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

RST 3-02-F-0028

TRANSMITTAL MEMO

To:	Mr. Eric Daly, On-Scene Coordinator Response and Prevention Branch U.S. EPA, Region II
From:	Smita Sumbaly, Data Reviewer RST 3, Region II
Subject:	Canadian Uranium and Radium Site Data Validation Assessment
Date:	October 2, 2015

The purpose of this memo is to transmit the following information:

- Data validation results for the following parameters:

  TAL Metals and Mercury — 15 Samples

- Matrices and Number of Samples

  Soil — 13 Samples
  Aqueous (Rinsate Blank) — 2 Samples

- Sampling Dates: August 5, 7 and 18, 2015

The final data assessment narrative and original analytical data package are attached.

cc:	RST 3 SPM:	Bernard Nwosu
	RST 3 SITE FILE TDD #:	TO-0006-0053
	RST 3 ANALYTICAL TDD #:	TO-0006-0070
	TASK#:	2070

U.S. ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: October 2, 2015

TO: Eric Daly, On-Scene Coordinator
U.S. EPA, Region II

FROM: Smita Sumbaly
RST 3 Data Review Team

SUBJECT: QA/QC Compliance Review Summary

As requested quality control and performance measures for the data packages noted have been examined and compared to EPA standards for compliance. Measures for the following general areas were evaluated as applicable:

Holding Time	MS/MSD
Calibration, Initial	Calibration, Continuing
ICP Interference Check	Blanks
Data Completeness	Laboratory Control Sample
Serial Dilution	CRQL Check Standard
Field Duplicate	

Any statistical measures used to support the following conclusions are attached so that the review may be reviewed by others.

Summary of Results

	I TAL Metals and Mercury
Acceptable as Submitted	
Acceptable with Comments	X
Unacceptable, Action Pending	
Unacceptable	

Data Reviewed by: Smita Sumbaly Date: 10/2/15

Approved By: [signature] Date: 10/6/15

Area Code/Phone No.: (732) 585-4410

NARRATIVE

PCS No. 2070

SITE NAME: **Canadian Uranium and Radium Site**
Mount Kisco
Westchester County
New York

Laboratory Name: TestAmerica Laboratories, Inc., TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045.

INTRODUCTION:

The laboratory's portion of this case consisted of 13 soil samples and two aqueous rinsate blank samples for TAL Metals and Mercury analyses. All samples were collected on August 5, 7 and 18, 2015. The TestAmerica Laboratories, Inc., Job numbers are: 160-13266-1 and 160-13435-1.

The laboratory reported No problem(s) with the receipt of these samples.

The laboratory reported No problems with the analyses of TAL Metals and Mercury.

The evaluator has commented on the criteria specified under each fraction heading. All criteria have been assessed, but no discussion is given where the evaluator has determined that criteria were adequately performed or require no comment. Details relevant to these comments are given on the following forms.

Appropriate Form Is and Chain of Custody have been copied from the original data package and appended to the data assessment narrative for reference.

Inorganic:

Y Holding Time	Y MS/MSD
Y Calibration, Initial	Y CRQL Check Standard
Y Calibration, Continuing	Y ICP Interference Check
Y Blanks	Y Data Completeness
Y Laboratory Control Sample	Y Serial Dilution
Y Field Duplicate	Y Laboratory Duplicate

Comments:

1. Refer to Data Assessment Narrative.

Inorganic Data Review Narrative

RFP# 334 **TASK # 2070**	**Site: Canadian Uranium and Radium Site**	**Matrix** **Soil: 13** **Aqueous (RB): 2**
SDG# 160-13266-1 and 160-13435-1	**Lab: TestAmerical Laboratories, Inc.**	
Sampling Team: RST 3	**Reviewer: Smita Sumbaly**	

A.2.1 Data Validation Flags:

The following flags may have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

R and Red-Line - A red-line drawn through a sample result indicates un-usable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

U - This data validation qualifier is applied to sample results ≥ MDL when associated blank is contaminated.

Fully Usable Data - The results that do not carry "J" or "red-line" are fully usable.

A.2.2 Laboratory Qualifiers:

The Non-CLP laboratory applies a contractual qualifier on all Form Is and the QC Form when a QC analysis is outside the control limits. These qualifiers and their meanings are as follows:

U: This is a concentration qualifier that the laboratory applies to a non-detected result which is essentially less than the Method Detection Limit (MDL). A non-detected result of an analyte is indicated by the Contract Required Quantitation Limit (CRQL) of that analyte suffixed with "U".

J: This is also a concentration qualifier that the laboratory applies to a positive result below the CRQL.

NOTE: The laboratory qualifiers are crossed out and replaced with the appropriate data validation qualifiers (J, R, or U) by the data validator.

A.2.3.1 **Data Case Description:**

On August 5, 7 and 18, 2015, U.S. EPA, Region II, RST 3 sampling personnel collected 13 soil samples, including two field duplicates, and two aqueous rinsate blank samples from the Canadian Uranium and Radium Site located in Mount Kisco, Westchester County, New York. On August 7 and 18, 2015, these samples for TAL Metals and Mercury analyses were shipped, via FedEx, to TestAmerica Laboratories, Inc., located at 13715 Rider Trail North, Earth City, MO 63045. The laboratory verified that samples were received intact, properly sealed, and refrigerated. Sample cooler temperatures were recorded at 2.2°C, 3.0°C, and 2.4°C.

TAL Metals analysis was performed by using the EPA SW-846 Method 6010C and the Mercury analysis was performed by using Method 7471B/7470A.

The following USEPA Region II standard operating procedures (SOPs) were used for data validation.

- No. HW-3a (Revision 15), December 2012, for validating metals by Contract Laboratory Program (CLP) Statement of Work (SOW) ISM01.2 in conjunction with SW 846 Method 6010C/7471B (soil)/7470A (aqueous) and laboratory established QC criteria.

Client identification (ID) and laboratory ID numbers are as follows:

Field Sample ID	Lab Sample ID	Matrix	Analysis	Sampling Date
TestAmerica Job Number: 160-13266-1				
C002-SS001-2448-01	160-13266-1	Soil	TAL Metals and Mercury	8/05/2015
C002-SS002-2448-01	160-13266-2	Soil		8/05/2015
C002-SS003-2448-01	160-13266-3	Soil		8/05/2015
C003-SS001-2448-01	160-13266-4	Soil		8/05/2015
C003-SS001-2448-02[1]	160-13266-5	Soil		8/05/2015
C003-SS002-0024-01	160-13266-6	Soil		8/05/2015
RB-080515	160-13266-7	Aqueous		8/05/2015
C003-SS003-2448-01	160-13266-8	Soil		8/05/2015
C002-TRENCH-0036-01	160-13266-9	Soil		8/05/2015
C004-SS001-1824-01	160-13266-10	Soil		8/07/2015
[1] Field duplicate of Sample No. C003-SS001-2448-01				
TestAmerica Job Number: 160-13435-1				
C001-SS001-0012-01	160-13435-1	Soil	TAL Metals and Mercury	8/18/2015
C001-SS001-0012-02[2]	160-13435-2	Soil		8/18/2015
C001-SS002-0012-01	160-13435-3	Soil		8/18/2015
C001-SS003-0012-01	160-13435-4	Soil		8/18/2015
RB-081815	160-13435-5	Aqueous		8/18/2015
[2] Field duplicate of Sample No. C001-SS001-0012-01				

All samples were reviewed for the following quality control (QC) parameters. Two MS/MSD samples and two field duplicate samples were collected. All QC results were evaluated, but only non-compliant QC observations, if any, are discussed in detail in this report.

- Sample Preservation
- Holding Time
- Initial Calibration
- Initial Calibration Verification (including Initial Calibration Blank)
- Continuing Calibration Verification (including Continuing Calibration Blank and Method Blank)
- CRQL Check Standard
- ICP Interference Check Sample (only for ICP Metals)
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Duplicate
- Laboratory Control Sample
- Field Duplicate
- ICP Serial Dilution (only for ICP Metals)

A.2.3.3 Technical Review:

The results presented in the data package are acceptable with the exception noted in the following data assessment narrative.

TAL Metals and Mercury – SDG# 160-13266-1 and 160-13435-1

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".

SDG# 160-13266-1 and 160-13435-1

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. They-intercept of the curve must be less than the CRQL.

SDG# 160-13266-1 and 160-13435-1

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%.

SDG# 160-13266-1 and 160-13435-1

No problems were found for this criterion.

The low level check standard recovery associated with analytical batch 160-208156 is outside the acceptance criteria (70-130%) for the antimony. The associated samples results ≥ MDL are qualified J.

SDG# 160-13435-1

Antimony J – RB-081815

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.

ICP-AES

The following samples have analyte results greater than or equal to MDLs but less than or equal to CRQLs. The associated Method blank analyte results are greater than or equal to MDLs but less than

or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated to CRQLs.

