

**Data Validation Report
Tennessee Valley Authority
Bull Run Fossil Plant
Environmental Investigation Plan
Background Soil Samples**

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the six background soil samples and two aqueous blanks collected on October 30, 2018, at the Tennessee Valley Authority (TVA) Bull Run Fossil Plant facility. These samples were collectively analyzed by TestAmerica Laboratories, Inc. (TestAmerica), of Pittsburgh, Tennessee, for total metals by SW-846 Method 6020A; for total mercury by SW-846 Method 7470A/7471B; for anions (specifically, chloride, fluoride, and sulfate) by SW-846 Method 9056A; and for pH by Method 9045D.

This review was performed in accordance with the Quality Assurance Project Plan for the Tennessee Valley Authority Bull Run Fossil Plant Environmental Investigation (TVA BRF QAPP, Revision 2, July 2018) and the Background Soil Sampling and Analysis Plan for TVA Bull Run Fossil Plant (TVA BRF SAP, Revision 3, July 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 180-83548-1.

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

Sample Identification	Laboratory Sample Identification	Job Number	Matrix	Date Sample Collected	Parameter(s) Examined
BRF-BS-BG14-1.5/3.5-20181030	180-83548-1	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-BG14-6.0/8.0-20181030	180-83548-2	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-BG14-0.0/0.5-20181030	180-83548-3	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-FB01-20181030 (Field Blank)	180-83548-4	180-83548-1	Aq	10/30/18	A, M, Hg
BRF-BS-BG01-0.0/0.5-20181030	180-83548-5	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-BG01-1.25/3.25-20181030	180-83548-6	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-BG01-6.5/8.5-20181030	180-83548-7	180-83548-1	Soil	10/30/18	A, M, Hg, pH
BRF-BS-EB01-20181030 (Equipment Blank)	180-83548-8	180-83548-1	Aq	10/30/18	A, M, Hg

Parameters Examined

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

Qualifier Summary

Analyte(s)	Job Number	Sample(s)	Validation Qualifier(s)	Reason(s) for Qualification
molybdenum	180-83548-1	All samples except BRF-BS-FB01-20181030 and BRF-BS-EB01-20181030	U*	BE
fluoride	180-83548-1	BRF-BS-BG14-1.5/3.5-20181030	UR	M-
fluoride	180-83548-1	BRF-BS-BG14-6.0/8.0-20181030, BRF-BS-BG14-0.0/0.5-20181030, BRF-BS-BG01-0.0/0.5-20181030, BRF-BS-BG01-1.25/3.25-20181030, and BRF-BS-BG01-6.5/8.5-20181030	J	M-, MP
chloride	180-83548-1	All samples	J/UJ	R-
antimony and boron	180-83548-1	All samples except BRF-BS-FB01-20181030 and BRF-BS-EB01-20181030	J/UJ	M-
lead	180-83548-1	All samples except BRF-BS-FB01-20181030 and BRF-BS-EB01-20181030	J	M+
calcium	180-83548-1	All samples except BRF-BS-FB01-20181030 and BRF-BS-EB01-20181030	J	MP, SD

Analyte(s)	Job Number	Sample(s)	Validation Qualifier(s)	Reason(s) for Qualification
selenium, vanadium, and zinc	180-83548-1	All samples except BRF-BS-FB01-20181030 and BRF-BS-EB01-20181030	J	P-
selenium	180-83548-1	BRF-BS-BG14-1.5/3.5-20181030 and BRF-BS-BG01-0.0/0.5-20181030	J	ZZ

All positive results reported between the method detection limit (MDL) and quantitation limit (QL) should be considered estimated and have been flagged "J" (unless previously flagged "U*") on the data tables.

Review performed by: Danielle Coles, Quality Assurance Chemist

Review reviewed by: Andrew L. Piasecki, Senior Quality Assurance Chemist/Data Validation Task Manager

Review approved by: Jennifer N. Gable, Senior Quality Assurance Chemist/Technical Lead

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

Date review completed: 11/16/18

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

Reason Code	Explanation
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 RL.
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.

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/KG	0.282	J	M-	0.0732	0.0732	0.236	Y	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	5.33			0.0307	0.0307	0.118	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	194			0.0673	0.0673	1.18	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	1.28			0.00886	0.00886	0.118	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	2.72	J	M-,RL	0.901	0.901	9.45	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.170			0.0201	0.0201	0.118	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	2520	J	MP,SD	10.6	10.6	59.1	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	21.6			0.0780	0.0780	0.236	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	33.1			0.00980	0.00980	0.0591	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	19.4			0.133	0.133	0.236	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	71.3	J	M+	0.0413	0.0413	0.118	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	11.6			0.326	0.326	0.591	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE	0.611	0.611	0.611	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	15.6			0.0721	0.0721	0.118	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	1.01	J	P-,ZZ	0.0709	0.0709	0.591	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG	0.0235	J	RL	0.0165	0.0165	0.118	Y	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.170			0.0154	0.0154	0.118	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	22.0	J	P-	0.0721	0.0721	0.118	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	36.1	J	P-	0.395	0.395	0.591	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG	0.0165	J	RL	0.00851	0.00851	0.0380	Y	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	7.1			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG		UJ	R-	4.73	4.73	12.2	N	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG		UR	M-	0.828	0.828	1.22	N	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG	27.1			8.27	8.27	12.2	Y	Yes	1	DRY

	Lab Sample ID	180-83548-2												
	Sys Sample Code	BRF-BS-BG14-6.0/8.0-20181030												
	Sample Name	BRF-BS-BG14-6.0/8.0-20181030												
	Sample Date	10/30/2018 12:25:00 PM												
	Location	BRF-BG-14												
	Sample Type	N												
	Parent Sample													
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/KG	0.164	J	M-,RL	0.0748	0.0748	0.241	Y	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	4.76			0.0314	0.0314	0.121	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	117			0.0688	0.0688	1.21	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	1.39			0.00905	0.00905	0.121	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	2.52	J	M-,RL	0.920	0.920	9.65	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.113	J	RL	0.0205	0.0205	0.121	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	7890	J	MP,SD	10.8	10.8	60.3	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	23.4			0.0796	0.0796	0.241	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	16.8			0.0100	0.0100	0.0603	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	15.9			0.136	0.136	0.241	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	40.2	J	M+	0.0422	0.0422	0.121	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	21.1			0.333	0.333	0.603	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE,RL	0.277	0.277	0.603	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	19.2			0.0736	0.0736	0.121	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	0.979	J	P-	0.0724	0.0724	0.603	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG	0.0241	J	RL	0.0169	0.0169	0.121	Y	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.190			0.0157	0.0157	0.121	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	24.1	J	P-	0.0736	0.0736	0.121	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	50.3	J	P-	0.403	0.403	0.603	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG	0.0519			0.00839	0.00839	0.0375	Y	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	7.9			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG	10.1	J	R-,RL	4.60	4.60	11.9	Y	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG	1.79	J	M-,MP	0.807	0.807	1.19	Y	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG	16.9			8.05	8.05	11.9	Y	Yes	1	DRY

