

**Data Validation Report  
Tennessee Valley Authority  
Johnsonville Fossil Plant  
Environmental Investigation Plan  
Background Soil Samples  
Chain-of-Custody Number: JOF\_BS\_20190603\_1A**

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the three background soil samples and one aqueous blank collected on June 3, 2019, at the Tennessee Valley Authority (TVA) Johnsonville Fossil Plant facility. These samples were collectively analyzed by TestAmerica Laboratories, Inc. (TestAmerica), of Pittsburgh, Pennsylvania, for total metals by SW-846 Method 6020A; for total mercury by SW-846 Methods 7470A/7471B; for anions (specifically, chloride, fluoride, and sulfate) by SW-846 Method 9056A; and for pH by SW-846 Method 9045D.

This review was performed in accordance with the Environmental Investigation Plan for the Tennessee Valley Authority Johnsonville Fossil Plant Environmental Investigation (JOF EIP, Revision 4, December 2018). This review was performed with guidance from the National Functional Guidelines for Inorganic Data Review (US EPA, October 2004); the US EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (November 2001); and the US EPA Region IV Data Validation Standard Operating Procedures. These validation guidance documents specifically address analyses performed in accordance with the Contract Laboratory Program (CLP) analytical methods and are not completely applicable to the type of analyses and analytical protocols performed for the SW-846 Methods utilized by the laboratory for these samples. Environmental Standards, Inc. (Environmental Standards) used professional judgment to determine the usability of the analytical results and compliance relative to the SW-846 Methods utilized by the laboratory.

### **Summary**

The analytical results and associated laboratory quality control (QC) samples were reviewed to determine the integrity of the reported analytical results and to ensure that the data met the established data quality objectives. This QA review includes all samples in TestAmerica Job Number 180-90873-1.

The samples that have undergone Stage 4 data validation are listed below:

Sample Identification	Laboratory Sample Identification	Job Number	Matrix	Date Sample Collected	Parameters Examined
JOF-BS-BG01-0.0/0.5-20190603	180-90873-1	180-90873-1	Soil	6/3/19	M, Hg, A, pH
JOF-BS-FB07-20190603 (Field Blank)	180-90873-2	180-90873-1	Aq	6/3/19	M, Hg, A
JOF-BS-BG01-1.5/3.5-20190603	180-90873-3	180-90873-1	Soil	6/3/19	M, Hg, A, pH
JOF-BS-BG03-6.5/8.5-20190603	180-90873-4	180-90873-1	Soil	6/3/19	M, Hg, A, pH

Parameters Examined

- M - Total Metals by SW-846 Method 6020A.  
Hg - Total Mercury by SW-846 Methods 7470A/7471B.  
A - Anions (specifically, chloride, fluoride, and sulfate) by SW-846 Method 9056A.  
pH - pH by SW-846 Method 9045D.  
Aq - Aqueous.

Items Reviewed	
Holding Times	Instrument Tuning and Calibrations
Sample Preservation	Reporting Limit (RL) Standard Recoveries
Chain-of-Custody (COC) Record and Case Narrative	Internal Standard Recoveries
Blank Results	Serial Dilution Analysis
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results	Post-Digestion Spike Results
Laboratory Control Sample (LCS) Results	Sample Preparation
Laboratory and Field Duplicate Results	Analytical Sequence
Quantitation of Positive Results	

### **Comments and Exceptions**

- All analyses performed for the sampling event were in compliance with the requirements set forth in the EIP.
- MS/MSD, post-digestion spike, laboratory duplicate, and/or serial dilution analyses were performed on a non-project sample(s). Qualification of data due to this issue was not warranted.

