		mg/kg	6.4	*	1	YES	S3VEM
Thallium	Spike	3.3		mg/kg	3.3	*	1	YES	S3VEM
Tin	Spike	23.7		mg/kg	23.7		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE116** | **Lab Code: BON**

Sample Number: MBE145D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 14:46:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13100		mg/kg	13100		1	YES	S3VEM
Antimony	Target	0.80	J	mg/kg	0.80	J	1	YES	S3VEM
Arsenic	Target	12.8		mg/kg	12.8		1	YES	S3VEM
Barium	Target	159		mg/kg	159		1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82		1	YES	S3VEM
Cadmium	Target	0.59		mg/kg	0.59		1	YES	S3VEM
Calcium	Target	14800		mg/kg	14800		1	YES	S3VEM
Chromium	Target	20.2		mg/kg	20.2		1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8		1	YES	S3VEM
Copper	Target	38.5		mg/kg	38.5		1	YES	S3VEM
Iron	Target	17900		mg/kg	17900		1	YES	S3VEM
Lead	Target	262		mg/kg	262		1	YES	S3VEM
Magnesium	Target	5370		mg/kg	5370		1	YES	S3VEM
Manganese	Target	664		mg/kg	664		1	YES	S3VEM
Nickel	Target	21.3		mg/kg	21.3		1	YES	S3VEM
Potassium	Target	1980		mg/kg	1980		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Silver	Target	0.063	J	mg/kg	0.063	J	1	YES	S3VEM
Sodium	Target	84.0	J	mg/kg	84.0	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	24.2		mg/kg	24.2		1	YES	S3VEM
Zinc	Target	257		mg/kg	257		1	YES	S3VEM
Tin	Target	8.1		mg/kg	8.1		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE116** | **Lab Code: BON**

Sample Number: MBE145L	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	13400		mg/kg	13400		5	YES	S3VEM
Antimony	Target	29.8	U	mg/kg	29.8	U	5	YES	S3VEM
Arsenic	Target	11.5		mg/kg	11.5		5	YES	S3VEM
Barium	Target	158		mg/kg	158		5	YES	S3VEM
Beryllium	Target	0.76	J	mg/kg	0.76	J	5	YES	S3VEM
Cadmium	Target	0.64	J	mg/kg	0.64	J*	5	YES	S3VEM
Calcium	Target	15500		mg/kg	15500		5	YES	S3VEM
Chromium	Target	22.4		mg/kg	22.4	*	5	YES	S3VEM
Cobalt	Target	7.7	J	mg/kg	7.7	J*	5	YES	S3VEM
Copper	Target	39.8		mg/kg	39.8		5	YES	S3VEM
Iron	Target	18900		mg/kg	18900		5	YES	S3VEM
Lead	Target	237		mg/kg	237		5	YES	S3VEM
Magnesium	Target	5530		mg/kg	5530		5	YES	S3VEM
Manganese	Target	692		mg/kg	692		5	YES	S3VEM
Nickel	Target	19.4	J	mg/kg	19.4	J	5	YES	S3VEM
Potassium	Target	2040	J	mg/kg	2040	J	5	YES	S3VEM
Selenium	Target	17.4	U	mg/kg	17.4	U	5	YES	S3VEM
Silver	Target	5.0	U	mg/kg	5.0	U	5	YES	S3VEM
Sodium	Target	83.3	J	mg/kg	83.3	J	5	YES	S3VEM
Thallium	Target	12.4	U	mg/kg	12.4	U	5	YES	S3VEM
Vanadium	Target	26.3		mg/kg	26.3		5	YES	S3VEM
Zinc	Target	243		mg/kg	243		5	YES	S3VEM
Tin	Target	9.6		mg/kg	9.6	J*	5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

Sample Number: MBE145S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 14:46:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	5.6	J	mg/kg	5.6	J	1	YES	S3VEM
Arsenic	Spike	21.0		mg/kg	21.0		1	YES	S3VEM
Barium	Spike	513		mg/kg	513		1	YES	S3VEM
Beryllium	Spike	10.4		mg/kg	10.4		1	YES	S3VEM
Cadmium	Spike	8.6		mg/kg	8.6		1	YES	S3VEM
Chromium	Spike	53.3		mg/kg	53.3		1	YES	S3VEM
Cobalt	Spike	88.9		mg/kg	88.9		1	YES	S3VEM
Copper	Spike	80.1		mg/kg	80.1		1	YES	S3VEM
Lead	Spike	256		mg/kg	256		1	YES	S3VEM
Manganese	Spike	749		mg/kg	749		1	YES	S3VEM
Nickel	Spike	125		mg/kg	125		1	YES	S3VEM
Selenium	Spike	16.2		mg/kg	16.2		1	YES	S3VEM
Silver	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Thallium	Spike	7.2		mg/kg	7.2		1	YES	S3VEM
Vanadium	Spike	103		mg/kg	103		1	YES	S3VEM
Zinc	Spike	355		mg/kg	355		1	YES	S3VEM
Tin	Spike	79.5		mg/kg	79.5		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE116** | **Lab Code: BON**

Sample Number: MBE166	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 14:50:00
% 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		1	YES	S3VEM
Antimony	Target	5.7	U	mg/kg	0.48	J*	1	YES	S3VEM
Arsenic	Target	13.5		mg/kg	13.5		1	YES	S3VEM
Barium	Target	167		mg/kg	167		1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85		1	YES	S3VEM
Cadmium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Calcium	Target	15600		mg/kg	15600		1	YES	S3VEM
Chromium	Target	21.2		mg/kg	21.2	*	1	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Copper	Target	41.9		mg/kg	41.9		1	YES	S3VEM
Iron	Target	18300		mg/kg	18300		1	YES	S3VEM
Lead	Target	347		mg/kg	347		1	YES	S3VEM
Magnesium	Target	5510		mg/kg	5510		1	YES	S3VEM
Manganese	Target	693		mg/kg	693		1	YES	S3VEM
Nickel	Target	22.3		mg/kg	22.3		1	YES	S3VEM
Potassium	Target	2030		mg/kg	2030		1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.092	J	mg/kg	0.092	J	1	YES	S3VEM
Sodium	Target	473	U	mg/kg	87.4	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	24.5		mg/kg	24.5		1	YES	S3VEM
Zinc	Target	262		mg/kg	262		1	YES	S3VEM
Tin	Target	17.2		mg/kg	17.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	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	1.4	J	mg/kg	1.4	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	-0.20	J	1	YES	S3VEM
Beryllium	Target			mg/kg	-0.0045	J	1	YES	S3VEM
Cadmium	Target			mg/kg	-0.011	J	1	YES	S3VEM
Calcium	Target	4.9	J	mg/kg	4.9	J	1	YES	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Cobalt	Target			mg/kg	-0.042	J	1	YES	S3VEM
Copper	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Iron	Target			mg/kg	-2.5	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			mg/kg	-0.14	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	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	-0.33	J	1	YES	S3VEM
Vanadium	Target			mg/kg	-0.051	J	1	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Tin	Target	1.2		mg/kg	1.2	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE116	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteeenmile Creek
Number of Samples: 20 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE121
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/16/2017
Validation SOP: HW-3a (Rev 1)

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Sample MBE127 has analytes that have been qualified J, J+ or J-.

Minor Findings:
None

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

Reviewer Name(s): Jianwei Huang

Approver's Signature: **Date: 01/09/18**

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.	

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 ±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.

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 MBE129, MBE135, MBE128, MBE124, MBE138, MBE134, MBE136, MBE132, MBE131, MBE133, MBE122, MBE139, MBE127, MBE126, MBE137, MBE130, MBE125, MBE121, MBE140, MBE123
Cadmium MBE135
Sodium MBE132, MBE125, MBE126, MBE134, MBE140, MBE124, MBE136, MBE123, MBE128, MBE133, MBE135, MBE131, MBE130, MBE121, MBE137, MBE127, MBE138, MBE129, MBE122, MBE139

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 MBE133, MBE135, MBE126, MBE131, MBE132, MBE125, MBE122, MBE124, MBE129, MBE123, MBE140, MBE121, MBE130, MBE137, MBE127, MBE139, MBE136, MBE138, MBE128, MBE134

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 MBE135, MBE131

Field Blank MBE168 in SDG MBE0X6

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 less than 75%. Detects are qualified as J-. Nondetects are qualified as UJ.

Thallium MBE127

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

Silver MBE127

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. Nondetects are qualified as UJ.

Antimony, Arsenic, Cobalt MBE127

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-. Nondetects are qualified as UJ.

Cadmium MBE127

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. Nondetects are qualified as UJ.

Chromium, Copper, Selenium, Vanadium MBE127

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 ≥ 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 (MBE127/MBE128)

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 ≥ 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.

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 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. Nondetects are not qualified.