	Lab Sample ID	180-83548-3												
	Sys Sample Code	BRF-BS-BG14-0.0/0.5-20181030												
	Sample Name	BRF-BS-BG14-0.0/0.5-20181030												
	Sample Date	10/30/2018 12:31:00 PM												
	Location	BRF-BG-14												
	Sample Type	N												
	Parent Sample													
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/KG	0.166	J	M-,RL	0.0756	0.0756	0.244	Y	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	4.88			0.0317	0.0317	0.122	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	87.8			0.0695	0.0695	1.22	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	0.870			0.00915	0.00915	0.122	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	2.18	J	M-,RL	0.930	0.930	9.75	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.169			0.0207	0.0207	0.122	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	2870	J	MP,SD	10.9	10.9	61.0	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	18.4			0.0805	0.0805	0.244	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	18.1			0.0101	0.0101	0.0610	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	10.6			0.138	0.138	0.244	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	36.2	J	M+	0.0427	0.0427	0.122	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	7.67			0.337	0.337	0.610	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE,RL	0.559	0.559	0.610	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	9.99			0.0744	0.0744	0.122	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	0.773	J	P-	0.0732	0.0732	0.610	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG	0.0728	J	RL	0.0171	0.0171	0.122	Y	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.119	J	RL	0.0159	0.0159	0.122	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	19.3	J	P-	0.0744	0.0744	0.122	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	31.2	J	P-	0.407	0.407	0.610	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG	0.0227	J	RL	0.00867	0.00867	0.0387	Y	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	7.6			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG		UJ	R-	4.63	4.63	11.9	N	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG	1.17	J	M-,MP,RL	0.811	0.811	1.19	Y	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG	16.9			8.10	8.10	11.9	Y	Yes	1	DRY

	Lab Sample ID	180-83548-4												
	Sys Sample Code	BRF-BS-FB01-20181030												
	Sample Name	BRF-BS-FB01-20181030												
	Sample Date	10/30/2018 2:15:00 PM												
	Location													
	Sample Type	FB												
	Parent Sample													
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		0.00112	0.00112	0.00200	N	Yes	1	NA
	Arsenic	7440-38-2	T	MG/L		U		0.000323	0.000323	0.00100	N	Yes	1	NA
	Barium	7440-39-3	T	MG/L		U		0.000373	0.000373	0.0100	N	Yes	1	NA
	Beryllium	7440-41-7	T	MG/L		U		0.0000570	0.0000570	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	0.00159	J	RL	0.000631	0.000631	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		0.00130	0.00130	0.00200	N	Yes	1	NA
	Lead	7439-92-1	T	MG/L		U		0.0000940	0.0000940	0.00100	N	Yes	1	NA
	Lithium	7439-93-2	T	MG/L		U		0.00256	0.00256	0.00500	N	Yes	1	NA
	Molybdenum	7439-98-7	T	MG/L		U		0.000474	0.000474	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		0.000813	0.000813	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		0.0000630	0.0000630	0.00100	N	Yes	1	NA
	Vanadium	7440-62-2	T	MG/L	0.00180			0.000899	0.000899	0.00100	Y	Yes	1	NA
	Zinc	7440-66-6	T	MG/L	0.00624			0.00242	0.00242	0.00500	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	T	MG/L		U		0.0000653	0.0000653	0.000200	N	Yes	1	NA
SW-846 9056A	Chloride	16887-00-6	N	MG/L		UU	R-	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	180-83548-5												
	Sys Sample Code	BRF-BS-BG01-0.0/0.5-20181030												
	Sample Name	BRF-BS-BG01-0.0/0.5-20181030												
	Sample Date	10/30/2018 3:42:00 PM												
	Location	BRF-BG-01												
	Sample Type	N												
	Parent Sample													
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/KG	0.431	J	M-	0.0803	0.0803	0.259	Y	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	11.5			0.0337	0.0337	0.129	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	63.9			0.0738	0.0738	1.29	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	0.997			0.00971	0.00971	0.129	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	2.42	J	M-,RL	0.988	0.988	10.4	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.204			0.0220	0.0220	0.129	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	2170	J	MP,SD	11.6	11.6	64.7	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	61.9			0.0855	0.0855	0.259	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	19.1			0.0107	0.0107	0.0647	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	19.0			0.146	0.146	0.259	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	27.1	J	M+	0.0453	0.0453	0.129	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	5.40			0.357	0.357	0.647	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE	0.696	0.696	0.696	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	13.2			0.0790	0.0790	0.129	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	0.912	J	P,-ZZ	0.0777	0.0777	0.647	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG	0.0245	J	RL	0.0181	0.0181	0.129	Y	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.0948	J	RL	0.0168	0.0168	0.129	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	30.6	J	P-	0.0790	0.0790	0.129	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	79.4	J	P-	0.432	0.432	0.647	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG	0.0257	J	RL	0.00983	0.00983	0.0439	Y	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	7.6			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG		UJ	R-	5.06	5.06	13.1	N	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG	4.10	J	M-,MP	0.888	0.888	1.31	Y	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG		U		8.86	8.86	13.1	N	Yes	1	DRY

	Lab Sample ID	180-83548-6												
	Sys Sample Code	BRF-BS-BG01-1.25/3.25-20181030												
	Sample Name	BRF-BS-BG01-1.25/3.25-20181030												
	Sample Date	10/30/2018 3:40:00 PM												
	Location	BRF-BG-01												
	Sample Type	N												
	Parent Sample													
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/KG		UJ	M-	0.0761	0.0761	0.245	N	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	2.01			0.0319	0.0319	0.123	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	46.7			0.0700	0.0700	1.23	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	0.728			0.00921	0.00921	0.123	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	4.37	J	M-,RL	0.936	0.936	9.82	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.0729	J	RL	0.0209	0.0209	0.123	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	179000	J	MP,SD	11.0	11.0	61.4	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	14.2			0.0810	0.0810	0.245	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	8.35			0.0102	0.0102	0.0614	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	11.6			0.139	0.139	0.245	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	4.55	J	M+	0.0430	0.0430	0.123	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	13.7			0.339	0.339	0.614	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE,RL	0.253	0.253	0.614	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	16.1			0.0749	0.0749	0.123	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	0.404	J	P-,RL	0.0736	0.0736	0.614	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG		U		0.0172	0.0172	0.123	N	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.0644	J	RL	0.0160	0.0160	0.123	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	12.2	J	P-	0.0749	0.0749	0.123	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	45.7	J	P-	0.410	0.410	0.614	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG		U		0.00910	0.00910	0.0406	N	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	8.5			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG		UJ	R-	4.48	4.48	11.5	N	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG	4.42	J	M-,MP	0.785	0.785	1.15	Y	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG		U		7.84	7.84	11.5	N	Yes	1	DRY