### **Qualifier Summary**

Analyte(s)	Job Number	Samples	Validation Qualifier(s)	Reason for Qualification
fluoride	180-90873-1	JOF-BS-BG01-0.0/0.5-20190603, JOF-BS-BG01-1.5/3.5-20190603, and JOF-BS-BG03-6.5/8.5-20190603	J/UR	M-

Unless otherwise qualified, all positive results reported between the method detection limit (MDL) and quantitation limit (QL) should be considered estimated and have been flagged "J" on the data tables. (Reason Code: RL)

Review performed by: Bryan J. Eck, Quality Assurance Chemist

Review reviewed by: Stephen T. Zeiner, CEAC, Senior Technical Chemist

Review approved by: Andrew L. Piasecki, Senior Quality Assurance Chemist

Review approved by: Rock J. Vitale, CEAC, Technical Director of Chemistry/Principal

Date review completed: 7/25/19

**SECTION 2**

**ANALYTICAL RESULTS**

## **INORGANIC DATA QUALIFIERS**

- U\* This result should be considered "not-detected" because it was detected in a rinsate blank or laboratory blank at a similar level.
- UR Unreliable reporting limit; analyte may or may not be present in sample.
- R Unreliable positive result; analyte may or may not be present in sample.
- J Quantitation is approximate due to limitations identified during data validation.
- UJ This analyte was not detected, but the reporting limit may or may not be higher due to a bias identified during data validation.



## **REASON CODES AND EXPLANATIONS**

<b>Reason Code</b>	<b>Explanation</b>
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
BN	Negative laboratory blank contamination.
C	Initial and/or Continuing Calibration issue, indeterminate bias.
C+	Initial and/or Continuing Calibration issue. The result may be biased high.
C-	Initial and/or Continuing Calibration issue. The result may be biased low.
FD	Field duplicate imprecision.
FG	Total versus Dissolved Imprecision.
H	Holding time exceeded.
I	Internal standard recovery outside of acceptance limits.
L	LCS and LCSD recoveries outside of acceptance limits, indeterminate bias.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
LD	Laboratory duplicate imprecision.
LP	LCS/LCSD imprecision.
M	MS and MSD recoveries outside of acceptance limits, indeterminate bias.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.
MP	MS/MSD imprecision.
P	Post-digestion spike recoveries outside of acceptance limits, indeterminate bias.
P+	Post-digestion spike recovery outside of acceptance limits. The result may be biased high.
P-	Post-digestion spike recovery outside of acceptance limits. The result may be biased low.
Q	Chemical Preservation issue.
R	RL standards outside of acceptance limits, indeterminate bias.
R+	RL standard(s) outside of acceptance limits. The result may be biased high.
R-	RL standard(s) outside of acceptance limits. The result may be biased low.
RL	Reported result between the MDL and the QL.
T	Temperature preservation issue.
SD	Serial Dilution imprecision.
X	Percent solids < 50%.
Y+	Chemical Yield outside of acceptance limits. The result may be biased high.
Y-	Chemical yield outside of acceptance limits. The result may be biased low.
Z	ICP or ICP/MS Interference.
ZZ	Other.