Arsenic, Beryllium, Lead, Nickel, Potassium and Zinc MBE127

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: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **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	39.6		mg/kg	39.6		1	YES	S3VEM
Antimony	Spike	12.0		mg/kg	12.0		1	YES	S3VEM
Arsenic	Spike	1.7		mg/kg	1.7		1	YES	S3VEM
Barium	Spike	39.9		mg/kg	39.9		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	1020		mg/kg	1020		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	4.7		mg/kg	4.7		1	YES	S3VEM
Iron	Spike	18.8		mg/kg	18.8		1	YES	S3VEM
Lead	Spike	2.2		mg/kg	2.2		1	YES	S3VEM
Magnesium	Spike	975		mg/kg	975		1	YES	S3VEM
Manganese	Spike	3.0		mg/kg	3.0		1	YES	S3VEM
Nickel	Spike	8.4		mg/kg	8.4		1	YES	S3VEM
Potassium	Spike	955		mg/kg	955		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	963		mg/kg	963		1	YES	S3VEM
Thallium	Spike	4.6		mg/kg	4.6		1	YES	S3VEM
Vanadium	Spike	10.2		mg/kg	10.2		1	YES	S3VEM
Zinc	Spike	12.9		mg/kg	12.9		1	YES	S3VEM
Tin	Spike	10.8		mg/kg	10.8		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE121	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S001	pH:	Sample Date: 11/16/2017	Sample Time: 08:10:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7490		mg/kg	7490	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	22.5		mg/kg	22.5	*	1	YES	S3VEM
Barium	Target	190		mg/kg	190	*	1	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	14100		mg/kg	14100	*	1	YES	S3VEM
Chromium	Target	18.8		mg/kg	18.8	*	1	YES	S3VEM
Cobalt	Target	5.3		mg/kg	5.3	*	1	YES	S3VEM
Copper	Target	59.9		mg/kg	59.9	*	1	YES	S3VEM
Iron	Target	16800		mg/kg	16800	*	1	YES	S3VEM
Lead	Target	364		mg/kg	364	*	1	YES	S3VEM
Magnesium	Target	3790		mg/kg	3790	*	1	YES	S3VEM
Manganese	Target	320		mg/kg	320	*	1	YES	S3VEM
Nickel	Target	26.9		mg/kg	26.9	*	1	YES	S3VEM
Potassium	Target	1120		mg/kg	1120	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.047	J	mg/kg	0.047	J*	1	YES	S3VEM
Sodium	Target	499	U	mg/kg	86.9	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.8		mg/kg	19.8	*	1	YES	S3VEM
Zinc	Target	321		mg/kg	321	*	1	YES	S3VEM
Tin	Target	14.7		mg/kg	14.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE122	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S001	pH:	Sample Date: 11/16/2017	Sample Time: 08:42:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9150		mg/kg	9150	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.7	J*	1	YES	S3VEM
Arsenic	Target	57.8		mg/kg	57.8	*	1	YES	S3VEM
Barium	Target	312		mg/kg	312	*	1	YES	S3VEM
Beryllium	Target	1.5		mg/kg	1.5	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	21100		mg/kg	21100	*	1	YES	S3VEM
Chromium	Target	23.3		mg/kg	23.3	*	1	YES	S3VEM
Cobalt	Target	8.0		mg/kg	8.0	*	1	YES	S3VEM
Copper	Target	81.3		mg/kg	81.3	*	1	YES	S3VEM
Iron	Target	21400		mg/kg	21400	*	1	YES	S3VEM
Lead	Target	403		mg/kg	403	*	1	YES	S3VEM
Magnesium	Target	4410		mg/kg	4410	*	1	YES	S3VEM
Manganese	Target	382		mg/kg	382	*	1	YES	S3VEM
Nickel	Target	39.4		mg/kg	39.4	*	1	YES	S3VEM
Potassium	Target	1330		mg/kg	1330	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	161	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	26.9		mg/kg	26.9	*	1	YES	S3VEM
Zinc	Target	386		mg/kg	386	*	1	YES	S3VEM
Tin	Target	16.2		mg/kg	16.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE123	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S001	pH:	Sample Date: 11/16/2017	Sample Time: 09:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10200		mg/kg	10200	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.99	J*	1	YES	S3VEM
Arsenic	Target	21.4		mg/kg	21.4	*	1	YES	S3VEM
Barium	Target	181		mg/kg	181	*	1	YES	S3VEM
Beryllium	Target	0.98		mg/kg	0.98	*	1	YES	S3VEM
Cadmium	Target	0.81		mg/kg	0.81	*	1	YES	S3VEM
Calcium	Target	9780		mg/kg	9780	*	1	YES	S3VEM
Chromium	Target	18.7		mg/kg	18.7	*	1	YES	S3VEM
Cobalt	Target	8.4		mg/kg	8.4	*	1	YES	S3VEM
Copper	Target	59.4		mg/kg	59.4	*	1	YES	S3VEM
Iron	Target	16800		mg/kg	16800	*	1	YES	S3VEM
Lead	Target	277		mg/kg	277	*	1	YES	S3VEM
Magnesium	Target	3130		mg/kg	3130	*	1	YES	S3VEM
Manganese	Target	462		mg/kg	462	*	1	YES	S3VEM
Nickel	Target	29.8		mg/kg	29.8	*	1	YES	S3VEM
Potassium	Target	1280		mg/kg	1280	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	494	U	mg/kg	117	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.5		mg/kg	23.5	*	1	YES	S3VEM
Zinc	Target	244		mg/kg	244	*	1	YES	S3VEM
Tin	Target	8.7		mg/kg	8.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE124	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S001	pH:	Sample Date: 11/16/2017	Sample Time: 09:11:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8940		mg/kg	8940	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	30.9		mg/kg	30.9	*	1	YES	S3VEM
Barium	Target	238		mg/kg	238	*	1	YES	S3VEM
Beryllium	Target	1.3		mg/kg	1.3	*	1	YES	S3VEM
Cadmium	Target	0.74		mg/kg	0.74	*	1	YES	S3VEM
Calcium	Target	16300		mg/kg	16300	*	1	YES	S3VEM
Chromium	Target	26.9		mg/kg	26.9	*	1	YES	S3VEM
Cobalt	Target	10.1		mg/kg	10.1	*	1	YES	S3VEM
Copper	Target	60.1		mg/kg	60.1	*	1	YES	S3VEM
Iron	Target	16400		mg/kg	16400	*	1	YES	S3VEM
Lead	Target	287		mg/kg	287	*	1	YES	S3VEM
Magnesium	Target	3340		mg/kg	3340	*	1	YES	S3VEM
Manganese	Target	385		mg/kg	385	*	1	YES	S3VEM
Nickel	Target	42.0		mg/kg	42.0	*	1	YES	S3VEM
Potassium	Target	1230		mg/kg	1230	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	490	U	mg/kg	162	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.2		mg/kg	24.2	*	1	YES	S3VEM
Zinc	Target	255		mg/kg	255	*	1	YES	S3VEM
Tin	Target	9.9		mg/kg	9.9	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE125	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 07:59:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7120		mg/kg	7120	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.97	J*	1	YES	S3VEM
Arsenic	Target	10.8		mg/kg	10.8	*	1	YES	S3VEM
Barium	Target	317		mg/kg	317	*	1	YES	S3VEM
Beryllium	Target	0.57		mg/kg	0.57	*	1	YES	S3VEM
Cadmium	Target	1.5		mg/kg	1.5	*	1	YES	S3VEM
Calcium	Target	17800		mg/kg	17800	*	1	YES	S3VEM
Chromium	Target	20.4		mg/kg	20.4	*	1	YES	S3VEM
Cobalt	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM
Copper	Target	67.8		mg/kg	67.8	*	1	YES	S3VEM
Iron	Target	14500		mg/kg	14500	*	1	YES	S3VEM
Lead	Target	758		mg/kg	758	*	1	YES	S3VEM
Magnesium	Target	6580		mg/kg	6580	*	1	YES	S3VEM
Manganese	Target	389		mg/kg	389	*	1	YES	S3VEM
Nickel	Target	23.6		mg/kg	23.6	*	1	YES	S3VEM
Potassium	Target	1350		mg/kg	1350	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.23	J	mg/kg	0.23	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	88.0	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Zinc	Target	563		mg/kg	563	*	1	YES	S3VEM
Tin	Target	16.5		mg/kg	16.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE126	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 08:03:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7230		mg/kg	7230	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	12.5		mg/kg	12.5	*	1	YES	S3VEM
Barium	Target	345		mg/kg	345	*	1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62	*	1	YES	S3VEM
Cadmium	Target	1.6		mg/kg	1.6	*	1	YES	S3VEM
Calcium	Target	20200		mg/kg	20200	*	1	YES	S3VEM
Chromium	Target	21.0		mg/kg	21.0	*	1	YES	S3VEM
Cobalt	Target	5.8		mg/kg	5.8	*	1	YES	S3VEM
Copper	Target	101		mg/kg	101	*	1	YES	S3VEM
Iron	Target	15300		mg/kg	15300	*	1	YES	S3VEM
Lead	Target	874		mg/kg	874	*	1	YES	S3VEM
Magnesium	Target	7590		mg/kg	7590	*	1	YES	S3VEM
Manganese	Target	391		mg/kg	391	*	1	YES	S3VEM
Nickel	Target	28.0		mg/kg	28.0	*	1	YES	S3VEM
Potassium	Target	1280		mg/kg	1280	*	1	YES	S3VEM
Selenium	Target	0.95	J	mg/kg	0.95	J*	1	YES	S3VEM
Silver	Target	0.29	J	mg/kg	0.29	J*	1	YES	S3VEM
Sodium	Target	499	U	mg/kg	108	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Zinc	Target	612		mg/kg	612	*	1	YES	S3VEM
Tin	Target	20.2		mg/kg	20.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE127	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 08:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8840		mg/kg	8840	*	1	YES	S3VEM
Antimony	Target	6.0	UJ	mg/kg	1.5	J*	1	YES	S3VEM
Arsenic	Target	24.8	J	mg/kg	24.8	*	1	YES	S3VEM
Barium	Target	639	J-	mg/kg	639	*	1	YES	S3VEM
Beryllium	Target	1.1	J	mg/kg	1.1	*	1	YES	S3VEM
Cadmium	Target	2.6	J-	mg/kg	2.6	*	1	YES	S3VEM
Calcium	Target	35000		mg/kg	35000	*	1	YES	S3VEM
Chromium	Target	30.8	J	mg/kg	30.8	*	1	YES	S3VEM
Cobalt	Target	9.6	J	mg/kg	9.6	*	1	YES	S3VEM
Copper	Target	168	J	mg/kg	168	*	1	YES	S3VEM
Iron	Target	22500		mg/kg	22500	*	1	YES	S3VEM
Lead	Target	1610	J	mg/kg	1610	*	1	YES	S3VEM
Magnesium	Target	13200		mg/kg	13200	*	1	YES	S3VEM
Manganese	Target	598		mg/kg	598	*	1	YES	S3VEM
Nickel	Target	45.5	J	mg/kg	45.5	*	1	YES	S3VEM
Potassium	Target	1510	J	mg/kg	1510	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	1.2	J-	mg/kg	1.2	*	1	YES	S3VEM
Sodium	Target	496	U	mg/kg	191	J*	1	YES	S3VEM
Thallium	Target	2.5	UJ	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	25.3	J	mg/kg	25.3	*	1	YES	S3VEM
Zinc	Target	1050	J	mg/kg	1050	*	1	YES	S3VEM
Tin	Target	30.5		mg/kg	30.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE127A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 08:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	12.0		mg/kg	12.0		1	YES	S3VEM
Arsenic	Spike	59.4		mg/kg	59.4		1	YES	S3VEM
Cadmium	Spike	6.3		mg/kg	6.3	*	1	YES	S3VEM
Chromium	Spike	82.9		mg/kg	82.9		1	YES	S3VEM
Cobalt	Spike	24.5		mg/kg	24.5		1	YES	S3VEM
Copper	Spike	428		mg/kg	428		1	YES	S3VEM
Selenium	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Thallium	Spike	3.5		mg/kg	3.5	*	1	YES	S3VEM
Vanadium	Spike	62.9		mg/kg	62.9		1	YES	S3VEM
Tin	Spike	29.5		mg/kg	29.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE127D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 08:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	6560		mg/kg	6560	*	1	YES	S3VEM
Antimony	Target	1.1	J	mg/kg	1.1	J	1	YES	S3VEM
Arsenic	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Barium	Target	517		mg/kg	517	*	1	YES	S3VEM
Beryllium	Target	0.81		mg/kg	0.81		1	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0	*	1	YES	S3VEM
Calcium	Target	27600		mg/kg	27600	*	1	YES	S3VEM
Chromium	Target	25.5		mg/kg	25.5		1	YES	S3VEM
Cobalt	Target	7.5		mg/kg	7.5		1	YES	S3VEM
Copper	Target	130		mg/kg	130	*	1	YES	S3VEM
Iron	Target	17700		mg/kg	17700	*	1	YES	S3VEM
Lead	Target	1190		mg/kg	1190	*	1	YES	S3VEM
Magnesium	Target	10400		mg/kg	10400	*	1	YES	S3VEM
Manganese	Target	476		mg/kg	476	*	1	YES	S3VEM
Nickel	Target	33.7		mg/kg	33.7	*	1	YES	S3VEM
Potassium	Target	1080		mg/kg	1080		1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J	1	YES	S3VEM
Silver	Target	0.55	J	mg/kg	0.55	J	1	YES	S3VEM
Sodium	Target	145	J	mg/kg	145	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Zinc	Target	778		mg/kg	778	*	1	YES	S3VEM
Tin	Target	25.0		mg/kg	25.0		1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE127L	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	7610		mg/kg	7610	*	5	YES	S3VEM
Antimony	Target	29.8	U	mg/kg	29.8	U	5	YES	S3VEM
Arsenic	Target	18.6		mg/kg	18.6	*	5	YES	S3VEM
Barium	Target	601		mg/kg	601		5	YES	S3VEM
Beryllium	Target	0.87	J	mg/kg	0.87	J*	5	YES	S3VEM
Cadmium	Target	2.3	J	mg/kg	2.3	J*	5	YES	S3VEM
Calcium	Target	33200		mg/kg	33200		5	YES	S3VEM
Chromium	Target	30.1		mg/kg	30.1		5	YES	S3VEM
Cobalt	Target	8.7	J	mg/kg	8.7	J	5	YES	S3VEM
Copper	Target	142		mg/kg	142	*	5	YES	S3VEM
Iron	Target	21500		mg/kg	21500		5	YES	S3VEM
Lead	Target	1250		mg/kg	1250	*	5	YES	S3VEM
Magnesium	Target	12200		mg/kg	12200		5	YES	S3VEM
Manganese	Target	574		mg/kg	574		5	YES	S3VEM
Nickel	Target	35.0		mg/kg	35.0	*	5	YES	S3VEM
Potassium	Target	1240	J	mg/kg	1240	J*	5	YES	S3VEM
Selenium	Target	17.4	U	mg/kg	17.4	U	5	YES	S3VEM
Silver	Target	0.58	J	mg/kg	0.58	J	5	YES	S3VEM
Sodium	Target	165	J	mg/kg	165	J*	5	YES	S3VEM
Thallium	Target	12.4	U	mg/kg	12.4	U	5	YES	S3VEM
Vanadium	Target	22.4	J	mg/kg	22.4	J*	5	YES	S3VEM
Zinc	Target	843		mg/kg	843	*	5	YES	S3VEM
Tin	Target	29.4		mg/kg	29.4		5	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE127S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 08:15:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	7.2		mg/kg	7.2		1	YES	S3VEM
Arsenic	Spike	27.1		mg/kg	27.1		1	YES	S3VEM
Barium	Spike	832		mg/kg	832		1	YES	S3VEM
Beryllium	Spike	9.6		mg/kg	9.6		1	YES	S3VEM
Cadmium	Spike	9.6		mg/kg	9.6		1	YES	S3VEM
Chromium	Spike	57.9		mg/kg	57.9		1	YES	S3VEM
Cobalt	Spike	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Spike	183		mg/kg	183		1	YES	S3VEM
Lead	Spike	1330		mg/kg	1330		1	YES	S3VEM
Manganese	Spike	575		mg/kg	575		1	YES	S3VEM
Nickel	Spike	123		mg/kg	123		1	YES	S3VEM
Selenium	Spike	15.5		mg/kg	15.5		1	YES	S3VEM
Silver	Spike	8.2		mg/kg	8.2		1	YES	S3VEM
Thallium	Spike	5.4		mg/kg	5.4		1	YES	S3VEM
Vanadium	Spike	95.3		mg/kg	95.3		1	YES	S3VEM
Zinc	Spike	964		mg/kg	964		1	YES	S3VEM
Tin	Spike	101		mg/kg	101		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE128	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 08:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	7730		mg/kg	7730	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.3	J*	1	YES	S3VEM
Arsenic	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Barium	Target	611		mg/kg	611	*	1	YES	S3VEM
Beryllium	Target	0.96		mg/kg	0.96	*	1	YES	S3VEM
Cadmium	Target	2.4		mg/kg	2.4	*	1	YES	S3VEM
Calcium	Target	31600		mg/kg	31600	*	1	YES	S3VEM
Chromium	Target	29.0		mg/kg	29.0	*	1	YES	S3VEM
Cobalt	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM
Copper	Target	152		mg/kg	152	*	1	YES	S3VEM
Iron	Target	19900		mg/kg	19900	*	1	YES	S3VEM
Lead	Target	1450		mg/kg	1450	*	1	YES	S3VEM
Magnesium	Target	11900		mg/kg	11900	*	1	YES	S3VEM
Manganese	Target	547		mg/kg	547	*	1	YES	S3VEM
Nickel	Target	39.4		mg/kg	39.4	*	1	YES	S3VEM
Potassium	Target	1290		mg/kg	1290	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	0.67	J	mg/kg	0.67	J*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	201	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	22.2		mg/kg	22.2	*	1	YES	S3VEM
Zinc	Target	955		mg/kg	955	*	1	YES	S3VEM
Tin	Target	29.2		mg/kg	29.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE129	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 08:49:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8910		mg/kg	8910	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.4	J*	1	YES	S3VEM
Arsenic	Target	21.9		mg/kg	21.9	*	1	YES	S3VEM
Barium	Target	644		mg/kg	644	*	1	YES	S3VEM
Beryllium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Cadmium	Target	2.0		mg/kg	2.0	*	1	YES	S3VEM
Calcium	Target	27100		mg/kg	27100	*	1	YES	S3VEM
Chromium	Target	29.1		mg/kg	29.1	*	1	YES	S3VEM
Cobalt	Target	9.0		mg/kg	9.0	*	1	YES	S3VEM
Copper	Target	148		mg/kg	148	*	1	YES	S3VEM
Iron	Target	18900		mg/kg	18900	*	1	YES	S3VEM
Lead	Target	1370		mg/kg	1370	*	1	YES	S3VEM
Magnesium	Target	6530		mg/kg	6530	*	1	YES	S3VEM
Manganese	Target	514		mg/kg	514	*	1	YES	S3VEM
Nickel	Target	42.4		mg/kg	42.4	*	1	YES	S3VEM
Potassium	Target	1530		mg/kg	1530	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.47	J	mg/kg	0.47	J*	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	176	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.2		mg/kg	23.2	*	1	YES	S3VEM
Zinc	Target	949		mg/kg	949	*	1	YES	S3VEM
Tin	Target	29.3		mg/kg	29.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE130	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P040-S002	pH:	Sample Date: 11/16/2017	Sample Time: 08:51:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9170		mg/kg	9170	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.0	J*	1	YES	S3VEM
Arsenic	Target	16.9		mg/kg	16.9	*	1	YES	S3VEM
Barium	Target	532		mg/kg	532	*	1	YES	S3VEM
Beryllium	Target	0.87		mg/kg	0.87	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	31100		mg/kg	31100	*	1	YES	S3VEM
Chromium	Target	26.1		mg/kg	26.1	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	105		mg/kg	105	*	1	YES	S3VEM
Iron	Target	16200		mg/kg	16200	*	1	YES	S3VEM
Lead	Target	856		mg/kg	856	*	1	YES	S3VEM
Magnesium	Target	7850		mg/kg	7850	*	1	YES	S3VEM
Manganese	Target	437		mg/kg	437	*	1	YES	S3VEM
Nickel	Target	27.7		mg/kg	27.7	*	1	YES	S3VEM
Potassium	Target	1600		mg/kg	1600	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	0.25	J	mg/kg	0.25	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	143	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	20.9		mg/kg	20.9	*	1	YES	S3VEM
Zinc	Target	672		mg/kg	672	*	1	YES	S3VEM
Tin	Target	23.4		mg/kg	23.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE131	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S001	pH:	Sample Date: 11/16/2017	Sample Time: 10:07:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9280		mg/kg	9280	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.39	J*	1	YES	S3VEM
Arsenic	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Barium	Target	110		mg/kg	110	*	1	YES	S3VEM
Beryllium	Target	0.55		mg/kg	0.55	*	1	YES	S3VEM
Cadmium	Target	0.76		mg/kg	0.76	*	1	YES	S3VEM
Calcium	Target	57400		mg/kg	57400	D*	2	YES	S3VEM
Chromium	Target	14.4		mg/kg	14.4	*	1	YES	S3VEM
Cobalt	Target	5.3		mg/kg	5.3	*	1	YES	S3VEM
Copper	Target	28.7		mg/kg	28.7	*	1	YES	S3VEM
Iron	Target	14900		mg/kg	14900	*	1	YES	S3VEM
Lead	Target	227		mg/kg	227	*	1	YES	S3VEM
Magnesium	Target	23100		mg/kg	23100	*	1	YES	S3VEM
Manganese	Target	896		mg/kg	896	*	1	YES	S3VEM
Nickel	Target	16.7		mg/kg	16.7	*	1	YES	S3VEM
Potassium	Target	2050		mg/kg	2050	*	1	YES	S3VEM
Selenium	Target	1.2	J	mg/kg	1.2	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	90.0	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	17.0		mg/kg	17.0	*	1	YES	S3VEM
Zinc	Target	265		mg/kg	265	*	1	YES	S3VEM
Tin	Target	5.0		mg/kg	5.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE132	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S001	pH:	Sample Date: 11/16/2017	Sample Time: 10:20:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10200		mg/kg	10200	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.51	J*	1	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5	*	1	YES	S3VEM
Barium	Target	118		mg/kg	118	*	1	YES	S3VEM
Beryllium	Target	0.63		mg/kg	0.63	*	1	YES	S3VEM
Cadmium	Target	0.73		mg/kg	0.73	*	1	YES	S3VEM
Calcium	Target	34700		mg/kg	34700	*	1	YES	S3VEM
Chromium	Target	16.4		mg/kg	16.4	*	1	YES	S3VEM
Cobalt	Target	6.1		mg/kg	6.1	*	1	YES	S3VEM
Copper	Target	29.7		mg/kg	29.7	*	1	YES	S3VEM
Iron	Target	15900		mg/kg	15900	*	1	YES	S3VEM
Lead	Target	240		mg/kg	240	*	1	YES	S3VEM
Magnesium	Target	11900		mg/kg	11900	*	1	YES	S3VEM
Manganese	Target	910		mg/kg	910	*	1	YES	S3VEM
Nickel	Target	20.8		mg/kg	20.8	*	1	YES	S3VEM
Potassium	Target	2040		mg/kg	2040	*	1	YES	S3VEM
Selenium	Target	0.96	J	mg/kg	0.96	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	81.3	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	19.2		mg/kg	19.2	*	1	YES	S3VEM
Zinc	Target	264		mg/kg	264	*	1	YES	S3VEM
Tin	Target	6.5		mg/kg	6.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE133	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S001	pH:	Sample Date: 11/16/2017	Sample Time: 10:24:00
% 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	5.7	U	mg/kg	0.51	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0	*	1	YES	S3VEM
Barium	Target	126		mg/kg	126	*	1	YES	S3VEM
Beryllium	Target	0.67		mg/kg	0.67	*	1	YES	S3VEM
Cadmium	Target	0.53		mg/kg	0.53	*	1	YES	S3VEM
Calcium	Target	33600		mg/kg	33600	*	1	YES	S3VEM
Chromium	Target	14.5		mg/kg	14.5	*	1	YES	S3VEM
Cobalt	Target	6.6		mg/kg	6.6	*	1	YES	S3VEM
Copper	Target	29.2		mg/kg	29.2	*	1	YES	S3VEM
Iron	Target	15700		mg/kg	15700	*	1	YES	S3VEM
Lead	Target	219		mg/kg	219	*	1	YES	S3VEM
Magnesium	Target	7900		mg/kg	7900	*	1	YES	S3VEM
Manganese	Target	1040		mg/kg	1040	*	1	YES	S3VEM
Nickel	Target	18.4		mg/kg	18.4	*	1	YES	S3VEM
Potassium	Target	2060		mg/kg	2060	*	1	YES	S3VEM
Selenium	Target	1.1	J	mg/kg	1.1	J*	1	YES	S3VEM
Silver	Target	0.95	U	mg/kg	0.95	U*	1	YES	S3VEM
Sodium	Target	475	U	mg/kg	179	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Zinc	Target	191		mg/kg	191	*	1	YES	S3VEM
Tin	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **Lab Code: BON**