	Lab Sample ID	180-83548-7												
	Sys Sample Code	BRF-BS-BG01-6.5/8.5-20181030												
	Sample Name	BRF-BS-BG01-6.5/8.5-20181030												
	Sample Date	10/30/2018 3:26:00 PM												
	Location	BRF-BG-01												
	Sample Type	N												
	Parent Sample													
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/KG	0.0796	J	M-,RL	0.0730	0.0730	0.236	Y	Yes	1	DRY
	Arsenic	7440-38-2	T	MG/KG	2.69			0.0306	0.0306	0.118	Y	Yes	1	DRY
	Barium	7440-39-3	T	MG/KG	35.1			0.0671	0.0671	1.18	Y	Yes	1	DRY
	Beryllium	7440-41-7	T	MG/KG	0.918			0.00883	0.00883	0.118	Y	Yes	1	DRY
	Boron	7440-42-8	T	MG/KG	3.85	J	M-,RL	0.899	0.899	9.42	Y	Yes	1	DRY
	Cadmium	7440-43-9	T	MG/KG	0.0597	J	RL	0.0200	0.0200	0.118	Y	Yes	1	DRY
	Calcium	7440-70-2	T	MG/KG	61400	J	SD,MP	10.5	10.5	58.9	Y	Yes	1	DRY
	Chromium	7440-47-3	T	MG/KG	15.0			0.0777	0.0777	0.236	Y	Yes	1	DRY
	Cobalt	7440-48-4	T	MG/KG	10.1			0.00978	0.00978	0.0589	Y	Yes	1	DRY
	Copper	7440-50-8	T	MG/KG	13.8			0.133	0.133	0.236	Y	Yes	1	DRY
	Lead	7439-92-1	T	MG/KG	8.52	J	M+	0.0412	0.0412	0.118	Y	Yes	1	DRY
	Lithium	7439-93-2	T	MG/KG	19.0			0.325	0.325	0.589	Y	Yes	1	DRY
	Molybdenum	7439-98-7	T	MG/KG		U*	BE,RL	0.251	0.251	0.589	N	Yes	1	DRY
	Nickel	7440-02-0	T	MG/KG	20.5			0.0718	0.0718	0.118	Y	Yes	1	DRY
	Selenium	7782-49-2	T	MG/KG	0.557	J	P-,RL	0.0707	0.0707	0.589	Y	Yes	1	DRY
	Silver	7440-22-4	T	MG/KG		U		0.0165	0.0165	0.118	N	Yes	1	DRY
	Thallium	7440-28-0	T	MG/KG	0.123			0.0153	0.0153	0.118	Y	Yes	1	DRY
	Vanadium	7440-62-2	T	MG/KG	15.7	J	P-	0.0718	0.0718	0.118	Y	Yes	1	DRY
	Zinc	7440-66-6	T	MG/KG	56.9	J	P-	0.393	0.393	0.589	Y	Yes	1	DRY
SW-846 7471B	Mercury	7439-97-6	T	MG/KG		U		0.00876	0.00876	0.0391	N	Yes	1	DRY
SW-846 9045D	pH at 25 Degrees C	PH	N	SU	8.3			0.1	0.1	0.1	Y	Yes	1	WET
SW-846 9056A	Chloride	16887-00-6	N	MG/KG		UJ	R-	4.47	4.47	11.5	N	Yes	1	DRY
	Fluoride	16984-48-8	N	MG/KG	5.87	J	M-,MP	0.784	0.784	1.15	Y	Yes	1	DRY
	Sulfate	14808-79-8	N	MG/KG	8.19	J	RL	7.83	7.83	11.5	Y	Yes	1	DRY

	Lab Sample ID	180-83548-8												
	Sys Sample Code	BRF-BS-EB01-20181030												
	Sample Name	BRF-BS-EB01-20181030												
	Sample Date	10/30/2018 4:10:00 PM												
	Location													
	Sample Type	EB												
	Parent Sample													
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		0.00112	0.00112	0.00200	N	Yes	1	NA
	Arsenic	7440-38-2	T	MG/L		U		0.000323	0.000323	0.00100	N	Yes	1	NA
	Barium	7440-39-3	T	MG/L	0.000755	J	RL	0.000373	0.000373	0.0100	Y	Yes	1	NA
	Beryllium	7440-41-7	T	MG/L		U		0.0000570	0.0000570	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	1.99			0.116	0.116	0.500	Y	Yes	1	NA
	Chromium	7440-47-3	T	MG/L	0.00523			0.000631	0.000631	0.00200	Y	Yes	1	NA
	Cobalt	7440-48-4	T	MG/L	0.000115	J	RL	0.0000750	0.0000750	0.000500	Y	Yes	1	NA
	Copper	7440-50-8	T	MG/L		U		0.00130	0.00130	0.00200	N	Yes	1	NA
	Lead	7439-92-1	T	MG/L		U		0.0000940	0.0000940	0.00100	N	Yes	1	NA
	Lithium	7439-93-2	T	MG/L		U		0.00256	0.00256	0.00500	N	Yes	1	NA
	Molybdenum	7439-98-7	T	MG/L	0.00127	J		0.000474	0.000474	0.00500	Y	Yes	1	NA
	Nickel	7440-02-0	T	MG/L	0.000659	J	RL	0.000312	0.000312	0.00100	Y	Yes	1	NA
	Selenium	7782-49-2	T	MG/L		U		0.000813	0.000813	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		0.0000630	0.0000630	0.00100	N	Yes	1	NA
	Vanadium	7440-62-2	T	MG/L	0.00177			0.000899	0.000899	0.00100	Y	Yes	1	NA
	Zinc	7440-66-6	T	MG/L	0.00319	J	RL	0.00242	0.00242	0.00500	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	T	MG/L		U		0.0000653	0.0000653	0.000200	N	Yes	1	NA
SW-846 9056A	Chloride	16887-00-6	N	MG/L		UU	R-	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

SECTION 3

SUPPORTING DOCUMENTATION FOR QUALIFIERS



INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: TVA BRF BGS
 Sample Collection Dates: 10/30/18
 Job Number: 20188395.A000
 Project Manager: AJC
 Laboratory: TestAmerica- Pittsburgh

Reviewed by: Danielle Coles
 Approved by: AP
 Completion Date: 11/14

Applicable Sample No's (X) Refer to Table 1 in the Quality Assurance Review

		<u>Sample No.</u>	<u>Lab Control No.</u>
Deliverable:	CLP (Full) ()		
Level IV (Full)	(X)	180-83548-1	
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					
	6020A	74707471	9056	Gen Chem		6020A	74707471	9056	Gen Chem		6020A	74707471	9056	Gen Chem
Holding Times	X	X	X	X										
Blank Analysis Results	X	X	X	X		X					X			
Matrix Spike (Predigestion) Results	X	X	X			X								
Duplicate Analysis: () Field (X) Lab				X										
Quantitation of Results	X	X	X	X										
Detection Limit/Sensitivity														
Initial Calibrations	X	X	X											
Continuing Calibrations	X	X	X	X										
Laboratory Control Standard (LCS)	X	X	X	X										
ICP Linear Range Analysis	X													
ICP Interference Checks														
ICP Serial Dilutions	X					X					X			
ICP Post-Digestion Spike	X					X					X			
GFAA Post Digestion Spikes														
GFAA Duplicate Injections														
ICP Multiple Exposures														
GFAA Standard Additions														
CRDL Standards	X	X	X					X				X		
Condition on Receipt	X	X	X	X										
Percent Solids														
Others: ICPMS internal standards, multiple injections	X					X				X				

Comments: All results are acceptable unless otherwise qualified.



BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

Matrix (Aq., S.)	Blank Type					Blank Sample Number	Contaminant	Concentration ($\mu\text{g/L}$, mg/L , mg/kg)	Qualification limit ($5\times$)	
	Method	ICB	CCB	Prep.	Trip	Equip	Field			
S						X	BRF-BS-FB01-20181030	chromium	1.587	7.935
								vanadium	1.796	8.98
								zinc	6.24	31.2
S	X						CCB 11/5/18	beryllium	0.066	0.33
Aq						X	CUF-BS-EB02-20180827	barium	0.755	3.775
								calcium	1991.663	9958.315
								chromium	5.232	26.16
								cobalt	0.115	0.575
								molybdenum	1.271	6.355
								nickel	0.659	3.295
								vanadium	1.773	8.865
								zinc	3.19	15.95

Aq = Aqueous; S = Solid

Notes: _____

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20181030_1A

TestAmerica Job ID: 180-83548-1

Client Sample ID: BRF-BS-EB01-20181030

Lab Sample ID: 180-83548-8

Matrix: Water

Date Collected: 10/30/18 16:10

Date Received: 10/31/18 16:25

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride <i>v3, R-</i>	ND		1.00	0.715	mg/L			11/06/18 11:35	1
Fluoride	ND		0.100	0.0263	mg/L			11/06/18 11:35	1
Sulfate	<i>Clear</i>		1.00	0.380	mg/L			11/06/18 11:35	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.00200	0.00112	mg/L			11/01/18 12:14	1
Arsenic	ND		0.00100	0.000323	mg/L			11/01/18 12:14	1
Barium	<i>0.000755 J</i>	<i>0.003775</i>	0.0100	0.000373	mg/L			11/01/18 12:14	1
Beryllium	ND		0.00100	0.0000570	mg/L			11/01/18 12:14	1
Boron	ND		0.0800	0.0303	mg/L			11/01/18 12:14	1
Cadmium	ND		0.00100	0.000125	mg/L			11/01/18 12:14	1
Calcium	<i>1.99</i>	<i>9.95</i>	0.500	0.116	mg/L			11/01/18 12:14	1
Chromium	<i>0.00523</i>	<i>0.02615</i>	0.00200	0.000631	mg/L			11/01/18 12:14	1
Cobalt	<i>0.000115 J</i>	<i>0.000575</i>	0.000500	0.0000750	mg/L			11/01/18 12:14	1
Copper	ND		0.00200	0.00130	mg/L			11/01/18 12:14	1
Lead	ND		0.00100	0.0000940	mg/L			11/01/18 12:14	1
Lithium	ND		0.00500	0.00256	mg/L			11/01/18 12:14	1
Molybdenum <i>V: -3, 5-7</i>	<i>0.00127 J</i>	<i>0.00635</i>	0.00500	0.000474	mg/L			11/01/18 12:14	1
Nickel	<i>0.000659 J</i>	<i>0.003215</i>	0.00100	0.000312	mg/L			11/01/18 12:14	1
Selenium	ND		0.00500	0.000813	mg/L			11/01/18 12:14	1
Silver	ND		0.00100	0.000121	mg/L			11/01/18 12:14	1
Thallium	ND		0.00100	0.0000630	mg/L			11/01/18 12:14	1
Vanadium	<i>0.00177</i>	<i>0.00895</i>	0.00100	0.000899	mg/L			11/01/18 12:14	1
Zinc	<i>0.00319 J</i>	<i>0.01595</i>	0.00500	0.00242	mg/L			11/01/18 12:14	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Mercury	<i>Clear</i>		ND	0.000200	0.0000653	mg/L		11/01/18 15:03	11/02/18 13:14	1

TestAmerica Pittsburgh

Quantitation Report

File Name 096SMPL.d
File Path D:\Agilent\ICPMH\1\DATA\A81102A.b
Acq Time 2018-11-02 14:21:17
Sample Name 180-83548-B-8-A FB
Sample Type Sample
Comment ---
Prep Dilution 1.0000
Auto Dilution 1.0000
Total Dilution 1.0000
Operator Name Reinheimer, Bill
Acq Mode Spectrum
Cal Title ---
Cal Type External Calibration
Last Calib 11/03/2018 06:41:21
Bkg File ---
Bkg Mode Count Subtraction except for ISTD
FQ BlankFile ---
VIS Fit Point to Point

FullQuant Table

Element	Mass	ISTD	Tune Mode	Conc.	Units	RSD(%)	CPS	Ratio	Det.	Time(sec)	Rep
	2		No Gas Flush		ppb		1053.39		Pulse	0.1000	3
Li	7	6	No Gas	0.765	ppb	11.6	37977.62	0.0946	Pulse	0.3000	3
Be	9	45	No Gas	-0.076	ppb	N/A	40.67	0.0000	Pulse	0.5000	3
(B)	10	45	No Gas	128.513	ppb	1.8	20825.18	0.0058	Pulse	0.3000	3
B	11	6	No Gas	127.732	ppb	0.8	98004.28	0.2442	Pulse	0.3000	3
Si	28	45	H2	129.183	ppb	5.7	7971.11	0.0119	Pulse	0.3000	3
Fe	56	45	H2	434.880	ppb	0.5	899165.48	1.3463	Pulse	0.3000	3
(Se)	78	45	H2	0.033	ppb	50.5	8.33	0.0000	Pulse	1.0000	3
Na	23	45	He	130.368	ppb	3.7	33164.74	0.1635	Pulse	0.3000	3
{Mg}	24	45	He	55.562	ppb	3.0	5803.35	0.0286	Pulse	0.3000	3
{Mg}	25	45	He	51.730	ppb	0.8	803.36	0.0040	Pulse	0.3000	3
Mg	26	45	He	49.785	ppb	6.7	1132.27	0.0056	Pulse	0.3000	3
Al	27	45	He	101.379	ppb	3.9	4355.30	0.0215	Pulse	0.5000	3
K	39	45	He	86.729	ppb	58.3	65445.79	0.3227	Pulse	0.3000	3
{Ca}	43	45	He	1797.303	ppb	5.2	610.02	0.0030	Pulse	0.3000	3
Ca	44	45	He	1991.663	ppb	2.4	12332.84	0.0608	Pulse	0.3000	3
Ti	47	45	He	5.285	ppb	6.4	223.00	0.0011	Pulse	1.0000	3
V	51	45	He	1.773	ppb	2.8	2463.55	0.0121	Pulse	0.3000	3
Cr	52	45	He	5.232	ppb	1.4	9044.99	0.0446	Pulse	0.3000	3
Mn	55	45	He	5.562	ppb	3.4	5114.23	0.0252	Pulse	0.3000	3
Co	59	103	He	0.115	ppb	10.6	356.68	0.0001	Pulse	0.3000	3
Ni	60	103	He	0.659	ppb	3.7	597.79	0.0001	Pulse	0.3000	3
(Cu)	63	103	He	1.123	ppb	1.1	2362.42	0.0006	Pulse	0.3000	3
Cu	65	103	He	1.214	ppb	10.1	1227.83	0.0003	Pulse	0.3000	3
Zn	66	103	He	3.190	ppb	13.8	1384.52	0.0003	Pulse	0.3000	3
(Zn)	68	103	He	3.207	ppb	2.5	1040.04	0.0003	Pulse	0.3000	3
As	75	103	He	0.164	ppb	24.2	74.67	0.0000	Pulse	1.0000	3
Se	78	45	He	-0.070	ppb	N/A	53.67	0.0003	Pulse	1.0000	3
(Se)	82	45	He	-0.043	ppb	N/A	15.55	0.0001	Pulse	0.3000	3