Lab Sample ID	180-90873-1										
Sys Sample Code	JOF-BS-BG01-0.0/0.5-20190603										
Sample Name	JOF-BS-BG01-0.0/0.5-20190603										
Sample Date	6/3/2019 1:49:00 PM										
Location	BG01										
Sample Type	N										
Parent Sample											
n	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
	%	10.6									
	MG/KG	0.197	J	RL	0.0722	0.0722	0.233	Y	Yes	1	DRY
	MG/KG	3.33			0.0303	0.0303	0.116	Y	Yes	1	DRY
	MG/KG	39.0			0.149	0.149	1.16	Y	Yes	1	DRY
	MG/KG	0.356			0.00874	0.00874	0.116	Y	Yes	1	DRY
	MG/KG	1.57	J	RL	1.57	1.57	9.32	Y	Yes	1	DRY
	MG/KG	0.0361	J	RL	0.0198	0.0198	0.116	Y	Yes	1	DRY
	MG/KG	466			10.4	10.4	58.2	Y	Yes	1	DRY
	MG/KG	12.7			0.0967	0.0967	0.233	Y	Yes	1	DRY
	MG/KG	3.40			0.00967	0.00967	0.0582	Y	Yes	1	DRY
	MG/KG	5.93			0.132	0.132	0.233	Y	Yes	1	DRY
	MG/KG	8.12			0.0408	0.0408	0.116	Y	Yes	1	DRY
	MG/KG	4.41			0.321	0.321	0.582	Y	Yes	1	DRY
	MG/KG	0.716			0.190	0.190	0.582	Y	Yes	1	DRY
	MG/KG	4.96			0.0711	0.0711	0.116	Y	Yes	1	DRY
	MG/KG	0.764			0.142	0.142	0.582	Y	Yes	1	DRY
	MG/KG	0.0396	J	RL	0.0315	0.0315	0.116	Y	Yes	1	DRY
	MG/KG	0.289			0.0291	0.0291	0.116	Y	Yes	1	DRY
	MG/KG	15.6			0.0746	0.0746	0.116	Y	Yes	1	DRY
	MG/KG	56.8			0.389	0.389	0.582	Y	Yes	1	DRY
	MG/KG	0.0299	J	RL	0.0163	0.0163	0.0375	Y	Yes	1	DRY
	SU	5.6			0.1	0.1	0.1	Y	Yes	1	NA
	MG/KG		U		4.33	4.33	11.1	N	Yes	1	DRY
	MG/KG		UR	M-	0.758	0.758	1.11	N	Yes	1	DRY
	MG/KG	9.03	J	RL	7.57	7.57	11.1	Y	Yes	1	DRY

	<b>Lab Sample ID</b>	180-90873-2												
	<b>Sys Sample Code</b>	JOF-BS-FB07-20190603												
	<b>Sample Name</b>	JOF-BS-FB07-20190603												
	<b>Sample Date</b>	6/3/2019 2:10:00 PM												
	<b>Location</b>	BG01												
	<b>Sample Type</b>	FB												
	<b>Parent Sample</b>													
Analytic Method	Chemical Name	CAS Rn	Fraction	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
SW-846 6020A	Antimony	7440-36-0	T	MG/L		U		0.000378	0.000378	0.00200	N	Yes	1	NA
	Arsenic	7440-38-2	T	MG/L	0.000340	J	RL	0.000323	0.000323	0.00100	Y	Yes	1	NA
	Barium	7440-39-3	T	MG/L		U		0.00149	0.00149	0.0100	N	Yes	1	NA
	Beryllium	7440-41-7	T	MG/L		U		0.000155	0.000155	0.00100	N	Yes	1	NA
	Boron	7440-42-8	T	MG/L		U		0.0303	0.0303	0.0800	N	Yes	1	NA
	Cadmium	7440-43-9	T	MG/L		U		0.000125	0.000125	0.00100	N	Yes	1	NA
	Calcium	7440-70-2	T	MG/L		U		0.116	0.116	0.500	N	Yes	1	NA
	Chromium	7440-47-3	T	MG/L	0.00274			0.00153	0.00153	0.00200	Y	Yes	1	NA
	Cobalt	7440-48-4	T	MG/L		U		0.0000750	0.0000750	0.000500	N	Yes	1	NA
	Copper	7440-50-8	T	MG/L		U		0.000627	0.000627	0.00200	N	Yes	1	NA
	Lead	7439-92-1	T	MG/L		U		0.000128	0.000128	0.00100	N	Yes	1	NA
	Lithium	7439-93-2	T	MG/L		U		0.00314	0.00314	0.00500	N	Yes	1	NA
	Molybdenum	7439-98-7	T	MG/L		U		0.000610	0.000610	0.00500	N	Yes	1	NA
	Nickel	7440-02-0	T	MG/L		U		0.000312	0.000312	0.00100	N	Yes	1	NA
	Selenium	7782-49-2	T	MG/L		U		0.00262	0.00262	0.00500	N	Yes	1	NA
	Silver	7440-22-4	T	MG/L		U		0.000121	0.000121	0.00100	N	Yes	1	NA
	Thallium	7440-28-0	T	MG/L		U		0.000128	0.000128	0.00100	N	Yes	1	NA
	Vanadium	7440-62-2	T	MG/L	0.00156			0.000899	0.000899	0.00100	Y	Yes	1	NA
	Zinc	7440-66-6	T	MG/L		U		0.00322	0.00322	0.00500	N	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	T	MG/L		U		0.000101	0.000101	0.000200	N	Yes	1	NA
SW-846 9056A	Chloride	16887-00-6	N	MG/L		U		0.715	0.715	1.00	N	Yes	1	NA
	Fluoride	16984-48-8	N	MG/L		U		0.0263	0.0263	0.100	N	Yes	1	NA
	Sulfate	14808-79-8	N	MG/L		U		0.380	0.380	1.00	N	Yes	1	NA