Sample Number: MBE134	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S001	pH:	Sample Date: 11/16/2017	Sample Time: 10:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13400		mg/kg	13400	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.60	J*	1	YES	S3VEM
Arsenic	Target	14.6		mg/kg	14.6	*	1	YES	S3VEM
Barium	Target	191		mg/kg	191	*	1	YES	S3VEM
Beryllium	Target	0.87		mg/kg	0.87	*	1	YES	S3VEM
Cadmium	Target	0.53		mg/kg	0.53	*	1	YES	S3VEM
Calcium	Target	29600		mg/kg	29600	*	1	YES	S3VEM
Chromium	Target	16.9		mg/kg	16.9	*	1	YES	S3VEM
Cobalt	Target	7.8		mg/kg	7.8	*	1	YES	S3VEM
Copper	Target	39.4		mg/kg	39.4	*	1	YES	S3VEM
Iron	Target	19600		mg/kg	19600	*	1	YES	S3VEM
Lead	Target	346		mg/kg	346	*	1	YES	S3VEM
Magnesium	Target	6060		mg/kg	6060	*	1	YES	S3VEM
Manganese	Target	1370		mg/kg	1370	*	1	YES	S3VEM
Nickel	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Potassium	Target	2310		mg/kg	2310	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	220	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	22.4		mg/kg	22.4	*	1	YES	S3VEM
Zinc	Target	248		mg/kg	248	*	1	YES	S3VEM
Tin	Target	9.2		mg/kg	9.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE135	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S001	pH:	Sample Date: 11/16/2017	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	15200		mg/kg	15200	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.57	J*	1	YES	S3VEM
Arsenic	Target	16.5		mg/kg	16.5	*	1	YES	S3VEM
Barium	Target	124		mg/kg	124	*	1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.46	J*	1	YES	S3VEM
Calcium	Target	9050		mg/kg	9050	*	1	YES	S3VEM
Chromium	Target	18.8		mg/kg	18.8	*	1	YES	S3VEM
Cobalt	Target	8.9		mg/kg	8.9	*	1	YES	S3VEM
Copper	Target	35.4		mg/kg	35.4	*	1	YES	S3VEM
Iron	Target	22100		mg/kg	22100	*	1	YES	S3VEM
Lead	Target	169		mg/kg	169	*	1	YES	S3VEM
Magnesium	Target	3750		mg/kg	3750	*	1	YES	S3VEM
Manganese	Target	1510		mg/kg	1510	*	1	YES	S3VEM
Nickel	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Potassium	Target	2260		mg/kg	2260	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	500	U	mg/kg	224	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	25.5		mg/kg	25.5	*	1	YES	S3VEM
Zinc	Target	233		mg/kg	233	*	1	YES	S3VEM
Tin	Target	4.9	J	mg/kg	4.9	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE136	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S002	pH:	Sample Date: 11/16/2017	Sample Time: 10:18:00
% 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	0.80	J*	1	YES	S3VEM
Arsenic	Target	17.4		mg/kg	17.4	*	1	YES	S3VEM
Barium	Target	204		mg/kg	204	*	1	YES	S3VEM
Beryllium	Target	0.90		mg/kg	0.90	*	1	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Calcium	Target	15800		mg/kg	15800	*	1	YES	S3VEM
Chromium	Target	22.3		mg/kg	22.3	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	104		mg/kg	104	*	1	YES	S3VEM
Iron	Target	19600		mg/kg	19600	*	1	YES	S3VEM
Lead	Target	420		mg/kg	420	*	1	YES	S3VEM
Magnesium	Target	4620		mg/kg	4620	*	1	YES	S3VEM
Manganese	Target	1490		mg/kg	1490	*	1	YES	S3VEM
Nickel	Target	28.2		mg/kg	28.2	*	1	YES	S3VEM
Potassium	Target	2680		mg/kg	2680	*	1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.12	J	mg/kg	0.12	J*	1	YES	S3VEM
Sodium	Target	501	U	mg/kg	80.3	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.2		mg/kg	23.2	*	1	YES	S3VEM
Zinc	Target	384		mg/kg	384	*	1	YES	S3VEM
Tin	Target	12.1		mg/kg	12.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE137	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S002	pH:	Sample Date: 11/16/2017	Sample Time: 10:19:00
% 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	0.85	J*	1	YES	S3VEM
Arsenic	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Barium	Target	212		mg/kg	212	*	1	YES	S3VEM
Beryllium	Target	0.92		mg/kg	0.92	*	1	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Calcium	Target	16400		mg/kg	16400	*	1	YES	S3VEM
Chromium	Target	22.8		mg/kg	22.8	*	1	YES	S3VEM
Cobalt	Target	8.8		mg/kg	8.8	*	1	YES	S3VEM
Copper	Target	123		mg/kg	123	*	1	YES	S3VEM
Iron	Target	20100		mg/kg	20100	*	1	YES	S3VEM
Lead	Target	482		mg/kg	482	*	1	YES	S3VEM
Magnesium	Target	4700		mg/kg	4700	*	1	YES	S3VEM
Manganese	Target	1540		mg/kg	1540	*	1	YES	S3VEM
Nickel	Target	28.9		mg/kg	28.9	*	1	YES	S3VEM
Potassium	Target	2490		mg/kg	2490	*	1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.12	J	mg/kg	0.12	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	79.2	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	382		mg/kg	382	*	1	YES	S3VEM
Tin	Target	13.3		mg/kg	13.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE138	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S002	pH:	Sample Date: 11/16/2017	Sample Time: 10:41:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14300		mg/kg	14300	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.58	J*	1	YES	S3VEM
Arsenic	Target	18.1		mg/kg	18.1	*	1	YES	S3VEM
Barium	Target	214		mg/kg	214	*	1	YES	S3VEM
Beryllium	Target	0.95		mg/kg	0.95	*	1	YES	S3VEM
Cadmium	Target	0.94		mg/kg	0.94	*	1	YES	S3VEM
Calcium	Target	13900		mg/kg	13900	*	1	YES	S3VEM
Chromium	Target	21.5		mg/kg	21.5	*	1	YES	S3VEM
Cobalt	Target	9.2		mg/kg	9.2	*	1	YES	S3VEM
Copper	Target	76.7		mg/kg	76.7	*	1	YES	S3VEM
Iron	Target	20300		mg/kg	20300	*	1	YES	S3VEM
Lead	Target	389		mg/kg	389	*	1	YES	S3VEM
Magnesium	Target	3640		mg/kg	3640	*	1	YES	S3VEM
Manganese	Target	2010		mg/kg	2010	D*	2	YES	S3VEM
Nickel	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Potassium	Target	2350		mg/kg	2350	*	1	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J*	1	YES	S3VEM
Silver	Target	0.13	J	mg/kg	0.13	J*	1	YES	S3VEM
Sodium	Target	491	U	mg/kg	69.5	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	24.5		mg/kg	24.5	*	1	YES	S3VEM
Zinc	Target	352		mg/kg	352	*	1	YES	S3VEM
Tin	Target	11.6		mg/kg	11.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE139	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S002	pH:	Sample Date: 11/16/2017	Sample Time: 11:28:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14300		mg/kg	14300	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	0.67	J*	1	YES	S3VEM
Arsenic	Target	13.4		mg/kg	13.4	*	1	YES	S3VEM
Barium	Target	112		mg/kg	112	*	1	YES	S3VEM
Beryllium	Target	0.97		mg/kg	0.97	*	1	YES	S3VEM
Cadmium	Target	0.53		mg/kg	0.53	*	1	YES	S3VEM
Calcium	Target	18200		mg/kg	18200	*	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	130		mg/kg	130	*	1	YES	S3VEM
Iron	Target	20300		mg/kg	20300	*	1	YES	S3VEM
Lead	Target	169		mg/kg	169	*	1	YES	S3VEM
Magnesium	Target	3560		mg/kg	3560	*	1	YES	S3VEM
Manganese	Target	1330		mg/kg	1330	*	1	YES	S3VEM
Nickel	Target	23.5		mg/kg	23.5	*	1	YES	S3VEM
Potassium	Target	2620		mg/kg	2620	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.97	U	mg/kg	0.97	U*	1	YES	S3VEM
Sodium	Target	485	U	mg/kg	53.0	J*	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U*	1	YES	S3VEM
Vanadium	Target	23.4		mg/kg	23.4	*	1	YES	S3VEM
Zinc	Target	171		mg/kg	171	*	1	YES	S3VEM
Tin	Target	6.1		mg/kg	6.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