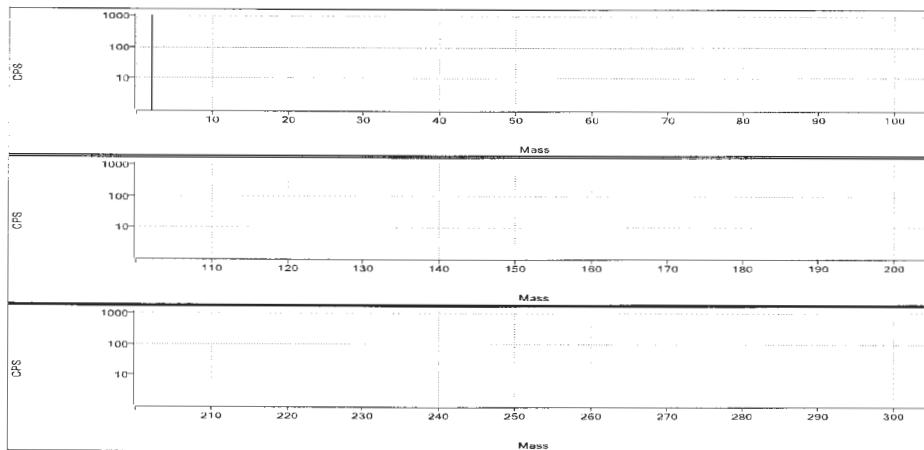
Quantitation Report

Element	Mass	ISTD	Tune Mode	Conc.	Units	RSD(%)	CPS	Ratio	Det.	Time(sec)	Rep
Sr	88	103	He	2.992	ppb	7.9	4438.48	0.0011	Pulse	0.3000	3
(Mo)	95	103	He	1.296	ppb	2.0	1284.06	0.0003	Pulse	0.5000	3
Mo	98	103	He	1.271	ppb	5.7	2153.50	0.0005	Pulse	0.5000	3
Ag	107	103	He	0.006	ppb	127.4	116.67	0.0000	Pulse	0.3000	3
(Ag)	109	103	He	0.007	ppb	85.6	108.89	0.0000	Pulse	0.3000	3
Cd	111	115	He	0.000	ppb	N/A	3.67	0.0000	Pulse	1.0000	3
(Cd)	114	115	He	0.021	ppb	43.3	27.33	0.0001	Pulse	1.0000	3
Sn	118	115	He	1.034	ppb	3.8	1078.93	0.0036	Pulse	0.3000	3
Sb	121	115	He	0.060	ppb	37.1	135.56	0.0005	Pulse	0.3000	3
(Sb)	123	115	He	0.063	ppb	26.4	96.67	0.0003	Pulse	0.3000	3
Ba	137	115	He	0.755	ppb	9.6	237.33	0.0008	Pulse	0.5000	3
(Tl)	203	209	He	-0.001	ppb	N/A	3.33	0.0000	Pulse	0.3000	3
Tl	205	209	He	0.002	ppb	106.3	11.11	0.0000	Pulse	0.3000	3
[Pb]	206	209	He	0.013	ppb	106.7	42.22	0.0000	Pulse	0.3000	3
[Pb]	207	209	He	0.042	ppb	4.7	44.44	0.0000	Pulse	0.3000	3
Pb	208	209	He	0.039	ppb	21.0	221.11	0.0001	Pulse	0.3000	3

ISTD Table:

Tune Mode	Element	Mass	CPS	RSD(%)	ISTD Recovery %	Det.	Time(sec)	Rep
No Gas	Li (IS)	6	401374.28	0.8	88.3	Pulse	0.3000	3
No Gas	Sc (IS)	45	3575209.53	1.7	82.7	Analog	0.1000	3
No Gas	Rh (IS)	103	7300498.43	3.0	84.9	Analog	0.1000	3
H2	Sc (IS)	45	667878.57	0.6	66.6	Pulse	0.3000	3
H2	Rh (IS)	103	376354.93	2.1	62.3	Pulse	0.3000	3
He	Sc (IS)	45	202910.28	1.1	90.4	Pulse	0.3000	3
He	Rh (IS)	103	4068578.59	1.8	93.2	Analog	0.3000	3
He	In (IS)	115	300591.45	0.6	86.0	Pulse	0.3000	3
He	Tb (IS)	159	210775.16	1.4	91.9	Pulse	0.3000	3
He	Ho (IS)	165	206635.24	0.7	91.5	Pulse	0.3000	3
He	Bi (IS)	209	1555003.48	1.4	93.8	Pulse	0.3000	3

No Gas Flush



FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.:

Matrix: Solid (Soluble) Level: Low

Lab File ID: 11-04-2018-39.d

Lab ID: 180-83548-1 MS

Client ID: BRF-BS-BG14-1.5/3.5-20181030 MS

75-125%

COMPOUND	SPIKE	SAMPLE	MS	MS	QC	#
	ADDED (mg/Kg)	CONCENTRATION (mg/Kg)	CONCENTRATION (mg/Kg)	% REC	REC	
Chloride	303	ND	271.8	90✓	80-120	
Fluoride	15.2	ND	3.113 ✓	21✓	80-120	F1
Sulfate	303	27.1	277.5 ✓	83✓	80-120	

J.M-2,3,5-7
VR,M-1

/

Column to be used to flag recovery and RPD values

FORM III EPA 9056A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.: _____

Matrix: Solid (Soluble) Level: Low Lab File ID: 11-04-2018-40.d

Lab ID: 180-83548-1 MSD Client ID: BRF-BS-BG14-1.5/3.5-20181030 MS

38 75-1251.