SDG# 160-13266-1

"U" -> Se -> C002-SS002-2448-01

SDG# 160-13435-1

"U" -> Sb -> C001-SS001-0012-01 and C001-SS001-0012-02
"U" -> As -> C001-SS001-0012-01, C001-SS001-0012-02, and C001-SS003-0012-01
"U" -> Cu -> C001-SS001-0012-02
"U" -> Ag -> C001-SS002-0012-01
"U" -> Se -> RB-081815

The following samples have analyte results greater than or equal to MDLs but less than CRQLs. The associated CCB analyte results are greater than or equal to MDLs but less than or equal to CRQLs. Detected analytes are qualified U. Non-detected analytes are not qualified. Sample results are elevated at CRQLs.

SDG# 160-13266-1

"U" -> As -> C002-SS001-2448-01, C002-SS002-2448-01, C002-SS003-2448-01, C003-S002-0024-01, C003-SS003-2448-01, and C004-SS001-2448-01
"U" -> V -> C003-SS002-0024-01, C003-SS003-2448-01, and C004-SS001-2448-01
"U" -> Se -> C002-SS002-2448-01[1]

SDG# 160-13435-1

"U" -> Sb -> C001-SS001-0012-01[1] and C001-SS001-0012-02[1]
"U" -> As -> C001-SS001-0012-02[1] and C001-SS003-0012-01[1]

[1] Previously qualified due to method blank QC criteria.

4. Contract Required Quantitation Limit Check Standard

SDG # 160-13435-1

The recovery of antimony exceeded 130% in the CRQL check standard. The antimony concentration in samples C001-SS001-0012-01 and C001-SS001-0012-02 are < 2x reporting limit, thus estimated (J).

5. 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.

SDG# 160-13266-1 and 160-13435-1

No problems were found for this criterion.

6. 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.

SDG# 160-13266-1

The following MS/MSD samples have percent recoveries in the range of 30-74%. Detected analytes with results greater than or equal to MDLs are qualified J. Non-detected analytes are qualified UJ.

Antimony, Manganese, and Zinc – J/UJ – C003-SS001-2448-01

SDG# 160-13435-1

The following MS/MSD samples have percent recoveries in the range of >125% for potassium, barium, Copper, lead, and zinc; and Relative Percent Difference >30% for copper, lead, and zinc. Detected analytes with results greater than or equal to MDLs are qualified J.

Barium, Copper, Lead, Potassium and Zinc – J - C001-SS001-0012-01

7. 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

Note: Instead of laboratory duplicate analysis, laboratory analyzed matrix spike recovery, matrix spike duplicate recovery and calculated relative percent difference, which serves as lab duplicate.

8. 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.

SDG# 160-13266-1

Field duplicate pairs C003-SS001-2448-01 and C003-SS001-2448-02: qualification was not required as the relative percent difference of all results were <50%.

SDG# 160-13435-1

The following Duplicate (C001-SS001-0012-02) and original (C001-SS001-0012-01) sample results are greater than 5xRL and RPD is greater than 50%. The original and duplicate sample results are qualified J.

Manganese -> J -> C001-SS001-0012-01 and C001-SS001-0012-02

9. 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%.

SDG# 160-13266-1 and 160-13435-1

No problems were found for this criterion.

10. 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.

SDG# 160-13266-1 and 160-13435-1

No problems were found for this criterion.

11. 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".

SDG# 160-13266-1 and 160-13435-1

No problems were found for this criterion.

11. METHOD NON-COMPLIANCE

SDG# 160-13266-1 and 160-13435-1: Laboratory did not report pH for aqueous samples in data package. Data reviewer contacted the laboratory and was told that since it was not requested or listed in COC, pH was not measured in the lab. Since, SPM preserved both aqueous samples in field at pH<2, no qualification was required.

Reviewer's Signature: Smita Sumbaly **Date:** 10/2/2015

Verified By: _____ **Date:** 10/2/15

ED_006395_00000161-00011

OTHER ANALYTES WORK TABLE

Project: Canadian Uranium and Radium Site

Sampling Date: August 5, 2015

SAMPLE #/CONCENTRATION (MG/KG)

TAL Metals	Matrix:	Soil	Soil	Soil	Soil	Soil
	Client ID:	C002-SS001-2448-01	C002-SS002-2448-01	C002-SS003-2448-01	C003-SS001-2448-01	C003-SS001-2448-02
	Lab ID:	160-13266-1	160-13266-2	160-13266-3	160-13266-4	160-13266-5
Percent Solids		90.2	92.9	88.4	91.7	91.2
Dilution Factor	MDL	10	10	10	10	10
Aluminum	4.26	12000	10000	8600	8900	11000
Antimony	0.309	U	U	U	U J	U
Arsenic	0.236	9.9 U	10 U	11 U	20	19
Barium	0.11	87	130	1700	89	99
Beryllium	0.075	U	U	U	U	U
Cadmium	0.034	U	U	U	U	U
Calcium	6.73	13000	5000	9000	49000	36000
Chromium	0.138	24	29	59	43	38
Cobalt	0.144	9.1 J	8.9 J	10 J	7.6 J	8.1 J
Copper	0.245	24 J	27	45	60	77
Iron	1.99	19000	19000	31000	25000	19000
Lead	0.129	56	46	510	130	140
Magnesium	3.16	8600	5300	7600	12000	7500
Manganese	0.08	410	310	290	290 J	270
Nickel	0.116	19 J	19 J	42 J	19 J	18 J
Potassium	72.4	1800 J	2700 J	3300 J	1600 J	2300 J
Selenium	0.206	U	15 U	U	U	U
Silver	0.07	U	0.82 J	U	U	0.65 J
Sodium	7.62	500 J	230 J	330 J	200 J	300 J
Thallium	0.19	U	U	U	U	U
Vanadium	0.507	33 J	37 J	29 J	31 J	38 J
Zinc	0.562	94	76	830	190 J	170
Mercury	0.011	*0.070	*0.061	*0.028 J	*0.21	*0.20
		*D/F X 1	*D/F X 1	*D/F X 1	*D/F X 1	*D/F X 1

Inorganic Qualifiers

D/F - Dilution Factor
MDL - Method Detection Limit /RL-Reporting Limit
U - non-detected analyte
J (lab qualifier)- estimated value <RL and > MDL
J - estimated value
Note: MDL reported on the Form Is for the soil matrix have been adjusted to reflect the sample volume, percent solid, sample weight, and dilution factor.

OTHER ANALYTES WORK TABLE

Project: Canadian Uranium and Radium Site

Sampling Dates: August 5 and 7, 2015

SAMPLE #/CONCENTRATION (MG/KG)

TAL Metals	Matrix:	Soil	Soil	Soil	Soil
	Client ID:	C003-SS002-0024-01	C003-SS003-2448-01	C002-TRENCH-0036-01	C004-SS001-2448-01
	Lab ID:	160-13266-6	160-13266-8	160-13266-9	160-13266-10
Percent Solids		89.3	87.0	87.7	80.1
Dilution Factor	MDL	10	10	10	10
Aluminum	4.26	7600	9200	16000	13000
Antimony	0.309	U	U	U	U
Arsenic	0.236	10 U	11 U	12	12 U
Barium	0.11	170	130	370	130
Beryllium	0.075	U	U	U	U
Cadmium	0.034	U	U	U	U
Calcium	6.73	6200	26000	11000	1900 J
Chromium	0.138	20	24	90	31
Cobalt	0.144	9.1 J	9.5 J	16 J	7.7 J
Copper	0.245	85	97	71	27 J
Iron	1.99	20000	20000	29000	16000
Lead	0.129	220	180	220	120
Magnesium	3.16	4300	14000	12000	3600
Manganese	0.08	190	290	410	250
Nickel	0.116	23 J	21 J	62	19 J
Potassium	72.4	2100 J	2300 J	6000	940 J
Selenium	0.206	U	U	U	U
Silver	0.07	U	U	U	U
Sodium	7.62	2400	1800	740 J	280 J
Thallium	0.19	U	U	U	U
Vanadium	0.507	52 U	55 U	63	61 U
Zinc	0.562	160	140	180	130
Mercury	0.011	*0.13	*0.18	*0.12	*0.11
		*D/F X 1	*D/F X 1	*D/F X 1	*D/F X 1

Inorganic Qualifiers

D/F - Dilution Factor
MDL - Method Detection Limit /RL-Reporting Limit
U - non-detected analyte
J (lab qualifier)- estimated value <RL and > MDL
J - estimated value
Note: MDL reported on the Form Is for the soil matrix have been adjusted to reflect the sample volume, percent solid, sample weight, and dilution factor.