Lab Sample ID	180-90873-3										
Sys Sample Code	JOF-BS-BG01-1.5/3.5-20190603										
Sample Name	JOF-BS-BG01-1.5/3.5-20190603										
Sample Date	6/3/2019 2:24:00 PM										
Location	BG01										
Sample Type	N										
Parent Sample											
n	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
	%	20.9									
	MG/KG	0.189	J	RL	0.0769	0.0769	0.248	Y	Yes	1	DRY
	MG/KG	2.66			0.0322	0.0322	0.124	Y	Yes	1	DRY
	MG/KG	87.8			0.159	0.159	1.24	Y	Yes	1	DRY
	MG/KG	0.622			0.00930	0.00930	0.124	Y	Yes	1	DRY
	MG/KG	2.31	J	RL	1.67	1.67	9.92	Y	Yes	1	DRY
	MG/KG	0.0513	J	RL	0.0211	0.0211	0.124	Y	Yes	1	DRY
	MG/KG	1650			11.1	11.1	62.0	Y	Yes	1	DRY
	MG/KG	20.5			0.103	0.103	0.248	Y	Yes	1	DRY
	MG/KG	3.28			0.0103	0.0103	0.0620	Y	Yes	1	DRY
	MG/KG	9.34			0.140	0.140	0.248	Y	Yes	1	DRY
	MG/KG	5.30			0.0434	0.0434	0.124	Y	Yes	1	DRY
	MG/KG	4.45			0.342	0.342	0.620	Y	Yes	1	DRY
	MG/KG	0.622			0.202	0.202	0.620	Y	Yes	1	DRY
	MG/KG	8.72			0.0756	0.0756	0.124	Y	Yes	1	DRY
	MG/KG	0.873			0.151	0.151	0.620	Y	Yes	1	DRY
	MG/KG	0.0674	J	RL	0.0335	0.0335	0.124	Y	Yes	1	DRY
	MG/KG	0.205			0.0310	0.0310	0.124	Y	Yes	1	DRY
	MG/KG	17.8			0.0793	0.0793	0.124	Y	Yes	1	DRY
	MG/KG	36.9			0.414	0.414	0.620	Y	Yes	1	DRY
	MG/KG	0.0424			0.0184	0.0184	0.0424	Y	Yes	1	DRY
	SU	7.2			0.1	0.1	0.1	Y	Yes	1	NA
	MG/KG	5.61	J	RL	4.85	4.85	12.5	Y	Yes	1	DRY
	MG/KG	1.58	J	M-	0.849	0.849	1.25	Y	Yes	1	DRY
	MG/KG	46.3			8.48	8.48	12.5	Y	Yes	1	DRY