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD		QC LIMITS		#
			REC %	RPD %	RPD	REC	
Chloride	304	277.3 ✓	91	2	15	80-120	
Fluoride	15.2	1.786 ✓	12	54	15	80-120	F2 F1
Sulfate	304	281.5	84	1	15	80-120	

J/n-MP: 2,3,5-7

VR/~~MP~~: 1

86/113

M-

Column to be used to flag recovery and RPD values

FORM III EPA 9056A

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Pittsburgh Job No.: 180-83548-1
 SDG No.:
 Lab Sample ID: CCVL 180-261889/50 Calibration Date: 11/04/2018 17:54 ✓
 Instrument ID: CHICS2000 Calib Start Date: 10/31/2018 04:20
 GC Column: AS-14 ID: 2.00 (mm) Calib End Date: 10/31/2018 05:56
 Lab File ID: 11-04-2018-50.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin2		17009280		0.0465 ✓	0.0500	-6.9 ✓	
Chloride	LinF		15040270		0.6925	1.00	-30.8	
Bromide	Lin2		5682955		0.198 ✓	0.200	-0.8	
Sulfate	LinF		14197619		1.05 ✓	1.00	5.4 ✓	

1.00 x 3 = 3.00
 results < 3x spike or ND
 J/UJ, R-: L3, S-7
 DC
 11/13/18

TestAmerica Pittsburgh
Target Compound Quantitation Report

Data File: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181104-24393.b\11-04-2018-50.d
 Lims ID: ccvl
 Client ID:
 Sample Type: CCVL
 Inject. Date: 04-Nov-2018 17:54:00 ALS Bottle#: 0 Worklist Smp#: 50
 Injection Vol: 50.0 ul Dil. Factor: 1.0000
 Sample Info: 180-0024393-050
 Misc. Info.: 11343 CCVL
 Operator ID: Instrument ID: CHICS2000
 Sublist: chrom-300_9056_CHICS2000*sub1
 Method: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181104-24393.b\300_9056_CHICS2000.m
 Limit Group: GC Anions ICAL
 Last Update: 05-Nov-2018 10:43:12 Calib Date: 31-Oct-2018 05:56:00
 Integrator: Falcon
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181031-24340.b\10-31-2018-8.d
 Column 1 : Det: 0008
 Process Host: CTX0317

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.025	3.033	-0.008	850464	0.0500	0.0465	
2 Chloride	4.158	4.175	-0.017	15040270	1.00	0.6925	
7 Nitrite as N	4.883	4.883	0.000	1403342	0.0500	0.0519	
4 Bromide	5.683	5.683	0.000	1136591	0.2000	0.1983	
5 Nitrate as N	6.300	6.292	0.008	1565609	0.0500	0.0485	
6 Orthophosphate as P		9.558			ND	ND	
3 Sulfate	10.683	10.617	0.066	14197619	1.00	1.05	

QC Flag Legend**Processing Flags**

ND - Not Detected or Marked ND

Reagents:

ICCCVl_00423 Amount Added: 1.00 Units: mL

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.:

Instrument ID: CHICS2000

Start Date: 11/04/2018 05:09

Analysis Batch Number: 261889

End Date: 11/04/2018 17:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
JCV 180-261889/2		11/04/2018 05:09	1	11-04-2018-2.d	AS-14 2 (mm)
CCV 180-261889/3		11/04/2018 05:25	1		AS-14 2 (mm)
CCB 180-261889/4		11/04/2018 05:41	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 05:57	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 06:13	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 06:29	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 06:45	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 07:01	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 07:17	5		AS-14 2 (mm)
ZZZZZ		11/04/2018 07:33	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 07:49	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 08:04	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 08:20	1		AS-14 2 (mm)
CCV 180-261889/15		11/04/2018 08:36	1		AS-14 2 (mm)
CCB 180-261889/16		11/04/2018 08:52	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 09:08	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 09:24	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 09:40	5		AS-14 2 (mm)
CCVL 180-261889/20		11/04/2018 09:56	1	11-04-2018-20.d	AS-14 2 (mm)
ZZZZZ		11/04/2018 10:12	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 10:28	10		AS-14 2 (mm)
ZZZZZ		11/04/2018 10:44	10		AS-14 2 (mm)
ZZZZZ		11/04/2018 11:00	10		AS-14 2 (mm)
ZZZZZ		11/04/2018 11:16	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 11:32	10		AS-14 2 (mm)
ZZZZZ		11/04/2018 11:48	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 12:03	10		AS-14 2 (mm)
CCV 180-261889/29		11/04/2018 12:19	1	11-04-2018-29.d	AS-14 2 (mm)
CCB 180-261889/30		11/04/2018 12:35	1	11-04-2018-30.d	AS-14 2 (mm)
ZZZZZ		11/04/2018 12:51	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 13:07	10		AS-14 2 (mm)
ZZZZZ		11/04/2018 13:23	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 13:39	1		AS-14 2 (mm)
ZZZZZ		11/04/2018 13:55	1		AS-14 2 (mm)
LB 180-261890/1-A		11/04/2018 14:11	1	11-04-2018-36.d	AS-14 2 (mm)
LCS 180-261890/2-A		11/04/2018 14:27	1	11-04-2018-37.d	AS-14 2 (mm)
180-83548-1		11/04/2018 14:43	1	11-04-2018-38.d	AS-14 2 (mm)
180-83548-1 MS		11/04/2018 14:59	1	11-04-2018-39.d	AS-14 2 (mm)
180-83548-1 MSD		11/04/2018 15:15	1	11-04-2018-40.d	AS-14 2 (mm)
CCV 180-261889/41		11/04/2018 15:31	1	11-04-2018-41.d	AS-14 2 (mm)
CCB 180-261889/40		11/04/2018 15:47	1	11-04-2018-42.d	AS-14 2 (mm)
180-83548-2		11/04/2018 16:03	1	11-04-2018-43.d	AS-14 2 (mm)
180-83548-2		11/04/2018 16:18	1	11-04-2018-44.d	AS-14 2 (mm)
180-83548-3		11/04/2018 16:34	1	11-04-2018-45.d	AS-14 2 (mm)
180-83548-3		11/04/2018 16:50	1	11-04-2018-46.d	AS-14 2 (mm)

EPA 9056A

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Pittsburgh Job No.: 180-83548-1

SDG No.:

Instrument ID: CHICS2000 Start Date: 11/04/2018 05:09

Analysis Batch Number: 261889 End Date: 11/04/2018 17:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
180-83548-7		11/04/2018 17:06	1	11-04-2018-47.d	AS-14 2 (mm)
CCV 180-261889/48		11/04/2018 17:22	1	11-04-2018-48.d	AS-14 2 (mm)
CCB 180-261889/49		11/04/2018 17:38	1	11-04-2018-49.d	AS-14 2 (mm)
CCVL 180-261889/50		11/04/2018 17:54	1	11-04-2018-50.d	AS-14 2 (mm)

FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.:

Lab Sample ID: CCVL 180-262011/7

Calibration Date: 11/06/2018 07:53 ✓

Instrument ID: CHICS2000

Calib Start Date: 10/31/2018 04:20

GC Column: AS-14 ID: 2.00(mm)