OTHER ANALYTES WORK TABLE

Project: Canadian Uranium and Radium Site

Sampling Date: August 5, 2015

SAMPLE #/CONCENTRATION (UG/L)

TAL Metals	Matrix: Client ID: Lab ID:	Aqueous RB-080515 160-13266-7
Percent Solids		NA
Dilution Factor	MDL	1.0
Aluminum	22.4	U
Antimony	3.74	U
Arsenic	1.78	U
Barium	2.12	U
Beryllium	0.283	U
Cadmium	0.336	U
Calcium	54.2	90 J
Chromium	3.35	U
Cobalt	2.72	U
Copper	2.1	U
Iron	12.8	U
Lead	0.598	10 U
Magnesium	50.5	U
Manganese	1	U
Nickel	2.57	U
Potassium	456	U
Selenium	2.08	U
Silver	0.994	U
Sodium	105	U
Thallium	2.38	U
Vanadium	4.39	U
Zinc	8.32	13 J
Mercury	0.06	U

Inorganic Qualifiers

MDL - Method Detection Limit /RL-Reporting Limit
U - non-detected analyte
J (lab qualifier)- estimated value <RL and > MDL

FIELD DUPLICATE

EPA SAMPLE NO.
C003-SS001-2448-01 &
C003-SS001-2448-02

Lab Name: Test America Contract: WESTON-RST 3

Lab Code: Test America RFP No.: 334 SDG No.: 160-13266-1

Matrix (soil/water): Soil Level (low/med): LOW

% Solids for Sample: 91.7 % Solids for Duplicate: 91.2

Concentration Units (ug/L or mg/kg dry weight): mg/kg

ANALYTE	CONTROL LIMIT	SAMPLE(S) C003-SS001-2448-01	C	DUPLICATE(D) C003-SS001-2448-02	C	RPD	Q
Aluminum	50%	8900		11000		21.1%	
Antimony	-	U		U		NC	
Arsenic	50%	20		19		5.1%	
Barium	50%	89		99		10.6%	
Beryllium	-	U		U		NC	
Cadmium	-	U		U		NC	
Calcium	50%	49000		36000		30.6%	
Chromium	50%	43		38		12.3%	
Cobalt	<100	7.6	J	8.1	J	<2 X RL	
Copper	50%	60		77		24.8%	
Iron	50%	25000		19000		27.3%	
Lead	50%	130		140		7.4%	
Magnesium	50%	12000		7500		46.2%	
Manganese	50%	290		270		7.1%	
Nickel	<80	19	J	18	J	<2 X RL	
Potassium	<10000	1600	J	2300	J	<2 X RL	
Selenium	-	U		U		NC	
Silver	<20	U		0.65	J	<2 X RL	
Sodium	<10000	200	J	300	J	<2 X RL	
Thallium	-	U		U		NC	
Vanadium	<100	31	J	38	J	<2 X RL	
Zinc	50%	190		170		11.1%	
Mercury	50%	0.21		0.20		4.9%	

Difference < 2 X RL, when sample and/or duplicate conc. <5X RL
RPD requirement: <50% when both results are ≥ 5 X RL

Job ID: 160-13266-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Weston Solutions, Inc.

Project: EPA RST2 - RFP No. 334

Report Number: 160-13266-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 08/08/2015; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 3.0° C.

TOTAL METALS (ICP)-Solids

Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/12/2015 and analyzed on 08/13/2015.

Batch 205614

The following samples from preparation batch 160-205179 and analytical batch 160-205614 were diluted to bring the concentration of target analytes within the calibration range: C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-01 (160-13266-4[MS]), C003-SS001-2448-01 (160-13266-4[MSD]), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6),

Job ID: 160-13266-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9), C004-SS001-1824-01 (160-13266-10) and (160-13266-F-4-B SD). Elevated reporting limits (RLs) are provided.

Due to the high concentration of aluminum, calcium, iron, and magnesium, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-205179 and analytical batch 160-205614 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. C003-SS001-2448-01 (160-13266-4[MS]) and C003-SS001-2448-01 (160-13266-4[MSD])

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 160-205179 and analytical batch 160-205614 were outside control limits manganese, antimony, and zinc. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. C003-SS001-2448-01 (160-13266-4[MS]) and C003-SS001-2448-01 (160-13266-4[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL METALS (ICP)-Waters
Sample RB-080515 (160-13266-7) was analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/11/2015 and analyzed on 08/13/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY-Solids
Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared on 08/13/2015 and 08/14/2015 and analyzed on 08/14/2015 and 08/17/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY-Waters
Sample RB-080515 (160-13266-7) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 08/13/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS
Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/12/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Solids
Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE A01R_Th. The samples were leached on 08/10/2015, prepared on 08/12/2015 and analyzed on 08/16/2015.

The matrix spike duplicate (MSD) recovery (124%) was outside QC limits (76-115%). Sample matrix interference is suspected; the samples contained small rocks and are non-homogeneous. The associated laboratory control sample (LCS) recovery was within acceptance limits. The results have been qualified and reported.C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-01 (160-13266-4[MS]),

Job ID: 160-13266-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

C003-SS001-2448-01 (160-13266-4[MSD]), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9), C004-SS001-1824-01 (160-13266-10), (LCS 160-205166/2-A) and (MB 160-205166/1-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Waters

Sample RB-080515 (160-13266-7) was analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 08/11/2015 and analyzed on 08/16/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Solids

Samples C002-SS001-2448-01 (160-13266-1), C002-SS002-2448-01 (160-13266-2), C002-SS003-2448-01 (160-13266-3), C003-SS001-2448-01 (160-13266-4), C003-SS001-2448-02 (160-13266-5), C003-SS002-0024-01 (160-13266-6), C003-SS003-2448-01 (160-13266-8), C002-TRENCH-0036-01 (160-13266-9) and C004-SS001-1824-01 (160-13266-10) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/10/2015, prepared on 08/12/2015 and analyzed on 08/16/2015 and 08/17/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Waters

Sample RB-080515 (160-13266-7) was analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 08/11/2015 and analyzed on 08/16/2015.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CESIUM-137 & OTHER GAMMA EMITTERS (GS)

Sample RB-080515 (160-13266-7) was analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE. The samples were prepared and analyzed on 08/12/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334

TestAmerica Job ID: 160-13266-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
7470A	7470A – Mercury (CVAA) – Aqueous Matrix	SW846	TAL SL
7471B	Mercury (CVAA)	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

COVER PAGE
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-13266-1

SDG No.:

Project: EPA RST2 - RFP No. 334

Client Sample ID	Lab Sample ID
C002-SS001-2448-01	160-13266-1
C002-SS002-2448-01	160-13266-2
C002-SS003-2448-01	160-13266-3
C003-SS001-2448-01	160-13266-4
C003-SS001-2448-02	160-13266-5
C003-SS002-0024-01	160-13266-6
RB-080515	160-13266-7
C003-SS003-2448-01	160-13266-8
C002-TRENCH-0036-01	160-13266-9
C004-SS001-1824-01	160-13266-10

Comments:

ED_006395_00000161-00023

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C002-SS001-2448-01
Lab Sample ID: 160-13266-1
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 10:50
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 90.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	12000	200	42	mg/Kg			10	6010C
7440-36-0	Antimony	ND	9.9	3.1	mg/Kg			10	6010C
7440-38-2	Arsenic	9.9 ~~4.7~~	9.9	2.3	mg/Kg	~~J~~ U		10	6010C
7440-39-3	Barium	87	49	1.1	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	4.9	0.74	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	4.9	0.34	mg/Kg			10	6010C
7440-70-2	Calcium	13000	2500	67	mg/Kg			10	6010C
7440-47-3	Chromium	24	9.9	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	9.1	49	1.4	mg/Kg	J		10	6010C
7440-50-8	Copper	24	25	2.4	mg/Kg	J		10	6010C
7439-89-6	Iron	19000	99	20	mg/Kg		B	10	6010C
7439-92-1	Lead	56	9.9	1.3	mg/Kg		B	10	6010C
7439-95-4	Magnesium	8600	990	31	mg/Kg			10	6010C
7439-96-5	Manganese	410	9.9	0.79	mg/Kg		B	10	6010C
7440-02-0	Nickel	19	40	1.1	mg/Kg	J		10	6010C
7440-09-7	Potassium	1800	4900	720	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	15	2.0	mg/Kg			10	6010C
7440-22-4	Silver	ND	9.9	0.69	mg/Kg			10	6010C
7440-23-5	Sodium	500	990	75	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	20	1.9	mg/Kg			10	6010C
7440-62-2	Vanadium	33	49	5.0	mg/Kg	J		10	6010C
7440-66-6	Zinc	94	49	5.6	mg/Kg			10	6010C
7439-97-6	Mercury	0.070	0.033	0.011	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C002-SS002-2448-01
Lab Sample ID: 160-13266-2
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 11:40
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 92.9