Sample Number: MBE140	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P041-S002	pH:	Sample Date: 11/16/2017	Sample Time: 11:33:00
% 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	5.9	U	mg/kg	0.35	J*	1	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0	*	1	YES	S3VEM
Barium	Target	130		mg/kg	130	*	1	YES	S3VEM
Beryllium	Target	0.84		mg/kg	0.84	*	1	YES	S3VEM
Cadmium	Target	0.57		mg/kg	0.57	*	1	YES	S3VEM
Calcium	Target	60000		mg/kg	60000	D*	3	YES	S3VEM
Chromium	Target	15.9		mg/kg	15.9	*	1	YES	S3VEM
Cobalt	Target	6.5		mg/kg	6.5	*	1	YES	S3VEM
Copper	Target	45.6		mg/kg	45.6	*	1	YES	S3VEM
Iron	Target	17600		mg/kg	17600	*	1	YES	S3VEM
Lead	Target	195		mg/kg	195	*	1	YES	S3VEM
Magnesium	Target	8250		mg/kg	8250	*	1	YES	S3VEM
Manganese	Target	1120		mg/kg	1120	*	1	YES	S3VEM
Nickel	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Potassium	Target	2840		mg/kg	2840	*	1	YES	S3VEM
Selenium	Target	0.76	J	mg/kg	0.76	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	493	U	mg/kg	74.4	J*	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U*	1	YES	S3VEM
Vanadium	Target	20.2		mg/kg	20.2	*	1	YES	S3VEM
Zinc	Target	187		mg/kg	187	*	1	YES	S3VEM
Tin	Target	5.6		mg/kg	5.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE121** | **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	2.0	J	mg/kg	2.0	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	-0.18	J	1	YES	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	YES	S3VEM
Calcium	Target	5.3	J	mg/kg	5.3	J	1	YES	S3VEM
Chromium	Target			mg/kg	-0.053	J	1	YES	S3VEM
Cobalt	Target			mg/kg	-0.082	J	1	YES	S3VEM
Copper	Target			mg/kg	-0.056	J	1	YES	S3VEM
Iron	Target			mg/kg	-1.5	J	1	YES	S3VEM
Lead	Target	0.39	J	mg/kg	0.39	J	1	YES	S3VEM
Magnesium	Target	500	U	mg/kg	500	U	1	YES	S3VEM
Manganese	Target			mg/kg	-0.093	J	1	YES	S3VEM
Nickel	Target			mg/kg	-0.091	J	1	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	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	-0.29	J	1	YES	S3VEM
Vanadium	Target			mg/kg	-0.060	J	1	YES	S3VEM
Zinc	Target	6.0	U	mg/kg	6.0	U	1	YES	S3VEM
Tin	Target	1.1		mg/kg	1.1	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE121	Lab Code: BON