Calib End Date: 10/31/2018 05:56

Lab File ID: 11-06-2018-7.d

Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin2		13931140		0.0394	0.0500	-21.2	
Chloride	LinF		14924518		0.6872	1.00	-31.3	
Bromide	Lin2		5730335		0.200	0.200	-0.1	
Sulfate	LinF		13973968		1.04	1.00	3.8	

results ND

W, R- : 4,8

TestAmerica Pittsburgh
Target Compound Quantitation Report

Data File: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181106-24414.b\11-06-2018-7.d
 Lims ID: ccvl
 Client ID:
 Sample Type: CCVL
 Inject. Date: 06-Nov-2018 07:53:00 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 50.0 ul Dil. Factor: 1.0000
 Sample Info: 180-0024414-007
 Misc. Info.: 7 ccvl
 Operator ID: Instrument ID: CHICS2000
 Sublist: chrom-300_9056_CHICS2000*sub1
 Method: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181106-24414.b\300_9056_CHICS2000.m
 Limit Group: GC Anions ICAL
 Last Update: 07-Nov-2018 04:10:53 Calib Date: 31-Oct-2018 05:56:00
 Integrator: Falcon
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Pittsburgh\ChromData\CHICS2000\20181031-24340.b\10-31-2018-8.d
 Column 1 : Det: 0008
 Process Host: CTX0320

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	3.033	3.042	-0.009	696557	0.0500	0.0394	
2 Chloride	4.158	4.225	-0.067	14924518	1.00	0.6872	
7 Nitrite as N	4.883	4.900	-0.017	1375882	0.0500	0.0510	
4 Bromide	5.692	5.692	0.000	1146067	0.2000	0.1998	
5 Nitrate as N	6.308	6.300	0.008	1525991	0.0500	0.0475	
6 Orthophosphate as P		9.525			ND	ND	
3 Sulfate	10.725	10.758	-0.033	13973968	1.00	1.04	

QC Flag Legend**Processing Flags**

ND - Not Detected or Marked ND

Reagents:

ICCCVL_00425 Amount Added: 1.00 Units: mL

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.:

Instrument ID: CHICS2000

Start Date: 11/06/2018 06:33

Analysis Batch Number: 262011

End Date: 11/06/2018 22:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ICV 180-262011/2		11/06/2018 06:33	1	11-06-2018-2.d	AS-14 2 (mm)
CCV 180-262011/3		11/06/2018 06:49	1	11-06-2018-3.d	AS-14 2 (mm)
CCB 180-262011/4		11/06/2018 07:05	1	11-06-2018-4.d	AS-14 2 (mm)
CCS 180-262011/5		11/06/2018 07:21	1	11-06-2018-5.d	AS-14 2 (mm)
MB 180-262011/6		11/06/2018 07:37	1	11-06-2018-6.d	AS-14 2 (mm)
CCVAL 180-262011/7		11/06/2018 07:53	1	11-06-2018-7.d	AS-14 2 (mm)
ZZZZZ		11/06/2018 10:31	1		AS-14 2 (mm)
180-83402-C-1 MS		11/06/2018 10:47	1	11-06-2018-9.d	AS-14 2 (mm)
180-83402-C-1 MSD		11/06/2018 11:03	1	11-06-2018-10.d	AS-14 2 (mm)
180-83588-6		11/06/2018 11:19	3	11-06-2018-11.d	AS-14 2 (mm)
180-83588-6		11/06/2018 11:35	3	11-06-2018-12.d	AS-14 2 (mm)
ZZZZZ		11/06/2018 11:51	3		AS-14 2 (mm)
ZZZZZ		11/06/2018 12:07	3		AS-14 2 (mm)
ZZZZZ		11/06/2018 12:13	3		AS-14 2 (mm)
CCV 180-262011/16		11/06/2018 12:39	3	11-06-2018-16.d	AS-14 2 (mm)
CCB 180-262011/17		11/06/2018 13:28	3	11-06-2018-17.d	AS-14 2 (mm)
ZZZZZ		11/06/2018 13:44	3		AS-14 2 (mm)
ZZZZZ		11/06/2018 14:11	3		AS-14 2 (mm)
ZZZZZ		11/06/2018 14:27	3		AS-14 2 (mm)
ZZZZZ		11/06/2018 14:43	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 14:59	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 15:14	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 15:30	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 15:46	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 16:02	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 16:18	1		AS-14 2 (mm)
CCV 180-262011/28		11/06/2018 16:34	1		AS-14 2 (mm)
CCB 180-262011/29		11/06/2018 16:50	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 17:06	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 17:22	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 17:38	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 17:54	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 18:10	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 18:26	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 18:42	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 18:58	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 19:13	1		AS-14 2 (mm)
CCV 180-262011/33		11/06/2018 19:29	1		AS-14 2 (mm)
CCB 180-262011/40		11/06/2018 19:45	1		AS-14 2 (mm)
CCVAL 180-262011/41		11/06/2018 20:01	1	11-06-2018-41.d	AS-14 2 (mm)
ZZZZZ		11/06/2018 20:17	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 20:33	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 20:49	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 21:05	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 21:21	1		AS-14 2 (mm)

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Pittsburgh Job No.: 180-83548-1

SDG No.: _____

Instrument ID: CHICS2000 Start Date: 11/06/2018 06:33

Analysis Batch Number: 262011 End Date: 11/06/2018 22:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		11/06/2018 21:37	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 21:53	1		AS-14 2 (mm)
ZZZZZ		11/06/2018 22:09	1		AS-14 2 (mm)
CCV 180-262011/50		11/06/2018 22:25	1		AS-14 2 (mm)
CCB 180-262011/51		11/06/2018 22:41	1		AS-14 2 (mm)

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: BRF-BS-BG01-6.5/8.5-20181030 MS Lab ID: 180-83548-7 MS
 Lab Name: TestAmerica Pittsburgh Job No.: 180-83548-1
 SDG No.:
 Matrix: Solid Concentration Units: mg/Kg
 % Solids: 85.8

Analyte	SSR	Sample Result (SR)	Spike Added (SA)	%R	Control Limit %R	Q	Method
	C	C					
Antimony	33.45	0.0796 J	60.7	55	75-125	F1	EPA 6020A
Arsenic	6.835	2.69	4.86	85	75-125		EPA 6020A
Barium	235.4	35.1	243	82	75-125		EPA 6020A
Beryllium	5.824	0.918	6.07	81	75-125		EPA 6020A
Boron	90.18	3.85 J	121	71	75-125	F1	EPA 6020A
Cadmium	5.757	0.0597 J	6.07	94	75-125		EPA 6020A
Calcium	89010 ✓	61400	6070	455	75-125	4	EPA 6020A
Chromium	35.81	15.0	24.3	86	75-125		EPA 6020A
Cobalt	60.03	10.1	60.7	82	75-125		EPA 6020A
Copper	38.19	13.8	30.4	80	75-125		EPA 6020A
Lead	10.99	8.52	2.43	102	75-125		EPA 6020A
Lithium	24.58	19.0	6.07	92	75-125		EPA 6020A
Molybdenum	116.2	0.251 J	121	96	75-125		EPA 6020A
Nickel	71.20 ✓	20.5	60.7	83	75-125		EPA 6020A
Selenium	1.475	0.557 J	1.21	76	75-125		EPA 6020A
Silver	5.801	ND	6.07	96	75-125		EPA 6020A
Thallium	5.738	0.123	6.07	92	75-125		EPA 6020A
Vanadium	62.94	15.7	60.7	78	75-125		EPA 6020A
Zinc	105.2	56.9	60.7	79	75-125		EPA 6020A