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	10000	200	44	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.2	mg/Kg			10	6010C
7440-38-2	Arsenic	10 ~~3.6~~	10	2.4	mg/Kg	~~J~~ U		10	6010C
7440-39-3	Barium	130	51	1.1	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.1	0.77	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.1	0.35	mg/Kg			10	6010C
7440-70-2	Calcium	5000	2600	69	mg/Kg			10	6010C
7440-47-3	Chromium	29	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	8.9	51	1.5	mg/Kg	J		10	6010C
7440-50-8	Copper	27	26	2.5	mg/Kg			10	6010C
7439-89-6	Iron	19000	100	20	mg/Kg		B	10	6010C
7439-92-1	Lead	46	10	1.3	mg/Kg		B	10	6010C
7439-95-4	Magnesium	5300	1000	32	mg/Kg			10	6010C
7439-96-5	Manganese	310	10	0.82	mg/Kg		B	10	6010C
7440-02-0	Nickel	19	41	1.2	mg/Kg	J		10	6010C
7440-09-7	Potassium	2700	5100	740	mg/Kg	J		10	6010C
7782-49-2	Selenium	15 U ~~2.9~~	15	2.1	mg/Kg	J	B	10	6010C
7440-22-4	Silver	0.82	10	0.72	mg/Kg	J		10	6010C
7440-23-5	Sodium	230	1000	78	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	20	1.9	mg/Kg			10	6010C
7440-62-2	Vanadium	37	51	5.2	mg/Kg	J		10	6010C
7440-66-6	Zinc	76	51	5.7	mg/Kg			10	6010C
7439-97-6	Mercury	0.061	0.035	0.012	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C002-SS003-2449-01
Lab Sample ID: 160-13266-3
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 12:10
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 88.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	9600	220	46	mg/Kg			10	6010C
7440-36-0	Antimony	ND	11	3.3	mg/Kg			10	6010C
7440-38-2	Arsenic	11 ~~6.5~~	11	2.5	mg/Kg	~~J~~ U		10	6010C
7440-39-3	Barium	1700	54	1.2	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.4	0.81	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.4	0.37	mg/Kg			10	6010C
7440-70-2	Calcium	9000	2700	73	mg/Kg			10	6010C
7440-47-3	Chromium	99	11	1.5	mg/Kg		B	10	6010C
7440-48-4	Cobalt	10	54	1.6	mg/Kg	J		10	6010C
7440-50-8	Copper	45	27	2.6	mg/Kg			10	6010C
7439-89-6	Iron	31000	110	21	mg/Kg		B	10	6010C
7439-92-1	Lead	510	11	1.4	mg/Kg		B	10	6010C
7439-95-4	Magnesium	7600	1100	34	mg/Kg			10	6010C
7439-96-5	Manganese	290	11	0.86	mg/Kg		B	10	6010C
7440-02-0	Nickel	42	43	1.3	mg/Kg	J		10	6010C
7440-09-7	Potassium	3300	5400	780	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	16	2.2	mg/Kg			10	6010C
7440-22-4	Silver	ND	11	0.76	mg/Kg			10	6010C
7440-23-5	Sodium	330	1100	82	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	22	2.1	mg/Kg			10	6010C
7440-62-2	Vanadium	29	54	5.5	mg/Kg	J		10	6010C
7440-66-6	Zinc	830	54	6.1	mg/Kg			10	6010C
7439-97-6	Mercury	0.028	0.035	0.012	mg/Kg	J		1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C003-SS001-2448-01
Lab Sample ID: 160-13266-4
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 14:10
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 91.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	8900	210	44	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.2	mg/Kg	J	F1	10	6010C
7440-38-2	Arsenic	20	10	2.5	mg/Kg			10	6010C
7440-39-3	Barium	89	52	1.1	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.2	0.78	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.2	0.35	mg/Kg			10	6010C
7440-70-2	Calcium	49000	2600	70	mg/Kg		F2	10	6010C
7440-47-3	Chromium	43	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	7.6	52	1.5	mg/Kg	J		10	6010C
7440-50-8	Copper	60	26	2.5	mg/Kg			10	6010C
7439-89-6	Iron	25000	100	21	mg/Kg		B	10	6010C
7439-92-1	Lead	130	10	1.3	mg/Kg		B	10	6010C
7439-95-4	Magnesium	12000	1000	33	mg/Kg			10	6010C
7439-96-5	Manganese	290	10	0.83	mg/Kg	J	B F1	10	6010C
7440-02-0	Nickel	19	42	1.2	mg/Kg	J		10	6010C
7440-09-7	Potassium	1600	5200	750	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	16	2.1	mg/Kg			10	6010C
7440-22-4	Silver	ND	10	0.73	mg/Kg			10	6010C
7440-23-5	Sodium	200	1000	79	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	21	2.0	mg/Kg			10	6010C
7440-62-2	Vanadium	31	52	5.3	mg/Kg	J		10	6010C
7440-66-6	Zinc	190	52	5.8	mg/Kg	J	F1	10	6010C
7439-97-6	Mercury	0.21	0.035	0.012	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C003-SS001-2448-02
Lab Sample ID: 160-13266-5
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 14:12
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 91.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	11000	190	40	mg/Kg			10	6010C
7440-36-0	Antimony	ND	9.3	2.9	mg/Kg			10	6010C
7440-38-2	Arsenic	19	9.3	2.2	mg/Kg			10	6010C
7440-39-3	Barium	99	46	1.0	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	4.6	0.70	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	4.6	0.32	mg/Kg			10	6010C
7440-70-2	Calcium	36000	2300	63	mg/Kg			10	6010C
7440-47-3	Chromium	38	9.3	1.3	mg/Kg		B	10	6010C
7440-48-4	Cobalt	8.1	46	1.3	mg/Kg	J		10	6010C
7440-50-8	Copper	77	23	2.3	mg/Kg			10	6010C
7439-89-6	Iron	19000	93	18	mg/Kg		B	10	6010C
7439-92-1	Lead	140	9.3	1.2	mg/Kg		B	10	6010C
7439-95-4	Magnesium	7500	930	29	mg/Kg			10	6010C
7439-96-5	Manganese	270	9.3	0.74	mg/Kg		B	10	6010C
7440-02-0	Nickel	18	37	1.1	mg/Kg	J		10	6010C
7440-09-7	Potassium	2300	4600	670	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	14	1.9	mg/Kg			10	6010C
7440-22-4	Silver	0.65	9.3	0.65	mg/Kg	J		10	6010C
7440-23-5	Sodium	300	930	71	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	19	1.8	mg/Kg			10	6010C
7440-62-2	Vanadium	38	46	4.7	mg/Kg	J		10	6010C
7440-66-6	Zinc	170	46	5.2	mg/Kg			10	6010C
7439-97-6	Mercury	0.20	0.032	0.011	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C003-SS002-0024-01
Lab Sample ID: 160-13266-6
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 14:55
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 89.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	7600	210	45	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.2	mg/Kg			10	6010C
7440-38-2	Arsenic	10 ~~[illegible]~~	10	2.5	mg/Kg	J U		10	6010C
7440-39-3	Barium	170	52	1.2	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.2	0.79	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.2	0.36	mg/Kg			10	6010C
7440-70-2	Calcium	6200	2600	71	mg/Kg			10	6010C
7440-47-3	Chromium	20	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	9.1	52	1.5	mg/Kg	J		10	6010C
7440-50-8	Copper	85	26	2.6	mg/Kg			10	6010C
7439-89-6	Iron	20000	100	21	mg/Kg		B	10	6010C
7439-92-1	Lead	220	10	1.4	mg/Kg		B	10	6010C
7439-95-4	Magnesium	4300	1000	53	mg/Kg			10	6010C
7439-96-5	Manganese	190	10	0.84	mg/Kg		B	10	6010C
7440-02-0	Nickel	23	42	1.2	mg/Kg	J		10	6010C
7440-09-7	Potassium	2100	5200	760	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	16	2.2	mg/Kg			10	6010C
7440-22-4	Silver	ND	10	0.73	mg/Kg			10	6010C
7440-23-5	Sodium	2400	1000	80	mg/Kg			10	6010C
7440-28-0	Thallium	ND	21	2.0	mg/Kg			10	6010C
7440-62-2	Vanadium	5 < U ~~[illegible]~~	52	5.3	mg/Kg	J		10	6010C
7440-66-6	Zinc	160	52	5.9	mg/Kg			10	6010C
7439-97-6	Mercury	0.13	0.035	0.012	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: RB-080515 | Lab Sample ID: 160-13266-7

Lab Name: TestAmerica St. Louis | Job No.: 160-13266-1

SDG ID.:

Matrix: Water | Date Sampled: 08/05/2015 15:00

Reporting Basis: WET | Date Received: 08/08/2015 09:10

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	200	22	ug/L			1	6010C
7440-36-0	Antimony	ND	10	3.7	ug/L			1	6010C
7440-38-2	Arsenic	ND	10	1.8	ug/L			1	6010C
7440-39-3	Barium	ND	50	2.1	ug/L			1	6010C
7440-41-7	Beryllium	ND	5.0	0.28	ug/L			1	6010C
7440-43-9	Cadmium	ND	5.0	0.34	ug/L			1	6010C
7440-70-2	Calcium	90	1000	54	ug/L	J		1	6010C
7440-47-3	Chromium	ND	10	3.4	ug/L			1	6010C
7440-48-4	Cobalt	ND	50	2.7	ug/L			1	6010C
7440-50-8	Copper	ND	25	2.1	ug/L			1	6010C
7439-89-6	Iron	ND	100	13	ug/L			1	6010C
7439-92-1	Lead	10 U ~~0.60~~	10	0.60	ug/L	J		1	6010C
7439-95-4	Magnesium	ND	1000	51	ug/L			1	6010C
7439-96-5	Manganese	ND	15	1.0	ug/L			1	6010C
7440-02-0	Nickel	ND	40	2.6	ug/L			1	6010C
7440-09-7	Potassium	ND	5000	460	ug/L			1	6010C
7782-49-2	Selenium	ND	15	2.1	ug/L			1	6010C
7440-22-4	Silver	ND	10	0.99	ug/L			1	6010C
7440-23-5	Sodium	ND	1000	110	ug/L			1	6010C
7440-28-0	Thallium	ND	20	2.4	ug/L			1	6010C
7440-62-2	Vanadium	ND	50	4.4	ug/L			1	6010C
7440-66-6	Zinc	13	20	8.3	ug/L	J		1	6010C
7439-97-6	Mercury	ND	0.20	0.060	ug/L			1	7470A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C003-SS003-2448-01 .
Lab Sample ID: 160-13266-8
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/05/2015 15:15
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 87.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	9200	220	47	mg/Kg			10	6010C
7440-36-0	Antimony	ND	11	3.4	mg/Kg			10	6010C
7440-38-2	Arsenic	11 ~~J~~	11	2.6	mg/Kg	B U		10	6010C
7440-39-3	Barium	130	55	1.2	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.5	0.82	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.5	0.37	mg/Kg			10	6010C
7440-70-2	Calcium	26000	2700	73	mg/Kg			10	6010C
7440-47-3	Chromium	24	11	1.5	mg/Kg		B	10	6010C
7440-48-4	Cobalt	9.5	55	1.6	mg/Kg	J		10	6010C
7440-50-8	Copper	97	27	2.7	mg/Kg			10	6010C
7439-89-6	Iron	20000	110	22	mg/Kg		B	10	6010C
7439-92-1	Lead	180	11	1.4	mg/Kg		B	10	6010C
7439-95-4	Magnesium	14000	1100	35	mg/Kg			10	6010C
7439-96-5	Manganese	290	11	0.87	mg/Kg		B	10	6010C
7440-02-0	Nickel	21	44	1.3	mg/Kg	J		10	6010C
7440-09-7	Potassium	2300	5500	790	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	16	2.2	mg/Kg			10	6010C
7440-22-4	Silver	ND	11	0.76	mg/Kg			10	6010C
7440-23-5	Sodium	1800	1100	83	mg/Kg			10	6010C
7440-28-0	Thallium	ND	22	2.1	mg/Kg			10	6010C
7440-62-2	Vanadium	55 ~~J~~ U	55	5.5	mg/Kg	J		10	6010C
7440-66-6	Zinc	140	55	6.1	mg/Kg			10	6010C
7439-97-6	Mercury	0.18	0.037	0.012	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C002-TRENCH-0036-01
Lab Sample ID: 160-13266-9
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG No.:
Matrix: Solid
Date Sampled: 08/05/2015 15:30
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 87.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	16000	200	43	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.1	mg/Kg			10	6010C
7440-38-2	Arsenic	12	10	2.4	mg/Kg			10	6010C
7440-39-3	Barium	370	50	1.1	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	5.0	0.75	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.0	0.34	mg/Kg			10	6010C
7440-70-2	Calcium	11000	2500	67	mg/Kg			10	6010C
7440-47-3	Chromium	90	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	16	50	1.4	mg/Kg	J		10	6010C
7440-50-8	Copper	71	25	2.4	mg/Kg			10	6010C
7439-89-6	Iron	29000	100	20	mg/Kg		B	10	6010C
7439-92-1	Lead	220	10	1.3	mg/Kg		B	10	6010C
7439-95-4	Magnesium	12000	1000	32	mg/Kg			10	6010C
7439-96-5	Manganese	410	10	0.80	mg/Kg		B	10	6010C
7440-02-0	Nickel	62	40	1.2	mg/Kg			10	6010C
7440-09-7	Potassium	6000	5000	720	mg/Kg			10	6010C
7782-49-2	Selenium	ND	15	2.1	mg/Kg			10	6010C
7440-22-4	Silver	ND	10	0.70	mg/Kg			10	6010C
7440-23-5	Sodium	740	1000	76	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	20	1.9	mg/Kg			10	6010C
7440-62-2	Vanadium	63	50	5.1	mg/Kg			10	6010C
7440-66-6	Zinc	180	50	5.6	mg/Kg			10	6010C
7439-97-6	Mercury	0.12	0.034	0.011	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C004-SS001-1824-01
Lab Sample ID: 160-13266-10
Lab Name: TestAmerica St. Louis
Job No.: 160-13266-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/07/2015 08:15
Reporting Basis: DRY
Date Received: 08/08/2015 08:10
% Solids: 80.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	13000	240	52	mg/Kg			10	6010C
7440-36-0	Antimony	ND	12	3.8	mg/Kg			10	6010C
7440-38-2	Arsenic	12 ~~3.9~~	12	2.9	mg/Kg	~~J~~ U		10	6010C
7440-39-3	Barium	130	61	1.3	mg/Kg		B	10	6010C
7440-41-7	Beryllium	ND	6.1	0.91	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	6.1	0.41	mg/Kg			10	6010C
7440-70-2	Calcium	1900	3000	82	mg/Kg	J		10	6010C
7440-47-3	Chromium	31	12	1.7	mg/Kg		B	10	6010C
7440-48-4	Cobalt	7.7	61	1.8	mg/Kg	J		10	6010C
7440-50-8	Copper	27	30	3.0	mg/Kg	J		10	6010C
7439-89-6	Iron	16000	120	24	mg/Kg		B	10	6010C
7439-92-1	Lead	120	12	1.6	mg/Kg		B	10	6010C
7439-95-4	Magnesium	3600	1200	39	mg/Kg			10	6010C
7439-96-5	Manganese	250	12	0.98	mg/Kg		B	10	6010C
7440-02-0	Nickel	19	49	1.4	mg/Kg	J		10	6010C
7440-09-7	Potassium	940	6100	880	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	18	2.5	mg/Kg			10	6010C
7440-22-4	Silver	ND	12	0.85	mg/Kg			10	6010C
7440-23-5	Sodium	280	1200	93	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	24	2.3	mg/Kg			10	6010C
7440-62-2	Vanadium	61 U ~~34~~	61	6.2	mg/Kg	J		10	6010C
7440-66-6	Zinc	130	61	6.9	mg/Kg			10	6010C
7439-97-6	Mercury	0.11	0.038	0.013	mg/Kg			1	7471B

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DateShipped: 8/5/2015

CarrierName: FedEx

AirbillNo: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu

Contact Phone: 908-565-2980

No: 2-080515-230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO

Lab Contact: Mike Franks

Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical_Method
	C002-SS001-2448-01	8/5/2015	10:50	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C002-SS001-2448-01	8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C002-SS001-2448-01	8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C002-SS001-2448-01	8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C002-SS001-2448-01	8/5/2015	10:50	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C002-SS002-2448-01	8/5/2015	11:40	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C002-SS002-2448-01	8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C002-SS002-2448-01	8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C002-SS002-2448-01	8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C002-SS002-2448-01	8/5/2015	11:40	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C002-SS003-2448-01	8/5/2015	12:10	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C002-SS003-2448-01	8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C002-SS003-2448-01	8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C002-SS003-2448-01	8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C002-SS003-2448-01	8/5/2015	12:10	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C003-SS001-2448-01	8/5/2015	14:10	Soil	Y	4	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C003-SS001-2448-01	8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C003-SS001-2448-01	8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Okum Weston Solutions	8/7/15	TA	8/8/15 0810	

160-13266 Chain of Custody

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DateShipped: 8/5/2015

CarrierName: FedEx

AirbillNo: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu

Contact Phone: 908-565-2980

No: 2-080515-230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO

Lab Contact: Mike Franks

Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical_Method
	C003-SS001-2448-01	8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	Mercury	SW846 7471B
	C003-SS001-2448-01	8/5/2015	14:10	Soil	Y	2	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C003-SS001-2448-02	8/5/2015	14:12	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C003-SS001-2448-02	8/5/2015	14:12	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C003-SS001-2448-02	8/5/2015	14:12	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C003-SS001-2448-02	8/5/2015	14:12	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C003-SS001-2448-02	8/5/2015	14:12	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C003-SS002-0024-01	8/5/2015	14:55	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C003-SS002-0024-01	8/5/2015	14:55	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C003-SS002-0024-01	8/5/2015	14:55	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C003-SS002-0024-01	8/5/2015	14:55	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C003-SS002-0024-01	8/5/2015	14:55	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	RB-080515	8/5/2015	15:00	Aqueous		1	1 L poly bottle	HNO3 pH<2	Gamma Spectroscopy	HASL-300 GA-01-0R
	RB-080515	8/5/2015	15:00	Aqueous		1	1 L poly bottle	HNO3 pH<2	Isotopic Thorium	HASL-300 A-01-R
	RB-080515	8/5/2015	15:00	Aqueous		1	1 L poly bottle	HNO3 pH<2	Isotopic Uranium	HASL-300 A-01-R
	RB-080515	8/5/2015	15:00	Aqueous		1	500 ml poly bottle	HNO3 pH<2	Mercury	SW846 7471B
	RB-080515	8/5/2015	15:00	Aqueous		1	1 L poly bottle	HNO3 pH<2	Radium-226	SW846 9315
	RB-080515	8/5/2015	15:00	Aqueous		1	1 L poly bottle	HNO3 pH<2	Radium-228	SW846 9320

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	[signature] Weston Solutions	8/7/15	[signature] TA	8/10/15 0910	