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

EXECUTIVE NARRATIVE

Case No.: 47320
Site: Eighteeenmile Creek
Number of Samples: 20 (Soil)
Analysis: Metals (ICP-AES)

SDG No.: MBE146
Laboratory: Bonner Analytical Testing Co.
Sampling dates: 11/16/2017
Validation SOP: HW-3a (Rev 1)

QAPP
Contractor: Weston Solutions
Reference: DCN # RST3-04-D-0090

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:
Sample MBE146 has analytes that have been qualified J, J+ or J-.

Minor Findings:
None

COMMENT: Concentrations of **Lead** exceeded the project action levels for one or more samples.

Reviewer Name(s): Jianwei Huang

Approver's Signature: **Date: 01/09/18**

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.	

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 ±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.

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 MBE146, MBE159, MBE156, MBE147, MBE160, MBE157, MBE163, MBE158, MBE164, MBE162, MBE148, MBE149, MBE152, MBE153, MBE150, MBE155, MBE151, MBE165, MBE161, MBE154
Cadmium MBE165, MBE158, MBE159, MBE160
Sodium MBE147, MBE155, MBE150, MBE149, MBE154, MBE151, MBE164, MBE162, MBE160, MBE156, MBE152, MBE157, MBE165, MBE161, MBE146, MBE153, MBE163, MBE159, MBE158, MBE148

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 MBE156, MBE159, MBE154, MBE161, MBE165, MBE151, MBE155, MBE150, MBE153, MBE152, MBE149, MBE148, MBE162, MBE164, MBE158, MBE163, MBE157, MBE160, MBE147, MBE146

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.

Antimony MBE146, MBE159, MBE154, MBE161, MBE165, MBE151, MBE155, MBE150, MBE156, MBE147, MBE160, MBE157, MBE163, MBE153, MBE149, MBE152, MBE148, MBE162, MBE164, MBE158
Tin MBE159, MBE165, MBE146, MBE160, MBE164

Field Blank MBE168 in SDG MBE0X6

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 ± 20% or ±CRQL (whichever is greater) of the true value for the analytes and interferents included in the solution. If results that are ≥ 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 ≥ 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 ≥ 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 Silver spike analyte %R within 30 - 74% and the post digestion spike is not required. Detects are qualified as J-. Nondetects are qualified as UJ.

Silver MBE146

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-. Nondetects are qualified as R.

Antimony MBE146

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-. Nondetects are qualified as UJ.

Selenium MBE146

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 ≥ 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

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 ≥ 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.

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 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. Nondetects are not qualified.

Aluminum, Barium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Potassium, Tin and Vanadium MBE146