Lab Sample ID	180-90873-4										
Sys Sample Code	JOF-BS-BG01-6.5/8.5-20190603										
Sample Name	JOF-BS-BG01-6.5/8.5-20190603										
Sample Date	6/3/2019 2:40:00 PM										
Location	BG01										
Sample Type	N										
Parent Sample											
n	Result Unit	Final Result	Final Qual	Reason code	Final MDL	Final RL	Final QL	Final Detect	Final Report	DF	Basis
	%	29.0									
	MG/KG		U		0.0891	0.0891	0.288	N	Yes	1	DRY
	MG/KG	0.348			0.0374	0.0374	0.144	Y	Yes	1	DRY
	MG/KG	17.1			0.184	0.184	1.44	Y	Yes	1	DRY
	MG/KG	0.670			0.0108	0.0108	0.144	Y	Yes	1	DRY
	MG/KG	4.93	J	RL	1.94	1.94	11.5	Y	Yes	1	DRY
	MG/KG	0.0485	J	RL	0.0244	0.0244	0.144	Y	Yes	1	DRY
	MG/KG	650			12.9	12.9	71.9	Y	Yes	1	DRY
	MG/KG	20.9			0.119	0.119	0.288	Y	Yes	1	DRY
	MG/KG	0.461			0.0119	0.0119	0.0719	Y	Yes	1	DRY
	MG/KG	7.38			0.162	0.162	0.288	Y	Yes	1	DRY
	MG/KG	2.07			0.0503	0.0503	0.144	Y	Yes	1	DRY
	MG/KG	1.16			0.397	0.397	0.719	Y	Yes	1	DRY
	MG/KG		U		0.234	0.234	0.719	N	Yes	1	DRY
	MG/KG	9.10			0.0877	0.0877	0.144	Y	Yes	1	DRY
	MG/KG	0.694	J	RL	0.175	0.175	0.719	Y	Yes	1	DRY
	MG/KG	0.0618	J	RL	0.0388	0.0388	0.144	Y	Yes	1	DRY
	MG/KG	0.107	J	RL	0.0359	0.0359	0.144	Y	Yes	1	DRY
	MG/KG	10.6			0.0920	0.0920	0.144	Y	Yes	1	DRY
	MG/KG	103			0.480	0.480	0.719	Y	Yes	1	DRY
	MG/KG		U		0.0208	0.0208	0.0481	N	Yes	1	DRY
	SU	7.6			0.1	0.1	0.1	Y	Yes	1	NA
	MG/KG	11.5	J	RL	5.42	5.42	14.0	Y	Yes	1	DRY
	MG/KG	2.77	J	M-	0.950	0.950	1.40	Y	Yes	1	DRY
	MG/KG	63.8			9.48	9.48	14.0	Y	Yes	1	DRY

## **SECTION 3**

### **SUPPORTING DOCUMENTATION FOR QUALIFIERS**



## INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: TVA  
 Sample Collection Dates: 6/3/19  
 Job Number: 20188360.A000  
 Project Manager: AC  
 Laboratory: TA Pittsburgh

Reviewed by: BE  
 Approved by: SZ  
 Completion Date: 7/19

Applicable Sample No's ( )

Refer to Table 1 in the Quality Assurance Review

		<u>Sample No.</u>	<u>Lab Control No.</u>
Deliverable:	CLP (Full) ( )	180-90873-1	
	Level IV (Full) (x)		
Limited	( )		
Other:			

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail			Problems Identified			Support Documentation Attachments				
	Check (✓) if Yes or Footnote Letter for Comments Below			Check (✓) if Yes or Footnote Letter for Comments Below			Check (✓) if Yes or Footnote Letter for Comments Below				
	IC	Metals	Wet Chem		IC	Metals	Wet Chem		IC	Metals	Wet Chem
Holding Times	x	x	x						x	x	x
Blank Analysis Results	x	x	x						x	x	x
Matrix Spike (Predigestion) Results	x	x	x		x				x	x	x
Duplicate Analysis: ( ) Field (x) Lab	x	x	x						x	x	x
Quantitation of Results	x	x	x						x	x	x
Detection Limit/Sensitivity	x	x	x						x	x	x
Initial Calibrations	x	x	x						x	x	x
Continuing Calibrations	x	x	x						x	x	x
Laboratory Control Standard (LCS)	x	x	x						x	x	x
ICP Linear Range Analysis											
ICP Interference Checks											
ICP Serial Dilutions											
ICP Post-Digestion Spike											
GFAA Post Digestion Spikes											
GFAA Duplicate Injections											
ICP Multiple Exposures											
GFAA Standard Additions											
CRDL Standards											
Condition on Receipt	x	x	x						x	x	x
Percent Solids											
Others: Total vs. Dissolved Metals		x							x		