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DateShipped: 8/5/2015

CarrierName: FedEx

AirbillNo: 8037-9662-5810

CHAIN OF CUSTODY RECORD

Case #: 334

Contact Name: Bernard Nwosu

Contact Phone: 908-565-2980

No: 2-080515-230111-0001

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO

Lab Contact: Mike Franks

Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical_Method
	RB-080515	8/5/2015	15:00	Aqueous		1	500 ml poly bottle	HNO3 pH<2	TAL Metals	SW846 3050B/6010C
	C003-SS003-2448-01	8/5/2015	15:15	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C003-SS003-2448-01	8/5/2015	15:15	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C002-TRENCH-0036-01	8/5/2015	15:30	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C002-TRENCH-0036-01	8/5/2015	15:30	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C004-SS001-1824-01	8/7/2015	08:15	Soil		2	16 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C004-SS001-1824-01	8/7/2015	08:15	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Weston Solutions	8/7/15		8/8/15 0810	

OTHER ANALYTES WORK TABLE

Project: Canadian Uranium and Radium Site

Sampling Date: August 18, 2015

SAMPLE #/CONCENTRATION (MG/KG)

TAL Metals	Matrix:	Soil	Soil	Soil	Soil
	Client ID:	C001-SS001-0012-01	C001-SS001-0012-02	C001-SS002-0012-01	C001-SS003-0012-01
	Lab ID:	160-13435-1	160-13435-2	160-13435-3	160-13435-4
Percent Solids		93.3	92.1	91.8	90.3
Dilution Factor	MDL	10	10	10	10
Aluminum	4.26	7200	6800	11000	9800
Antimony	0.309	9.3 U	9.6 U	U	U
Arsenic	0.236	9.3 U	9.6 U	U	10 U
Barium	0.11	77 J	72	42 J	51
Beryllium	0.075	U	U	U	U
Cadmium	0.034	U	U	U	U
Calcium	6.73	21000	18000	11000	5400
Chromium	0.138	21	17	11	18
Cobalt	0.144	7.3 J	6.3 J	13 J	8.9 J
Copper	0.245	35 J	24 U	46	32
Iron	1.99	18000	13000	22000	20000
Lead	0.129	100 J	160	22	23
Magnesium	3.16	11000	7400	6900	5200
Manganese	0.08	220 J	130 J	270	310
Nickel	0.116	18 J	16 J	13 J	16 J
Potassium	72.4	1700 J	2700 J	U	1200 J
Selenium	0.206	U	U	U	U
Silver	0.07	U	U	10 U	U
Sodium	7.62	1200	830 J	1700	700 J
Thallium	0.19	U	U	U	U
Vanadium	0.507	29 J	13 J	42 J	35 J
Zinc	0.562	120 J	100	50 J	66
Mercury	0.011	*0.12	*0.13	*0.15	*0.029 J
		*D/F X 1	*D/F X 1	*D/F X 1	*D/F X 1

Inorganic Qualifiers

D/F - Dilution Factor
MDL - Method Detection Limit /RL-Reporting Limit
U - non-detected analyte
J (lab qualifier)- estimated value <RL and > MDL
J - estimated value
Note: MDL reported on the Form is for the soil matrix have been adjusted to reflect the sample volume, percent solid, sample weight, and dilution factor.

OTHER ANALYTES WORK TABLE

Project: Canadian Uranium and Radium Site

Sampling Date: August 18, 2015

SAMPLE #/CONCENTRATION (UG/L)

TAL Metals	Matrix: Client ID: Lab ID:	Aqueous RB-081815 160-13435-5
Percent Solids		NA
Dilution Factor	MDL	1.0
Aluminum	22.4	U
Antimony	3.74	4.4 J
Arsenic	1.78	2.4 J
Barium	2.12	U
Beryllium	0.283	U
Cadmium	0.336	U
Calcium	54.2	U
Chromium	3.35	U
Cobalt	2.72	U
Copper	2.1	U
Iron	12.8	19 J
Lead	0.596	U
Magnesium	50.5	U
Manganese	1	U
Nickel	2.57	U
Potassium	456	U
Selenium	2.08	15 U
Silver	0.994	U
Sodium	105	U
Thallium	2.38	U
Vanadium	4.39	U
Zinc	8.32	13 J
Mercury	0.06	U

Inorganic Qualifiers

MDL - Method Detection Limit /RL-Reporting Limit
U - non-detected analyte
J (lab qualifier)- estimated value <RL and > MDL
J - estimated value

6
FIELD DUPLICATE

EPA SAMPLE NO.
C001-SS001-0012-01 &
C001-SS001-0012-02

Lab Name: Test America Contract: WESTON-RST 3

Lab Code: Test America RFP No.: 334 SDG No.: 160-13435

Matrix (soil/water): Soil Level (low/med): LOW

% Solids for Sample: 93.3 % Solids for Duplicate: 92.1

Concentration Units (ug/L or mg/kg dry weight): mg/kg

ANALYTE	CONTROL LIMIT	SAMPLE(S) C001-SS001-0012-01	C	DUPLICATE(D) C001-SS001-0012-02	C	RPD	Q
Aluminum	50%	7200		6800		5.7%	
Antimony	<20	4.3	J	3.5	J	<2 X RL	
Arsenic	<20	7.7	J	4.1	J	<2 X RL	
Barium	50%	77		72		6.7%	
Beryllium	-	U		U		NC	
Cadmium	-	U		U		NC	
Calcium	50%	21000		18000		15.4%	
Chromium	50%	21		17		21.0%	
Cobalt	<100	7.3	J	6.3	J	<2 X RL	
Copper	<50	35		22	J	<2 X RL	
Iron	50%	18000		13000		32.2%	
Lead	50%	100		160		46.2%	
Magnesium	50%	11000		7400		39.1%	
Manganese	50%	220		130		51.4%	*
Nickel	<80	18	J	16	J	<2 X RL	
Potassium	<10000	1700	J	2700	J	<2 X RL	
Selenium	-	U		U		NC	
Silver	-	U		U		NC	
Sodium	<10000	1200		830	J	<2 X RL	
Thallium	-	U		U		NC	
Vanadium	<100	29	J	13	J	<2 X RL	
Zinc	50%	120		100		18.2%	
Mercury	50%	0.12		0.13		8.0%	

Difference < 2 X RL, when sample and/or duplicate conc. <5X RL
RPD requirement: <50% when both results are ≥ 5 X RL

CASE NARRATIVE

Client: Weston Solutions, Inc.

Project: EPA RST2 - RFP No. 334A

Report Number: 160-13435-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 08/19/2015; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.4 C.

TOTAL METALS (ICP)- Solids
Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/21/2015 and analyzed on 08/26/2015.

Batch 208156
The low level check standard recovery associated with prep batches 206916 and 206995 and analytical batch 160-208156 is outside the acceptance criteria for the following analyte: antimony. However, the associated samples recovered below the reporting limit for the affected analyte; therefore, the results will be reported. (CRI 160-208156/7)

The low level continuing calibration verification (CCVL) associated with prep batches 206916 and 206995 and analytical batch

Job ID: 160-13435-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

160-208156 recovered above the upper control limit for antimony. The samples associated with this CCVL were below the reporting limit for the affected analytes; therefore, the data have been reported. (CCVL 160-208156/73)

The following samples from preparation batch 160-206916 and analytical batch 160-208156 were diluted to bring the concentration of target analytes within the calibration range: C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-01 (160-13435-1[MS]), C001-SS001-0012-01 (160-13435-1[MSD]), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3), C001-SS003-0012-01 (160-13435-4) and (160-13435-B-1-A SD). Elevated reporting limits (RLs) are provided.

Due to the high concentration of aluminum, calcium, iron, and magnesium, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-206916 and analytical batch 160-208156 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. C001-SS001-0012-01 (160-13435-1[MS]) and C001-SS001-0012-01 (160-13435-1[MSD])

The matrix spike / matrix spike duplicate (MS/MSD) recovery and precision for preparation batch 160-206916 and analytical batch 160-208156 was outside control limits for copper, potassium, lead, and zinc. Sample non-homogeneity is suspected because the associated laboratory control sample recovery was within acceptance limits. C001-SS001-0012-01 (160-13435-1[MS]) and C001-SS001-0012-01 (160-13435-1[MSD])

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 160-206916 and analytical batch 160-208156 were outside control limits for barium and manganese. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. C001-SS001-0012-01 (160-13435-1[MS]) and C001-SS001-0012-01 (160-13435-1[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL METALS (ICP)-Water

Sample RB-081815 (160-13435-5) was analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/21/2015 and analyzed on 08/26/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY-Solids

Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared on 08/27/2015 and analyzed on 08/28/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/20/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Solids

Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE A01R_Th. The samples were dried on 08/19/2015, prepared on 08/20/2015 and analyzed on 08/24/2015.