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: 47320	Contract: EPW14029	SDG: MBE146	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	36.4		mg/kg	36.4		1	YES	S3VEM
Antimony	Spike	11.0		mg/kg	11.0		1	YES	S3VEM
Arsenic	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Barium	Spike	38.8		mg/kg	38.8		1	YES	S3VEM
Beryllium	Spike	0.99		mg/kg	0.99		1	YES	S3VEM
Cadmium	Spike	0.98		mg/kg	0.98		1	YES	S3VEM
Calcium	Spike	1010		mg/kg	1010		1	YES	S3VEM
Chromium	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Cobalt	Spike	10.0		mg/kg	10.0		1	YES	S3VEM
Copper	Spike	4.5		mg/kg	4.5		1	YES	S3VEM
Iron	Spike	15.4		mg/kg	15.4		1	YES	S3VEM
Lead	Spike	2.0		mg/kg	2.0		1	YES	S3VEM
Magnesium	Spike	923		mg/kg	923		1	YES	S3VEM
Manganese	Spike	2.9		mg/kg	2.9		1	YES	S3VEM
Nickel	Spike	8.3		mg/kg	8.3		1	YES	S3VEM
Potassium	Spike	924		mg/kg	924		1	YES	S3VEM
Selenium	Spike	6.0		mg/kg	6.0		1	YES	S3VEM
Silver	Spike	1.8		mg/kg	1.8		1	YES	S3VEM
Sodium	Spike	946		mg/kg	946		1	YES	S3VEM
Thallium	Spike	4.5		mg/kg	4.5		1	YES	S3VEM
Vanadium	Spike	9.9		mg/kg	9.9		1	YES	S3VEM
Zinc	Spike	12.6		mg/kg	12.6		1	YES	S3VEM
Tin	Spike	10.3		mg/kg	10.3		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE146	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S001	pH:	Sample Date: 11/16/2017	Sample Time: 15:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13100	J	mg/kg	13100	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.68	J*	1	YES	S3VEM
Arsenic	Target	9.9		mg/kg	9.9	*	1	YES	S3VEM
Barium	Target	133	J	mg/kg	133	*	1	YES	S3VEM
Beryllium	Target	0.75		mg/kg	0.75	*	1	YES	S3VEM
Cadmium	Target	0.48	J	mg/kg	0.48	J*	1	YES	S3VEM
Calcium	Target	12100	J	mg/kg	12100	*	1	YES	S3VEM
Chromium	Target	23.3	J	mg/kg	23.3	*	1	YES	S3VEM
Cobalt	Target	6.3	J	mg/kg	6.3	*	1	YES	S3VEM
Copper	Target	24.6	J	mg/kg	24.6	*	1	YES	S3VEM
Iron	Target	16300	J	mg/kg	16300	*	1	YES	S3VEM
Lead	Target	145		mg/kg	145	*	1	YES	S3VEM
Magnesium	Target	4490	J	mg/kg	4490	*	1	YES	S3VEM
Manganese	Target	781	J	mg/kg	781	*	1	YES	S3VEM
Nickel	Target	17.0		mg/kg	17.0		1	YES	S3VEM
Potassium	Target	1700	J	mg/kg	1700	*	1	YES	S3VEM
Selenium	Target	1.7	J-	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.99	UJ	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	496	U	mg/kg	71.5	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.4	J	mg/kg	22.4	*	1	YES	S3VEM
Zinc	Target	156		mg/kg	156	*	1	YES	S3VEM
Tin	Target	4.0	J	mg/kg	4.0	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE146A	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 15:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	8.7		mg/kg	8.7	*	1	YES	S3VEM
Selenium	Spike	5.7		mg/kg	5.7	*	1	YES	S3VEM
Tin	Spike	4.6		mg/kg	4.6	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE146D	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 15:00:00
% 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	0.71	J	mg/kg	0.71	J	1	YES	S3VEM
Arsenic	Target	9.7		mg/kg	9.7		1	YES	S3VEM
Barium	Target	130		mg/kg	130		1	YES	S3VEM
Beryllium	Target	0.74		mg/kg	0.74		1	YES	S3VEM
Cadmium	Target	0.48	J	mg/kg	0.48	J	1	YES	S3VEM
Calcium	Target	12900		mg/kg	12900		1	YES	S3VEM
Chromium	Target	23.0		mg/kg	23.0		1	YES	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1	YES	S3VEM
Copper	Target	24.3		mg/kg	24.3		1	YES	S3VEM
Iron	Target	15800		mg/kg	15800		1	YES	S3VEM
Lead	Target	147		mg/kg	147		1	YES	S3VEM
Magnesium	Target	4520		mg/kg	4520		1	YES	S3VEM
Manganese	Target	765		mg/kg	765		1	YES	S3VEM
Nickel	Target	16.7		mg/kg	16.7		1	YES	S3VEM
Potassium	Target	1690		mg/kg	1690		1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Sodium	Target	72.8	J	mg/kg	72.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	22.0		mg/kg	22.0		1	YES	S3VEM
Zinc	Target	160		mg/kg	160		1	YES	S3VEM
Tin	Target	4.2		mg/kg	4.2	J	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE146L	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	15700		mg/kg	15700	*	5	YES	S3VEM
Antimony	Target	1.2	J	mg/kg	1.2	J	5	YES	S3VEM
Arsenic	Target	11.0		mg/kg	11.0	*	5	YES	S3VEM
Barium	Target	161		mg/kg	161	*	5	YES	S3VEM
Beryllium	Target	0.85	J	mg/kg	0.85	J*	5	YES	S3VEM
Cadmium	Target	0.60	J	mg/kg	0.60	J*	5	YES	S3VEM
Calcium	Target	16400		mg/kg	16400	*	5	YES	S3VEM
Chromium	Target	29.2		mg/kg	29.2	*	5	YES	S3VEM
Cobalt	Target	8.2	J	mg/kg	8.2	J*	5	YES	S3VEM
Copper	Target	29.4		mg/kg	29.4	*	5	YES	S3VEM
Iron	Target	20600		mg/kg	20600	*	5	YES	S3VEM
Lead	Target	161		mg/kg	161	*	5	YES	S3VEM
Magnesium	Target	5750		mg/kg	5750	*	5	YES	S3VEM
Manganese	Target	984		mg/kg	984	*	5	YES	S3VEM
Nickel	Target	17.9	J	mg/kg	17.9	J	5	YES	S3VEM
Potassium	Target	2040	J	mg/kg	2040	J*	5	YES	S3VEM
Selenium	Target	1.8	J	mg/kg	1.8	J	5	YES	S3VEM
Silver	Target	5.0	U	mg/kg	5.0	U	5	YES	S3VEM
Sodium	Target	79.4	J	mg/kg	79.4	J	5	YES	S3VEM
Thallium	Target	12.4	U	mg/kg	12.4	U	5	YES	S3VEM
Vanadium	Target	27.4		mg/kg	27.4	*	5	YES	S3VEM
Zinc	Target	178		mg/kg	178	*	5	YES	S3VEM
Tin	Target	5.2		mg/kg	5.2	J*	5	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE146S	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location:	pH:	Sample Date: 11/16/2017	Sample Time: 15:00:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	5.7	J	mg/kg	5.7	J	1	YES	S3VEM
Arsenic	Spike	17.0		mg/kg	17.0		1	YES	S3VEM
Barium	Spike	434		mg/kg	434		1	YES	S3VEM
Beryllium	Spike	10.3		mg/kg	10.3		1	YES	S3VEM
Cadmium	Spike	8.1		mg/kg	8.1		1	YES	S3VEM
Chromium	Spike	55.1		mg/kg	55.1		1	YES	S3VEM
Cobalt	Spike	83.3		mg/kg	83.3		1	YES	S3VEM
Copper	Spike	62.2		mg/kg	62.2		1	YES	S3VEM
Lead	Spike	146		mg/kg	146		1	YES	S3VEM
Manganese	Spike	849		mg/kg	849		1	YES	S3VEM
Nickel	Spike	115		mg/kg	115		1	YES	S3VEM
Selenium	Spike	14.5		mg/kg	14.5		1	YES	S3VEM
Silver	Spike	6.9		mg/kg	6.9		1	YES	S3VEM
Thallium	Spike	7.6		mg/kg	7.6		1	YES	S3VEM
Vanadium	Spike	98.6		mg/kg	98.6		1	YES	S3VEM
Zinc	Spike	252		mg/kg	252		1	YES	S3VEM
Tin	Spike	69.1		mg/kg	69.1		1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE147	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S002	pH:	Sample Date: 11/16/2017	Sample Time: 13:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8290		mg/kg	8290	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.79	J*	1	YES	S3VEM
Arsenic	Target	10.3		mg/kg	10.3	*	1	YES	S3VEM
Barium	Target	123		mg/kg	123	*	1	YES	S3VEM
Beryllium	Target	0.62		mg/kg	0.62	*	1	YES	S3VEM
Cadmium	Target	0.60		mg/kg	0.60	*	1	YES	S3VEM
Calcium	Target	11100		mg/kg	11100	*	1	YES	S3VEM
Chromium	Target	15.5		mg/kg	15.5	*	1	YES	S3VEM
Cobalt	Target	5.0		mg/kg	5.0	*	1	YES	S3VEM
Copper	Target	33.3		mg/kg	33.3	*	1	YES	S3VEM
Iron	Target	13200		mg/kg	13200	*	1	YES	S3VEM
Lead	Target	174		mg/kg	174	*	1	YES	S3VEM
Magnesium	Target	4610		mg/kg	4610	*	1	YES	S3VEM
Manganese	Target	434		mg/kg	434	*	1	YES	S3VEM
Nickel	Target	19.7		mg/kg	19.7		1	YES	S3VEM
Potassium	Target	1580		mg/kg	1580	*	1	YES	S3VEM
Selenium	Target	1.5	J	mg/kg	1.5	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	61.3	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	18.0		mg/kg	18.0	*	1	YES	S3VEM
Zinc	Target	215		mg/kg	215	*	1	YES	S3VEM
Tin	Target	7.8		mg/kg	7.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE148	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S002	pH:	Sample Date: 11/16/2017	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	8850		mg/kg	8850	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.83	J*	1	YES	S3VEM
Arsenic	Target	10.5		mg/kg	10.5	*	1	YES	S3VEM
Barium	Target	140		mg/kg	140	*	1	YES	S3VEM
Beryllium	Target	0.66		mg/kg	0.66	*	1	YES	S3VEM
Cadmium	Target	0.65		mg/kg	0.65	*	1	YES	S3VEM
Calcium	Target	12700		mg/kg	12700	*	1	YES	S3VEM
Chromium	Target	16.6		mg/kg	16.6	*	1	YES	S3VEM
Cobalt	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM
Copper	Target	39.0		mg/kg	39.0	*	1	YES	S3VEM
Iron	Target	14500		mg/kg	14500	*	1	YES	S3VEM
Lead	Target	193		mg/kg	193	*	1	YES	S3VEM
Magnesium	Target	5210		mg/kg	5210	*	1	YES	S3VEM
Manganese	Target	500		mg/kg	500	*	1	YES	S3VEM
Nickel	Target	21.9		mg/kg	21.9		1	YES	S3VEM
Potassium	Target	1560		mg/kg	1560	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	491	U	mg/kg	68.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	19.6		mg/kg	19.6	*	1	YES	S3VEM
Zinc	Target	228		mg/kg	228	*	1	YES	S3VEM
Tin	Target	8.3		mg/kg	8.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE149	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S002	pH:	Sample Date: 11/16/2017	Sample Time: 14:25:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8020		mg/kg	8020	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.1	J*	1	YES	S3VEM
Arsenic	Target	16.1		mg/kg	16.1	*	1	YES	S3VEM
Barium	Target	174		mg/kg	174	*	1	YES	S3VEM
Beryllium	Target	0.79		mg/kg	0.79	*	1	YES	S3VEM
Cadmium	Target	0.71		mg/kg	0.71	*	1	YES	S3VEM
Calcium	Target	14100		mg/kg	14100	*	1	YES	S3VEM
Chromium	Target	16.4		mg/kg	16.4	*	1	YES	S3VEM
Cobalt	Target	5.6		mg/kg	5.6	*	1	YES	S3VEM
Copper	Target	46.7		mg/kg	46.7	*	1	YES	S3VEM
Iron	Target	16100		mg/kg	16100	*	1	YES	S3VEM
Lead	Target	211		mg/kg	211	*	1	YES	S3VEM
Magnesium	Target	4520		mg/kg	4520	*	1	YES	S3VEM
Manganese	Target	457		mg/kg	457	*	1	YES	S3VEM
Nickel	Target	23.0		mg/kg	23.0		1	YES	S3VEM
Potassium	Target	1340		mg/kg	1340	*	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	501	U	mg/kg	78.3	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	20.1		mg/kg	20.1	*	1	YES	S3VEM
Zinc	Target	241		mg/kg	241	*	1	YES	S3VEM
Tin	Target	10.2		mg/kg	10.2	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE150	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S002	pH:	Sample Date: 11/16/2017	Sample Time: 14:45:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10400		mg/kg	10400	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	1.2	J*	1	YES	S3VEM
Arsenic	Target	21.8		mg/kg	21.8	*	1	YES	S3VEM
Barium	Target	241		mg/kg	241	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91	*	1	YES	S3VEM
Cadmium	Target	0.83		mg/kg	0.83	*	1	YES	S3VEM
Calcium	Target	13400		mg/kg	13400	*	1	YES	S3VEM
Chromium	Target	20.8		mg/kg	20.8	*	1	YES	S3VEM
Cobalt	Target	6.7		mg/kg	6.7	*	1	YES	S3VEM
Copper	Target	50.0		mg/kg	50.0	*	1	YES	S3VEM
Iron	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Lead	Target	283		mg/kg	283	*	1	YES	S3VEM
Magnesium	Target	4470		mg/kg	4470	*	1	YES	S3VEM
Manganese	Target	641		mg/kg	641	*	1	YES	S3VEM
Nickel	Target	25.7		mg/kg	25.7		1	YES	S3VEM
Potassium	Target	1810		mg/kg	1810	*	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	498	U	mg/kg	79.2	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.5		mg/kg	23.5	*	1	YES	S3VEM
Zinc	Target	304		mg/kg	304	*	1	YES	S3VEM
Tin	Target	10.3		mg/kg	10.3	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE151	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S003	pH:	Sample Date: 11/16/2017	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	7770		mg/kg	7770	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.83	J*	1	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Barium	Target	196		mg/kg	196	*	1	YES	S3VEM
Beryllium	Target	0.56		mg/kg	0.56	*	1	YES	S3VEM
Cadmium	Target	1.1		mg/kg	1.1	*	1	YES	S3VEM
Calcium	Target	14500		mg/kg	14500	*	1	YES	S3VEM
Chromium	Target	16.8		mg/kg	16.8	*	1	YES	S3VEM
Cobalt	Target	5.3		mg/kg	5.3	*	1	YES	S3VEM
Copper	Target	66.7		mg/kg	66.7	*	1	YES	S3VEM
Iron	Target	14300		mg/kg	14300	*	1	YES	S3VEM
Lead	Target	287		mg/kg	287	*	1	YES	S3VEM
Magnesium	Target	4660		mg/kg	4660	*	1	YES	S3VEM
Manganese	Target	368		mg/kg	368	*	1	YES	S3VEM
Nickel	Target	21.4		mg/kg	21.4		1	YES	S3VEM
Potassium	Target	1450		mg/kg	1450	*	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	77.4	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	18.1		mg/kg	18.1	*	1	YES	S3VEM
Zinc	Target	399		mg/kg	399	*	1	YES	S3VEM
Tin	Target	14.0		mg/kg	14.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE152	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S003	pH:	Sample Date: 11/16/2017	Sample Time: 15:26:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	8200		mg/kg	8200	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.97	J*	1	YES	S3VEM
Arsenic	Target	8.2		mg/kg	8.2	*	1	YES	S3VEM
Barium	Target	177		mg/kg	177	*	1	YES	S3VEM
Beryllium	Target	0.57		mg/kg	0.57	*	1	YES	S3VEM
Cadmium	Target	0.85		mg/kg	0.85	*	1	YES	S3VEM
Calcium	Target	14100		mg/kg	14100	*	1	YES	S3VEM
Chromium	Target	16.4		mg/kg	16.4	*	1	YES	S3VEM
Cobalt	Target	5.2		mg/kg	5.2	*	1	YES	S3VEM
Copper	Target	57.2		mg/kg	57.2	*	1	YES	S3VEM
Iron	Target	14400		mg/kg	14400	*	1	YES	S3VEM
Lead	Target	256		mg/kg	256	*	1	YES	S3VEM
Magnesium	Target	4710		mg/kg	4710	*	1	YES	S3VEM
Manganese	Target	362		mg/kg	362	*	1	YES	S3VEM
Nickel	Target	20.5		mg/kg	20.5		1	YES	S3VEM
Potassium	Target	1560		mg/kg	1560	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	502	U	mg/kg	79.7	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	18.6		mg/kg	18.6	*	1	YES	S3VEM
Zinc	Target	346		mg/kg	346	*	1	YES	S3VEM
Tin	Target	14.6		mg/kg	14.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE153	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S003	pH:	Sample Date: 11/16/2017	Sample Time: 15:51:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9420		mg/kg	9420	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.7	J*	1	YES	S3VEM
Arsenic	Target	21.0		mg/kg	21.0	*	1	YES	S3VEM
Barium	Target	369		mg/kg	369	*	1	YES	S3VEM
Beryllium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Cadmium	Target	1.4		mg/kg	1.4	*	1	YES	S3VEM
Calcium	Target	22500		mg/kg	22500	*	1	YES	S3VEM
Chromium	Target	24.6		mg/kg	24.6	*	1	YES	S3VEM
Cobalt	Target	8.9		mg/kg	8.9	*	1	YES	S3VEM
Copper	Target	215		mg/kg	215	*	1	YES	S3VEM
Iron	Target	25900		mg/kg	25900	*	1	YES	S3VEM
Lead	Target	574		mg/kg	574	*	1	YES	S3VEM
Magnesium	Target	4920		mg/kg	4920	*	1	YES	S3VEM
Manganese	Target	439		mg/kg	439	*	1	YES	S3VEM
Nickel	Target	33.0		mg/kg	33.0		1	YES	S3VEM
Potassium	Target	1590		mg/kg	1590	*	1	YES	S3VEM
Selenium	Target	2.4	J	mg/kg	2.4	J*	1	YES	S3VEM
Silver	Target	0.26	J	mg/kg	0.26	J*	1	YES	S3VEM
Sodium	Target	492	U	mg/kg	150	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.5		mg/kg	25.5	*	1	YES	S3VEM
Zinc	Target	672		mg/kg	672	*	1	YES	S3VEM
Tin	Target	28.6		mg/kg	28.6	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE154	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S003	pH:	Sample Date: 11/16/2017	Sample Time: 16:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	10000		mg/kg	10000	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.56	J*	1	YES	S3VEM
Arsenic	Target	9.9		mg/kg	9.9	*	1	YES	S3VEM
Barium	Target	169		mg/kg	169	*	1	YES	S3VEM
Beryllium	Target	0.68		mg/kg	0.68	*	1	YES	S3VEM
Cadmium	Target	0.56		mg/kg	0.56	*	1	YES	S3VEM
Calcium	Target	38400		mg/kg	38400	*	1	YES	S3VEM
Chromium	Target	16.1		mg/kg	16.1	*	1	YES	S3VEM
Cobalt	Target	5.1		mg/kg	5.1	*	1	YES	S3VEM
Copper	Target	159		mg/kg	159	*	1	YES	S3VEM
Iron	Target	13600		mg/kg	13600	*	1	YES	S3VEM
Lead	Target	210		mg/kg	210	*	1	YES	S3VEM
Magnesium	Target	8780		mg/kg	8780	*	1	YES	S3VEM
Manganese	Target	420		mg/kg	420	*	1	YES	S3VEM
Nickel	Target	16.2		mg/kg	16.2		1	YES	S3VEM
Potassium	Target	2030		mg/kg	2030	*	1	YES	S3VEM
Selenium	Target	1.4	J	mg/kg	1.4	J*	1	YES	S3VEM
Silver	Target	0.049	J	mg/kg	0.049	J*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	92.3	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	18.2		mg/kg	18.2	*	1	YES	S3VEM
Zinc	Target	256		mg/kg	256	*	1	YES	S3VEM
Tin	Target	13.1		mg/kg	13.1	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE155	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P042-S003	pH:	Sample Date: 11/16/2017	Sample Time: 15:49:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	9520		mg/kg	9520	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	1.5	J*	1	YES	S3VEM
Arsenic	Target	17.0		mg/kg	17.0	*	1	YES	S3VEM
Barium	Target	303		mg/kg	303	*	1	YES	S3VEM
Beryllium	Target	0.98		mg/kg	0.98	*	1	YES	S3VEM
Cadmium	Target	1.2		mg/kg	1.2	*	1	YES	S3VEM
Calcium	Target	20600		mg/kg	20600	*	1	YES	S3VEM
Chromium	Target	21.7		mg/kg	21.7	*	1	YES	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM
Copper	Target	145		mg/kg	145	*	1	YES	S3VEM
Iron	Target	24800		mg/kg	24800	*	1	YES	S3VEM
Lead	Target	428		mg/kg	428	*	1	YES	S3VEM
Magnesium	Target	4780		mg/kg	4780	*	1	YES	S3VEM
Manganese	Target	392		mg/kg	392	*	1	YES	S3VEM
Nickel	Target	31.3		mg/kg	31.3		1	YES	S3VEM
Potassium	Target	1540		mg/kg	1540	*	1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.98	U	mg/kg	0.98	U*	1	YES	S3VEM
Sodium	Target	488	U	mg/kg	140	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	24.5		mg/kg	24.5	*	1	YES	S3VEM
Zinc	Target	525		mg/kg	525	*	1	YES	S3VEM
Tin	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE156	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S001	pH:	Sample Date: 11/16/2017	Sample Time: 16:40:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	12300		mg/kg	12300	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.76	J*	1	YES	S3VEM
Arsenic	Target	14.1		mg/kg	14.1	*	1	YES	S3VEM
Barium	Target	97.7		mg/kg	97.7	*	1	YES	S3VEM
Beryllium	Target	0.84		mg/kg	0.84	*	1	YES	S3VEM
Cadmium	Target	0.59		mg/kg	0.59	*	1	YES	S3VEM
Calcium	Target	6740		mg/kg	6740	*	1	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	33.8		mg/kg	33.8	*	1	YES	S3VEM
Iron	Target	16500		mg/kg	16500	*	1	YES	S3VEM
Lead	Target	147		mg/kg	147	*	1	YES	S3VEM
Magnesium	Target	3550		mg/kg	3550	*	1	YES	S3VEM
Manganese	Target	528		mg/kg	528	*	1	YES	S3VEM
Nickel	Target	28.2		mg/kg	28.2		1	YES	S3VEM
Potassium	Target	1810		mg/kg	1810	*	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	501	U	mg/kg	63.6	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Zinc	Target	195		mg/kg	195	*	1	YES	S3VEM
Tin	Target	5.4		mg/kg	5.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE157	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S001	pH:	Sample Date: 11/16/2017	Sample Time: 16:41:00
% 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	5.9	U	mg/kg	0.79	J*	1	YES	S3VEM
Arsenic	Target	14.2		mg/kg	14.2	*	1	YES	S3VEM
Barium	Target	106		mg/kg	106	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85	*	1	YES	S3VEM
Cadmium	Target	0.61		mg/kg	0.61	*	1	YES	S3VEM
Calcium	Target	6650		mg/kg	6650	*	1	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	36.4		mg/kg	36.4	*	1	YES	S3VEM
Iron	Target	16300		mg/kg	16300	*	1	YES	S3VEM
Lead	Target	151		mg/kg	151	*	1	YES	S3VEM
Magnesium	Target	3580		mg/kg	3580	*	1	YES	S3VEM
Manganese	Target	536		mg/kg	536	*	1	YES	S3VEM
Nickel	Target	28.4		mg/kg	28.4		1	YES	S3VEM
Potassium	Target	1770		mg/kg	1770	*	1	YES	S3VEM
Selenium	Target	1.9	J	mg/kg	1.9	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	495	U	mg/kg	69.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.2		mg/kg	25.2	*	1	YES	S3VEM
Zinc	Target	195		mg/kg	195	*	1	YES	S3VEM
Tin	Target	8.5		mg/kg	8.5	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE158	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S001	pH:	Sample Date: 11/16/2017	Sample Time: 16:56:00
% 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	0.75	J*	1	YES	S3VEM
Arsenic	Target	12.4		mg/kg	12.4	*	1	YES	S3VEM
Barium	Target	94.4		mg/kg	94.4	*	1	YES	S3VEM
Beryllium	Target	0.82		mg/kg	0.82	*	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	*	1	YES	S3VEM
Calcium	Target	6030		mg/kg	6030	*	1	YES	S3VEM
Chromium	Target	17.7		mg/kg	17.7	*	1	YES	S3VEM
Cobalt	Target	7.4		mg/kg	7.4	*	1	YES	S3VEM
Copper	Target	31.6		mg/kg	31.6	*	1	YES	S3VEM
Iron	Target	15500		mg/kg	15500	*	1	YES	S3VEM
Lead	Target	103		mg/kg	103	*	1	YES	S3VEM
Magnesium	Target	3130		mg/kg	3130	*	1	YES	S3VEM
Manganese	Target	508		mg/kg	508	*	1	YES	S3VEM
Nickel	Target	23.5		mg/kg	23.5		1	YES	S3VEM
Potassium	Target	1540		mg/kg	1540	*	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	502	U	mg/kg	81.7	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.0		mg/kg	25.0	*	1	YES	S3VEM
Zinc	Target	146		mg/kg	146	*	1	YES	S3VEM
Tin	Target	5.8		mg/kg	5.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE159	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S001	pH:	Sample Date: 11/16/2017	Sample Time: 17:25:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13100		mg/kg	13100	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.66	J*	1	YES	S3VEM
Arsenic	Target	10.0		mg/kg	10.0	*	1	YES	S3VEM
Barium	Target	98.5		mg/kg	98.5	*	1	YES	S3VEM
Beryllium	Target	0.76		mg/kg	0.76	*	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.38	J*	1	YES	S3VEM
Calcium	Target	6310		mg/kg	6310	*	1	YES	S3VEM
Chromium	Target	19.0		mg/kg	19.0	*	1	YES	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	YES	S3VEM
Copper	Target	22.5		mg/kg	22.5	*	1	YES	S3VEM
Iron	Target	15500		mg/kg	15500	*	1	YES	S3VEM
Lead	Target	60.0		mg/kg	60.0	*	1	YES	S3VEM
Magnesium	Target	3190		mg/kg	3190	*	1	YES	S3VEM
Manganese	Target	652		mg/kg	652	*	1	YES	S3VEM
Nickel	Target	19.1		mg/kg	19.1		1	YES	S3VEM
Potassium	Target	1640		mg/kg	1640	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	498	U	mg/kg	58.6	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.1		mg/kg	23.1	*	1	YES	S3VEM
Zinc	Target	109		mg/kg	109	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	3.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **Lab Code: BON**