Comments: \_\_\_\_\_

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# QC Sample Results

Client: Environmental Standards Inc.  
Project/Site: JOF\_BS\_20190603\_1A

Job ID: 180-90873-1

## Method: EPA 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 180-90986-B-1-C MS

Matrix: Solid

Analysis Batch: 282062

Client Sample ID: Matrix Spike  
*In s.t.* Prep Type: Soluble

Analyte	Sample	Sample	Spike	MS	MS	Unit	%Rec.		
	Result	Qualifier	Added	Result	Qualifier		D	%Rec	Limits
Chloride	ND		286	317.7		mg/Kg	111	80 - 120	
Fluoride	ND	F1	14.3	1.855	F1	mg/Kg	13	80 - 120	
Sulfate	11.3	J	286	248.6		mg/Kg	83	80 - 120	

Lab Sample ID: 180-90986-B-1-D MSD

Matrix: Solid

Analysis Batch: 282062

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Soluble

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	%Rec.			RPD
	Result	Qualifier	Added	Result	Qualifier		D	%Rec	Limits	RPD
Chloride	ND		288	318.5		mg/Kg	110	80 - 120		0 15
Fluoride	ND	F1	14.4	1.987	F1	mg/Kg	14	80 - 120		7 15
Sulfate	11.3	J	288	251.0		mg/Kg	83	80 - 120		1 15

## Method: EPA 6020A - Metals (ICP/MS)

Lab Sample ID: MB 180-281565/1-A

Matrix: Solid

Analysis Batch: 281880

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 281565

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Antimony	ND		0.200	0.0620	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Arsenic	ND		0.100	0.0260	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Barium	ND		1.00	0.128	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Beryllium	ND		0.100	0.00750	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Boron	ND		8.00	1.35	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Cadmium	ND		0.100	0.0170	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Calcium	ND		50.0	8.95	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Chromium	ND		0.200	0.0830	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Cobalt	ND		0.0500	0.00830	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Copper	ND		0.200	0.113	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Lead	ND		0.100	0.0350	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Lithium	ND		0.500	0.276	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Molybdenum	ND		0.500	0.163	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Nickel	ND		0.100	0.0610	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Selenium	ND		0.500	0.122	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Silver	ND		0.100	0.0270	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Thallium	ND		0.100	0.0250	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Vanadium	ND		0.100	0.0640	mg/Kg		06/12/19 16:15	06/14/19 19:09	1
Zinc	ND		0.500	0.334	mg/Kg		06/12/19 16:15	06/14/19 19:09	1

Lab Sample ID: LCS 180-281565/2-A

Matrix: Solid

Analysis Batch: 281880

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 281565

Analyte	Spike	LCS			%Rec.
	Added	Result	Qualifier	Unit	
Antimony	25.0	25.89		mg/Kg	104
Arsenic	100	98.71		mg/Kg	99
Barium	100	95.27		mg/Kg	95
Beryllium	50.0	50.46		mg/Kg	101

Eurofins TestAmerica, Pittsburgh

5A-IN  
MATRIX SPIKE SAMPLE RECOVERY  
METALS

Client ID: Lab ID: 180-90843-B-1-D MS  
 Lab Name: Eurofins TestAmerica, Pittsburgh Job No.: 180-90873-1  
 SDG No.:  
 Matrix: Solid Concentration Units: mg/Kg  
 % Solids: 79.9