The matrix spike duplicate (MSD) recovery (123%) is outside the control limits (76-115%). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits . The data have been qualified and reported. C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-01 (160-13435-1[MS]), C001-SS001-0012-01 (160-13435-1[MSD]), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3), C001-SS003-0012-01 (160-13435-4), (LCS 160-206728/2-A) and (MB 160-206728/1-A)

Job ID: 160-13435-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC THORIUM (ALPHA SPECTROMETRY)-Water
Sample RB-081815 (160-13435-5) was analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 08/20/2015 and analyzed on 08/25/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Solids
Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were dried on 08/19/2015, prepared on 08/20/2015 and analyzed on 08/24/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)-Water
Sample RB-081815 (160-13435-5) was analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 08/20/2015 and analyzed on 08/24/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CESIUM-137 & OTHER GAMMA EMITTERS (GS)-Water
Sample RB-081815 (160-13435-5) was analyzed for Cesium-137 & Other Gamma Emitters (GS) in accordance with DOE. The samples were prepared and analyzed on 08/20/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM 226 (NO INGROWTH)-Solids
Samples C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3) and C001-SS003-0012-01 (160-13435-4) were analyzed for Radium 226 (No ingrowth) in accordance with GA-01-R. The samples were dried on 08/19/2015, prepared on 08/21/2015 and analyzed on 08/22/2015.

Ra-226 by gamma spectroscopy is typically determined by inference from daughters (e.g. Bi-214) after sealing the sample in an appropriate counting geometry/container and waiting 21 days to allow the Ra-226 decay chain through Rn-222 to reach secular equilibrium. Such an approach is considered to be the most reliable and representative means for establishing the true Ra-226 concentration in the sample. The method requested by the client to report Ra-226, using its own 186 keV gamma-ray emission, is subject to interference and potential bias due to the 185.7 keV U-235 gamma ray. Experience also indicates gamma spectroscopy software does not consistently assign accurate peak areas to Ra-226 (186 keV), with the problem compounded by slight drift of the instrumentation. The laboratory considers Ra-226 reported based upon the 186 keV gamma-ray emission to be best used by the client in a qualitative fashion.The MDC was greater than the requested limit of 1 pCi/g for Radium-226. Radium-226 was requested to be reported with no ingrowth for this batch; therefore, samples were reported from the only usable gamma energy line, 185.99 KeV. This energy line has a low efficiency which causes an elevated MDC.The following samples were affected: C001-SS001-0012-01 (160-13435-1), C001-SS001-0012-02 (160-13435-2), C001-SS002-0012-01 (160-13435-3), C001-SS003-0012-01 (160-13435-4), (LCS 160-206998/2-A), (MB 160-206998/1-A) and (160-13435-E-1-R DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

Metals

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method Summary

Client: Weston Solutions, Inc.
Project/Site: EPA RST2 - RFP No. 334A

TestAmerica Job ID: 160-13435-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SL
7470A	Mercury (CVAA)	SW846	TAL SL
7471B	Mercury (CVAA)	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
GA-01-R	Radium-226 & Other Gamma Emitters (GS)	DOE	TAL SL
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 160-13435-2

Login Number: 13435
List Number: 1
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

5

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

COVER PAGE
METALS

Lab Name: TestAmerica St. Louis Job Number: 160-13435-1

SDG No.:

Project: EPA RST2 - RFP No. 334A

Client Sample ID	Lab Sample ID
C001-SS001-0012-01	160-13435-1
C001-SS001-0012-02	160-13435-2
C001-SS002-0012-01	160-13435-3
C001-SS003-0012-01	160-13435-4
RB-081815	160-13435-5

Comments:

ED_006395_00000161-00049

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C001-SS001-0012-01 | Lab Sample ID: 160-13435-1

Lab Name: TestAmerica St. Louis | Job No.: 160-13435-1

SDG ID.:

Matrix: Solid | Date Sampled: 08/18/2015 09:40

Reporting Basis: DRY | Date Received: 08/19/2015 09:30

% Solids: 93.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	7200	190	40	mg/Kg			10	6010C
7440-36-0	Antimony	9.3 ~~4.3~~	9.3	2.9	mg/Kg	U	^ B	10	6010C
7440-38-2	Arsenic	9.3 ~~[illegible]~~	9.3	2.2	mg/Kg	U	B	10	6010C
7440-39-3	Barium	77	47	1.0	mg/Kg	J	F1	10	6010C
7440-41-7	Beryllium	ND	4.7	0.70	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	4.7	0.32	mg/Kg			10	6010C
7440-70-2	Calcium	21000	2300	63	mg/Kg			10	6010C
7440-47-3	Chromium	21	9.3	1.3	mg/Kg		B	10	6010C
7440-48-4	Cobalt	7.3	47	1.3	mg/Kg	J		10	6010C
7440-50-8	Copper	35	23	2.3	mg/Kg	J	F2 F1 B	10	6010C
7439-89-6	Iron	18000	93	19	mg/Kg		F2	10	6010C
7439-92-1	Lead	100	9.3	1.2	mg/Kg	J	F2 F1	10	6010C
7439-95-4	Magnesium	11000	930	29	mg/Kg			10	6010C
7439-96-5	Manganese	220	9.3	0.75	mg/Kg	J	F1	10	6010C
7440-02-0	Nickel	18	37	1.1	mg/Kg	J		10	6010C
7440-09-7	Potassium	1700	4700	670	mg/Kg	J	F2 F1	10	6010C
7782-49-2	Selenium	ND	14	1.9	mg/Kg			10	6010C
7440-22-4	Silver	ND	9.3	0.65	mg/Kg			10	6010C
7440-23-5	Sodium	1200	930	71	mg/Kg			10	6010C
7440-28-0	Thallium	ND	19	1.8	mg/Kg			10	6010C
7440-62-2	Vanadium	29	47	4.7	mg/Kg	J		10	6010C
7440-66-6	Zinc	120	47	5.2	mg/Kg	J	F2 F1	10	6010C
7439-97-6	Mercury	0.12	0.031	0.010	mg/Kg			1	7471B

ED_006395_00000161-00050

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C001-SS001-0012-02

Lab Sample ID: 160-13435-2

Lab Name: TestAmerica St. Louis

Job No.: 160-13435-1

SDG ID.:

Matrix: Solid

Date Sampled: 08/18/2015 09:40

Reporting Basis: DRY

Date Received: 08/19/2015 09:30

% Solids: 92.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	6800	190	41	mg/Kg			10	6010C
7440-36-0	Antimony	9.6	9.6	3.0	mg/Kg	U	B	10	6010C
7440-38-2	Arsenic	9.6	9.6	2.3	mg/Kg	U	B	10	6010C
7440-39-3	Barium	72	48	1.1	mg/Kg			10	6010C
7440-41-7	Beryllium	ND	4.8	0.72	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	4.8	0.33	mg/Kg			10	6010C
7440-70-2	Calcium	18000	2400	85	mg/Kg			10	6010C
7440-47-3	Chromium	17	9.6	1.3	mg/Kg		B	10	6010C
7440-48-4	Cobalt	6.3	48	1.4	mg/Kg	J		10	6010C
7440-50-8	Copper	24	24	2.4	mg/Kg	U	B	10	6010C
7439-89-6	Iron	13000	96	19	mg/Kg			10	6010C
7439-92-1	Lead	160	9.6	1.2	mg/Kg			10	6010C
7439-95-4	Magnesium	7400	960	30	mg/Kg			10	6010C
7439-96-5	Manganese	130	9.6	0.77	mg/Kg	J		10	6010C
7440-02-0	Nickel	16	38	1.1	mg/Kg	J		10	6010C
7440-09-7	Potassium	2700	4800	700	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	14	2.0	mg/Kg			10	6010C
7440-22-4	Silver	ND	9.6	0.67	mg/Kg			10	6010C
7440-23-5	Sodium	830	960	73	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	19	1.8	mg/Kg			10	6010C
7440-62-2	Vanadium	13	48	4.9	mg/Kg	J		10	6010C
7440-66-6	Zinc	100	48	5.4	mg/Kg			10	6010C
7439-97-6	Mercury	0.13	0.031	0.010	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: C001-SS002-0012-01
Lab Sample ID: 160-13435-3
Lab Name: TestAmerica St. Louis
Job No.: 160-13435-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/18/2015 11:30
Reporting Basis: DRY
Date Received: 08/19/2015 09:30
% Solids: 91.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	11000	200	43	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.1	mg/Kg		^	10	6010C
7440-38-2	Arsenic	ND	10	2.4	mg/Kg			10	6010C
7440-39-3	Barium	42	51	1.1	mg/Kg	J		10	6010C
7440-41-7	Beryllium	ND	5.1	0.76	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.1	0.35	mg/Kg			10	6010C
7440-70-2	Calcium	11000	2500	68	mg/Kg			10	6010C
7440-47-3	Chromium	11	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	13	51	1.5	mg/Kg	J		10	6010C
7440-50-8	Copper	46	25	2.5	mg/Kg		B	10	6010C
7439-89-6	Iron	23000	100	20	mg/Kg			10	6010C
7439-92-1	Lead	22	10	1.3	mg/Kg			10	6010C
7439-95-4	Magnesium	6900	1000	32	mg/Kg			10	6010C
7439-96-5	Manganese	270	10	0.81	mg/Kg			10	6010C
7440-02-0	Nickel	13	41	1.2	mg/Kg	J		10	6010C
7440-09-7	Potassium	ND	5100	740	mg/Kg			10	6010C
7782-49-2	Selenium	ND	15	2.1	mg/Kg			10	6010C
7440-22-4	Silver	10 ~~ND~~	10	0.71	mg/Kg	~~U~~	B	10	6010C
7440-23-5	Sodium	1700	1000	77	mg/Kg			10	6010C
7440-28-0	Thallium	ND	20	1.9	mg/Kg			10	6010C
7440-62-2	Vanadium	42	51	5.2	mg/Kg	J		10	6010C
7440-66-6	Zinc	50	51	5.7	mg/Kg	J		10	6010C
7439-97-6	Mercury	0.15	0.033	0.011	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: CD01-SS003-0012-01
Lab Sample ID: 160-13435-4
Lab Name: TestAmerica St. Louis
Job No.: 160-13435-1
SDG ID.:
Matrix: Solid
Date Sampled: 08/18/2015 12:50
Reporting Basis: DRY
Date Received: 08/19/2015 09:30
% Solids: 90.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	9800	200	42	mg/Kg			10	6010C
7440-36-0	Antimony	ND	10	3.1	mg/Kg		^	10	6010C
7440-38-2	Arsenic	10	10	2.4	mg/Kg	U	B	10	6010C
7440-39-3	Barium	51	50	1.1	mg/Kg			10	6010C
7440-41-7	Beryllium	ND	5.0	0.75	mg/Kg			10	6010C
7440-43-9	Cadmium	ND	5.0	0.34	mg/Kg			10	6010C
7440-70-2	Calcium	5400	2500	67	mg/Kg			10	6010C
7440-47-3	Chromium	18	10	1.4	mg/Kg		B	10	6010C
7440-48-4	Cobalt	8.9	50	1.4	mg/Kg	J		10	6010C
7440-50-8	Copper	32	25	2.4	mg/Kg		B	10	6010C
7439-89-6	Iron	20000	100	20	mg/Kg			10	6010C
7439-92-1	Lead	23	10	1.3	mg/Kg			10	6010C
7439-95-4	Magnesium	5200	1000	31	mg/Kg			10	6010C
7439-96-5	Manganese	310	10	0.80	mg/Kg			10	6010C
7440-02-0	Nickel	16	40	1.2	mg/Kg	J		10	6010C
7440-09-7	Potassium	1200	5000	720	mg/Kg	J		10	6010C
7782-49-2	Selenium	ND	15	2.1	mg/Kg			10	6010C
7440-22-4	Silver	ND	10	0.70	mg/Kg			10	6010C
7440-23-5	Sodium	700	1000	76	mg/Kg	J		10	6010C
7440-28-0	Thallium	ND	20	1.9	mg/Kg			10	6010C
7440-62-2	Vanadium	35	50	5.1	mg/Kg	J		10	6010C
7440-66-6	Zinc	66	50	5.6	mg/Kg			10	6010C
7439-97-6	Mercury	0.029	0.036	0.012	mg/Kg	J		1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: RB-081815 | Lab Sample ID: 160-13439-5