Sample Number: MBE160	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S001	pH:	Sample Date: 11/16/2017	Sample Time: 17:25:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	14900		mg/kg	14900	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.47	J*	1	YES	S3VEM
Arsenic	Target	9.5		mg/kg	9.5	*	1	YES	S3VEM
Barium	Target	104		mg/kg	104	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85	*	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.34	J*	1	YES	S3VEM
Calcium	Target	4770		mg/kg	4770	*	1	YES	S3VEM
Chromium	Target	17.8		mg/kg	17.8	*	1	YES	S3VEM
Cobalt	Target	7.1		mg/kg	7.1	*	1	YES	S3VEM
Copper	Target	24.5		mg/kg	24.5	*	1	YES	S3VEM
Iron	Target	16700		mg/kg	16700	*	1	YES	S3VEM
Lead	Target	34.9		mg/kg	34.9	*	1	YES	S3VEM
Magnesium	Target	2980		mg/kg	2980	*	1	YES	S3VEM
Manganese	Target	870		mg/kg	870	*	1	YES	S3VEM
Nickel	Target	18.1		mg/kg	18.1		1	YES	S3VEM
Potassium	Target	1940		mg/kg	1940	*	1	YES	S3VEM
Selenium	Target	1.6	J	mg/kg	1.6	J*	1	YES	S3VEM
Silver	Target	1.0	U	mg/kg	1.0	U*	1	YES	S3VEM
Sodium	Target	499	U	mg/kg	53.8	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.7		mg/kg	23.7	*	1	YES	S3VEM
Zinc	Target	90.2		mg/kg	90.2	*	1	YES	S3VEM
Tin	Target	5.0		mg/kg	1.6	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE161	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S002	pH:	Sample Date: 11/16/2017	Sample Time: 16:35:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11100		mg/kg	11100	*	1	YES	S3VEM
Antimony	Target	5.8	U	mg/kg	0.91	J*	1	YES	S3VEM
Arsenic	Target	12.8		mg/kg	12.8	*	1	YES	S3VEM
Barium	Target	143		mg/kg	143	*	1	YES	S3VEM
Beryllium	Target	0.91		mg/kg	0.91	*	1	YES	S3VEM
Cadmium	Target	1.0		mg/kg	1.0	*	1	YES	S3VEM
Calcium	Target	10400		mg/kg	10400	*	1	YES	S3VEM
Chromium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Cobalt	Target	6.9		mg/kg	6.9	*	1	YES	S3VEM
Copper	Target	44.5		mg/kg	44.5	*	1	YES	S3VEM
Iron	Target	15300		mg/kg	15300	*	1	YES	S3VEM
Lead	Target	366		mg/kg	366	*	1	YES	S3VEM
Magnesium	Target	4450		mg/kg	4450	*	1	YES	S3VEM
Manganese	Target	599		mg/kg	599	*	1	YES	S3VEM
Nickel	Target	25.9		mg/kg	25.9		1	YES	S3VEM
Potassium	Target	1990		mg/kg	1990	*	1	YES	S3VEM
Selenium	Target	2.1	J	mg/kg	2.1	J*	1	YES	S3VEM
Silver	Target	0.13	J	mg/kg	0.13	J*	1	YES	S3VEM
Sodium	Target	484	U	mg/kg	83.3	J	1	YES	S3VEM
Thallium	Target	2.4	U	mg/kg	2.4	U	1	YES	S3VEM
Vanadium	Target	24.4		mg/kg	24.4	*	1	YES	S3VEM
Zinc	Target	517		mg/kg	517	*	1	YES	S3VEM
Tin	Target	10.0		mg/kg	10.0	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE162	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S002	pH:	Sample Date: 11/16/2017	Sample Time: 16:42:00
% 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	0.80	J*	1	YES	S3VEM
Arsenic	Target	12.2		mg/kg	12.2	*	1	YES	S3VEM
Barium	Target	138		mg/kg	138	*	1	YES	S3VEM
Beryllium	Target	0.85		mg/kg	0.85	*	1	YES	S3VEM
Cadmium	Target	0.79		mg/kg	0.79	*	1	YES	S3VEM
Calcium	Target	8590		mg/kg	8590	*	1	YES	S3VEM
Chromium	Target	19.1		mg/kg	19.1	*	1	YES	S3VEM
Cobalt	Target	7.0		mg/kg	7.0	*	1	YES	S3VEM
Copper	Target	39.0		mg/kg	39.0	*	1	YES	S3VEM
Iron	Target	15900		mg/kg	15900	*	1	YES	S3VEM
Lead	Target	294		mg/kg	294	*	1	YES	S3VEM
Magnesium	Target	4210		mg/kg	4210	*	1	YES	S3VEM
Manganese	Target	645		mg/kg	645	*	1	YES	S3VEM
Nickel	Target	24.9		mg/kg	24.9		1	YES	S3VEM
Potassium	Target	1990		mg/kg	1990	*	1	YES	S3VEM
Selenium	Target	2.0	J	mg/kg	2.0	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	76.1	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	25.2		mg/kg	25.2	*	1	YES	S3VEM
Zinc	Target	347		mg/kg	347	*	1	YES	S3VEM
Tin	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE163	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S002	pH:	Sample Date: 11/16/2017	Sample Time: 17:09:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	11700		mg/kg	11700	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.79	J*	1	YES	S3VEM
Arsenic	Target	12.4		mg/kg	12.4	*	1	YES	S3VEM
Barium	Target	130		mg/kg	130	*	1	YES	S3VEM
Beryllium	Target	0.84		mg/kg	0.84	*	1	YES	S3VEM
Cadmium	Target	0.58		mg/kg	0.58	*	1	YES	S3VEM
Calcium	Target	11600		mg/kg	11600	*	1	YES	S3VEM
Chromium	Target	19.5		mg/kg	19.5	*	1	YES	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	YES	S3VEM
Copper	Target	36.3		mg/kg	36.3	*	1	YES	S3VEM
Iron	Target	15200		mg/kg	15200	*	1	YES	S3VEM
Lead	Target	196		mg/kg	196	*	1	YES	S3VEM
Magnesium	Target	4610		mg/kg	4610	*	1	YES	S3VEM
Manganese	Target	594		mg/kg	594	*	1	YES	S3VEM
Nickel	Target	23.8		mg/kg	23.8		1	YES	S3VEM
Potassium	Target	1960		mg/kg	1960	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.10	J	mg/kg	0.10	J*	1	YES	S3VEM
Sodium	Target	497	U	mg/kg	86.5	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.8		mg/kg	23.8	*	1	YES	S3VEM
Zinc	Target	235		mg/kg	235	*	1	YES	S3VEM
Tin	Target	7.4		mg/kg	7.4	*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE164	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S002	pH:	Sample Date: 11/16/2017	Sample Time: 18:05:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13900		mg/kg	13900	*	1	YES	S3VEM
Antimony	Target	5.9	U	mg/kg	0.63	J*	1	YES	S3VEM
Arsenic	Target	12.5		mg/kg	12.5	*	1	YES	S3VEM
Barium	Target	156		mg/kg	156	*	1	YES	S3VEM
Beryllium	Target	0.94		mg/kg	0.94	*	1	YES	S3VEM
Cadmium	Target	0.50		mg/kg	0.50	*	1	YES	S3VEM
Calcium	Target	16400		mg/kg	16400	*	1	YES	S3VEM
Chromium	Target	18.4		mg/kg	18.4	*	1	YES	S3VEM
Cobalt	Target	7.7		mg/kg	7.7	*	1	YES	S3VEM
Copper	Target	29.3		mg/kg	29.3	*	1	YES	S3VEM
Iron	Target	16000		mg/kg	16000	*	1	YES	S3VEM
Lead	Target	161		mg/kg	161	*	1	YES	S3VEM
Magnesium	Target	4230		mg/kg	4230	*	1	YES	S3VEM
Manganese	Target	1030		mg/kg	1030	*	1	YES	S3VEM
Nickel	Target	21.1		mg/kg	21.1		1	YES	S3VEM
Potassium	Target	2290		mg/kg	2290	*	1	YES	S3VEM
Selenium	Target	1.7	J	mg/kg	1.7	J*	1	YES	S3VEM
Silver	Target	0.99	U	mg/kg	0.99	U*	1	YES	S3VEM
Sodium	Target	494	U	mg/kg	91.1	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	26.6		mg/kg	26.6	*	1	YES	S3VEM
Zinc	Target	192		mg/kg	192	*	1	YES	S3VEM
Tin	Target	5.0	U	mg/kg	4.3	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON

Sample Number: MBE165	Method: Metals by ICP-AES	Matrix: Soil	MA Number: 2822.0
Sample Location: P043-S002	pH:	Sample Date: 11/16/2017	Sample Time: 18:06:00
% Moisture:		% Solids: 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Aluminum	Target	13600		mg/kg	13600	*	1	YES	S3VEM
Antimony	Target	6.0	U	mg/kg	0.56	J*	1	YES	S3VEM
Arsenic	Target	10.5		mg/kg	10.5	*	1	YES	S3VEM
Barium	Target	132		mg/kg	132	*	1	YES	S3VEM
Beryllium	Target	0.81		mg/kg	0.81	*	1	YES	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.46	J*	1	YES	S3VEM
Calcium	Target	32400		mg/kg	32400	*	1	YES	S3VEM
Chromium	Target	16.9		mg/kg	16.9	*	1	YES	S3VEM
Cobalt	Target	6.3		mg/kg	6.3	*	1	YES	S3VEM
Copper	Target	23.3		mg/kg	23.3	*	1	YES	S3VEM
Iron	Target	15500		mg/kg	15500	*	1	YES	S3VEM
Lead	Target	96.1		mg/kg	96.1	*	1	YES	S3VEM
Magnesium	Target	6830		mg/kg	6830	*	1	YES	S3VEM
Manganese	Target	833		mg/kg	833	*	1	YES	S3VEM
Nickel	Target	17.5		mg/kg	17.5		1	YES	S3VEM
Potassium	Target	2550		mg/kg	2550	*	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	498	U	mg/kg	88.9	J	1	YES	S3VEM
Thallium	Target	2.5	U	mg/kg	2.5	U	1	YES	S3VEM
Vanadium	Target	23.3		mg/kg	23.3	*	1	YES	S3VEM
Zinc	Target	154		mg/kg	154	*	1	YES	S3VEM
Tin	Target	4.1	J	mg/kg	4.1	J*	1	YES	S3VEM

Sample Summary Report

Case: 47320 | **Contract: EPW14029** | **SDG: MBE146** | **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			mg/kg	-1.7	J	1	YES	S3VEM
Antimony	Target	0.29	J	mg/kg	0.29	J	1	YES	S3VEM
Arsenic	Target			mg/kg	-0.19	J	1	YES	S3VEM
Barium	Target			mg/kg	-0.13	J	1	YES	S3VEM
Beryllium	Target	0.0062	J	mg/kg	0.0062	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	0.042	J	mg/kg	0.042	J	1	YES	S3VEM
Cobalt	Target	5.0	U	mg/kg	5.0	U	1	YES	S3VEM
Copper	Target			mg/kg	-0.059	J	1	YES	S3VEM
Iron	Target			mg/kg	-1.4	J	1	YES	S3VEM
Lead	Target	1.0	U	mg/kg	1.0	U	1	YES	S3VEM
Magnesium	Target			mg/kg	-2.5	J	1	YES	S3VEM
Manganese	Target			mg/kg	-0.093	J	1	YES	S3VEM
Nickel	Target	4.0	U	mg/kg	4.0	U	1	YES	S3VEM
Potassium	Target	500	U	mg/kg	500	U	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			mg/kg	-1.9	J	1	YES	S3VEM
Thallium	Target			mg/kg	-0.33	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	1.2		mg/kg	1.2	J	1	YES	S3VEM

Sample Summary Report

Case: 47320	Contract: EPW14029	SDG: MBE146	Lab Code: BON