Analyte	SSR	Sample Result (SR)	Spike Added (SA)	%R	Control Limit %R	Q	Method
	C	C					
Mercury	0.3119	0.0348	0.220	126	80-120	F1	EPA 7471B

SSR = Spiked Sample Result

no end

non-project  
sample  
no qualification

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN  
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY  
METALS

Client ID: Lab ID: 180-90843-B-1-E MSD  
 Lab Name: Eurofins TestAmerica, Pittsburgh Job No.: 180-90873-1  
 SDG No.:  
 Matrix: Solid Concentration Units: mg/Kg  
 % Solids: 79.9

Analyte	(SDR)	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Mercury	0.2445	0.196	107	80-120	24	20	F4	EPA 7471B

SDR = Sample Duplicate Result

*.. no eval*

*non-project sample*  
*no qualification*

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

## **SECTION 4**

### **CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD**

**Job Narrative  
180-90873-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 6/5/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

**GC Semi VOA**

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

**Metals**

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

**General Chemistry**

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

TVA Environmental Investigations



Tennessee Valley Authority

Chain-of-Custody / Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

COOLER No.:	1	of	1
COC No.:	JOF_BS_20190603_1A		
1 of 1 Pages			
Task Desc.:	JOF_BS		

Required Ship to Lab:		Required Project Information:		Required Sampler Information:	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Johnsonville Fossil Plant	Sampler:	Walker Padgett
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238	Project #:	18020000	Sampling Company:	Stantec
		Site Address:	535 Steam Plant Road	Address:	3157 Royal Drive
		City:	New Johnsonville	City/State:	Alpharetta, GA Phone:
		State, Zip:	TN 37134		678-327-2949
Lab Manager Contact Information		Site PM Name:	Roy Quinn	Sampling Team Number:	1
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Send EDD/Hard Copy to:	tva_delivery@envirotd.com
Phone/Fax:	615-301-5741/615-728-3404	Site PM Email:	jquinn@tva.gov		
Lab Email:	Gail.Lage@testamericainc.com				

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth		MATRIX CODE G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD
			Depth Unit	Select Unit							
1	JOF-BS-BG01-0.0/0.5-20190603	BG01	0.0	0.5	BS	G	N	6/3/2019	1349	2	<input type="checkbox"/>
2	JOF-BS-FB07-20190603	BG01	NA	NA	AQ	G	FB	6/3/2019	1410	2	<input type="checkbox"/>
3	JOF-BS-BG01-1.5/3.5-20190603	BG01	1.5	3.5	BS	G	N	6/3/2019	1424	2	<input type="checkbox"/>
4	JOF-BS-BG01-6.5/8.5-20190603	BG01	6.5	8.5	BS	G	N	6/3/2019	1440	2	<input type="checkbox"/>
5											<input type="checkbox"/>
6											<input type="checkbox"/>
7											<input type="checkbox"/>
8											<input type="checkbox"/>
9											<input type="checkbox"/>
10											<input type="checkbox"/>
11											<input type="checkbox"/>
12											<input type="checkbox"/>
13											<input type="checkbox"/>

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

BACKGROUNDSOIL\_BLANKS: Anions unpreserved; Metals preserved w/ HNO<sub>3</sub> to pH<2

Filtered	X	X	X
Preservative	X	X	X
Backgroundsoil, Blanks	X	X	X
Backgroundsoil, BH	X	X	X



180-90873 Chain of Custody

RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME	Sample Receipt Conditions			
Walker Padgett	Stantec	6/04/19	0845	8/1/19	4:15	6/1/19	4:15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
								<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHIPPING METHOD:				SAMPLER NAME AND SIGNATURE				Temperature in °C	Sample on Ice?	Sample Infect?	Trap Blank?
Courier				Walker Padgett Scott Stanley				6/04/19 WP			

## Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-90873-1

**Login Number: 90873**

**List Source: Eurofins TestAmerica, Pittsburgh**

**List Number: 1**

**Creator: Say, Thomas C**

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.	True	
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