Lab Name: TestAmerica St. Louis | Job No.: 160-13439-1

SDG ID.:

Matrix: Water | Date Sampled: 08/18/2015 11:45

Reporting Basis: WET | Date Received: 08/19/2015 09:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	200	22	ug/L			1	6010C
7440-36-0	Antimony	4.4	10	3.7	ug/L	J		1	6010C
7440-38-2	Arsenic	2.4	10	1.8	ug/L	J		1	6010C
7440-39-3	Barium	ND	50	2.1	ug/L			1	6010C
7440-41-7	Beryllium	ND	5.0	0.28	ug/L			1	6010C
7440-43-9	Cadmium	ND	5.0	0.34	ug/L			1	6010C
7440-70-2	Calcium	ND	1000	54	ug/L			1	6010C
7440-47-3	Chromium	ND	10	3.4	ug/L			1	6010C
7440-48-4	Cobalt	ND	50	2.7	ug/L			1	6010C
7440-50-8	Copper	ND	25	2.1	ug/L			1	6010C
7439-89-6	Iron	29	100	13	ug/L	J		1	6010C
7439-92-1	Lead	ND	10	0.60	ug/L			1	6010C
7439-95-4	Magnesium	ND	1000	51	ug/L			1	6010C
7439-96-5	Manganese	ND	15	1.0	ug/L			1	6010C
7440-02-0	Nickel	ND	40	2.6	ug/L			1	6010C
7440-09-7	Potassium	ND	5000	460	ug/L			1	6010C
7782-49-2	Selenium	5	15	2.1	ug/L	U	B	1	6010C
7440-22-4	Silver	ND	10	0.99	ug/L			1	6010C
7440-23-5	Sodium	ND	1000	110	ug/L			1	6010C
7440-28-0	Thallium	ND	20	2.4	ug/L			1	6010C
7440-62-2	Vanadium	ND	50	4.4	ug/L			1	6010C
7440-66-6	Zinc	13	20	8.3	ug/L	J		1	6010C
7439-97-6	Mercury	ND	0.20	0.060	ug/L			1	7470A

ED_006395_00000161-00054

USEPA

DateShipped: 8/18/2015

CarrierName: FedEx

AirbillNo: 8037-9662-5864

CHAIN OF CUSTODY RECORD

Case #: 334A

Contact Name: Bernard Nwosu

Contact Phone: 908-565-2980

No: 2-081815-162509-0004

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO

Lab Contact: Mike Franks

Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical_Method
	C001-SS001-0012-01	8/18/2015	09:40	Soil	Y	2	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C001-SS001-0012-01	8/18/2015	09:40	Soil	Y	2	2 oz glass jar	4 C	Mercury	SW846 7471B
	C001-SS001-0012-01	8/18/2015	09:40	Soil	Y	2	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C001-SS001-0012-01	8/18/2015	09:40	Soil	Y	2	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C001-SS001-0012-01	8/18/2015	09:40	Soil	Y	2	32 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C001-SS001-0012-02	8/18/2015	09:45	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C001-SS001-0012-02	8/18/2015	09:45	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C001-SS001-0012-02	8/18/2015	09:45	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C001-SS001-0012-02	8/18/2015	09:45	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C001-SS001-0012-02	8/18/2015	09:45	Soil		1	32 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C001-SS002-0012-01	8/18/2015	11:30	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C001-SS002-0012-01	8/18/2015	11:30	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C001-SS002-0012-01	8/18/2015	11:30	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R
	C001-SS002-0012-01	8/18/2015	11:30	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C001-SS002-0012-01	8/18/2015	11:30	Soil		1	32 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	C001-SS003-0012-01	8/18/2015	12:50	Soil		1	2 oz glass jar	4 C	TAL Metals	SW846 3050B/6010C
	C001-SS003-0012-01	8/18/2015	12:50	Soil		1	2 oz glass jar	4 C	Mercury	SW846 7471B
	C001-SS003-0012-01	8/18/2015	12:50	Soil		1	2 oz glass jar	4 C	Isotopic Thorium	HASL-300 A-01-R

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Nwosu Weston Solutions	8/18/15	Jill Clark TA STL	8.19.15 0830	

160-13435 Chain of Custody

USEPA

DateShipped: 8/18/2015

CarrierName: FedEx

AirbillNo: 8037-9662-5864

CHAIN OF CUSTODY RECORD

Case #: 334A

Contact Name: Bernard Nwosu

Contact Phone: 908-565-2980

No: 2-081815-162509-0004

Lab: TestAmerica Laboratories, Inc. - St. Louis, MO

Lab Contact: Mike Franks

Lab Phone: 314-298-8566

Lab #	Sample #	Sample Date	Sample Time	Matrix	Lab QC	Numb Cont	Container	Preservative	Analyses	Analytical_Method
	C001-SS003-0012-01	8/18/2015	12:50	Soil		1	2 oz glass jar	4 C	Isotopic Uranium	HASL-300 A-01-R
	C001-SS003-0012-01	8/18/2015	12:50	Soil		1	32 oz glass jar	4 C	Gamma Spectroscopy	HASL-300 GA-01-0R
	RB-081815	8/18/2015	11:45	Aqueous		1	500 ml poly bottle	HNO3 pH<2	TAL Metals	SW846 3050B/6010C
	RB-081815	8/18/2015	11:45	Aqueous		1	500 ml poly bottle	HNO3 pH<2	Mercury	SW846 7471B
	RB-081815	8/18/2015	11:45	Aqueous		1	1 L poly bottle	HNO3 pH<2	Isotopic Thorium	HASL-300 A-01-R
	RB-081815	8/18/2015	11:45	Aqueous		1	1 L poly bottle	HNO3 pH<2	Isotopic Uranium	HASL-300 A-01-R
	RB-081815	8/18/2015	11:45	Aqueous		1	1 L poly bottle	HNO3 pH<2	Radium-226	SW846 9315
	RB-081815	8/18/2015	11:45	Aqueous		1	1 L poly bottle	HNO3 pH<2	Radium-228	SW846 9320
	RB-081815	8/18/2015	11:45	Aqueous		1	1 L poly bottle	HNO3 pH<2	Gamma Spectroscopy	HASL-300 GA-01-0R

Special Instructions: Results for Radium-226 and Radium-228 analyzed via gamma spectroscopy should be reported separately for soil samples.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
All Samples All Analyses	Bernard Nwosu Weston Solutions	8/18/15	Jill Clarke TA STL	8.19.15 0830	