SSR = Spiked Sample Result

Sb + B

J, M-: 1-3, 5-7

result > spike, no dilution

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: BRF-BS-BG01-6.5/8.5-20181030 MSD

Lab ID: 180-83548-7 MSD

Lab Name: TestAmerica Pittsburgh

Job No.: 180-83548-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 85.8

35

Analyte	(SDR)	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Antimony	31.33	57.2	55	75-125	7	20	F1	EPA 6020A
Arsenic	7.096	4.57	96	75-125	4	20		EPA 6020A
Barium	226.1	229	84	75-125	4	20		EPA 6020A
Beryllium	6.003	5.72	89	75-125	3	20		EPA 6020A
Boron	85.31	114	71	75-125	6	20	F1	EPA 6020A
Cadmium	5.415	5.72	94	75-125	6	20		EPA 6020A
Calcium	58780	5720	-45	75-125	41	20	4	EPA 6020A
Chromium	36.11	22.9	92	75-125	1	20		EPA 6020A
Cobalt	57.53	57.2	83	75-125	4	20		EPA 6020A
Copper	39.61	28.6	90	75-125	4	20		EPA 6020A
Lead	12.81	2.29	188	75-125	15	20	F1	EPA 6020A
Lithium	25.53	5.72	14	75-125	4	20		EPA 6020A
Molybdenum	108.8	114	95	75-125	7	20		EPA 6020A
Nickel	71.09	57.2	88	75-125	0	20		EPA 6020A
Selenium	1.672	1.14	98	75-125	13	20		EPA 6020A
Silver	5.558	5.72	97	75-125	4	20		EPA 6020A
Thallium	5.451	5.72	93	75-125	5	20		EPA 6020A
Vanadium	61.70	57.2	80	75-125	2	20		EPA 6020A
Zinc	108.6	57.2	90	75-125	3	20		EPA 6020A

SDR = Sample Duplicate Result

Sb+B

Pb

Ca

J,M-1-35-7

J,Mt:1,235-7

J,MP: 1-3,5-7

MSD
no eval
RPD still
evaluated

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

5B-IN
POST DIGESTION SPIKE SAMPLE RECOVERY
METALS

Client ID: BRF-BS-BG01-6.5/8.5-20181030 PDS Lab ID: 180-83548-7 PDS
 Lab Name: TestAmerica Pittsburgh Job No.: 180-83548-1
 SDG No.:
 Matrix: Solid Concentration Units: mg/Kg
 00-1207.

Analyte	SSR	Sample		Spike Added (SA)	%R	Control Limit %R	Q	Method
		C	C					
Antimony	55.77	0.0796	J	58.9	95	75-125		EPA 6020A
Arsenic	7.000	2.69		4.71	91	75-125		EPA 6020A
Barium	242.7✓	35.1		236	88✓	75-125		EPA 6020A
Beryllium	5.940	0.918		5.89	85	75-125		EPA 6020A
Boron	102.0	3.85	J	118	83	75-125		EPA 6020A
Cadmium	6.140	0.0597	J	5.89	103	75-125		EPA 6020A
Calcium	66570	61400		5890	NC	75-125		EPA 6020A
Chromium	34.16	15.0		23.6	81	75-125		EPA 6020A
Cobalt	59.86	10.1		58.9	85	75-125		EPA 6020A
Copper	39.21	13.8		29.4	86	75-125		EPA 6020A
Lead	10.80	8.52		2.36	97✓	75-125		EPA 6020A
Lithium	23.96	19.0		5.89	84	75-125		EPA 6020A
Molybdenum	123.9✓	0.251	J	118	105	75-125		EPA 6020A
Nickel	71.24	20.5		58.9	86	75-125		EPA 6020A
Selenium	1.402	0.557	J	1.18	72	75-125	W	EPA 6020A
Silver	5.342	ND		5.89	91	75-125		EPA 6020A
Thallium	5.967	0.123		5.89	99	75-125		EPA 6020A
Vanadium	62.48	15.7		58.9	79	75-125		EPA 6020A
Zinc	102.8	56.9		58.9	78	75-125		EPA 6020A

SSR = Spiked Sample Result

Se, V, Zn

J, P- : 1-3, 5-7

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 VB - IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 180-83548-7

SDG No:

Lab Name: TestAmerica Pittsburgh

Job No: 180-83548-1

Matrix: Solid

Concentration Units: mg/Kg

$\pm 10\%$

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Antimony	0.0796	J	ND		NC		EPA 6020A
Arsenic	2.69		2.808		4.3		EPA 6020A
Barium	35.1		38.18		8.9		EPA 6020A
Beryllium	0.918		0.9681		5.4		EPA 6020A
Boron	3.85	J	ND		NC		EPA 6020A
Cadmium	0.0597	J	ND		NC		EPA 6020A
Calcium	61400		68960 ✓		12	V	EPA 6020A
Chromium	15.0		15.58		3.7		EPA 6020A
Cobalt	10.1		10.26		2.0		EPA 6020A
Copper	13.8		13.86		0.13		EPA 6020A
Lead	8.52		8.704		2.2		EPA 6020A
Lithium	19.0		20.43		7.5		EPA 6020A
Molybdenum	0.251	J	ND		NC		EPA 6020A
Nickel	20.5		20.70		0.83		EPA 6020A
Selenium	0.557	J	0.6013	J	NC		EPA 6020A
Silver	ND		ND		NC		EPA 6020A
Thallium	0.123		0.1207	J	NC		EPA 6020A
Vanadium	15.7		15.39 ✓		2.0		EPA 6020A
Zinc	56.9		58.50		2.8		EPA 6020A

[Ca]

J, SD: 1-3,5-7

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

FORM VIII-IN

180-83548-A-1-A 11/5/2018 6:26:25 PM

User Pre-dilution: 1.000

Run	Time	6Li	7Li	9Be	10B	11B	13C	23Na	25Mg
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	96.857%	97.010	10.600	21.720	22.170	0.000	347.800	12270.000
2	18:25:40	99.510%	98.240	10.900	22.050	22.970	0.000	352.100	12740.000
3	18:25:48	96.926%	100.300	10.930	23.880	23.820	0.000	360.300	12870.000
X		97.764%	98.520	10.810	22.550	22.990	0.000	353.400	12630.000
σ		1.512%	1.662	0.181	1.163	0.825	0.000	6.373	315.600
%RSD		1.547	1.687	1.673	5.156	3.587	0.000	1.803	2.499
Run	Time	26Mg	27Al	28Si	37Cl	39K	43Ca	44Ca	45Sc
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	12210.000	106700.000	9527.000	0.000	11170.000	21100.000	20600.000	83.960%
2	18:25:40	12560.000	110200.000	9557.000	0.000	11440.000	21930.000	21520.000	83.564%
3	18:25:48	12850.000	112700.000	9774.000	0.000	11630.000	22390.000	21730.000	82.779%
X		12540.000	109900.000	9619.000	0.000	11410.000	21810.000	21290.000	83.434%
σ		321.700	3025.000	134.700	0.000	231.800	655.500	600.500	0.601%
%RSD		2.565	2.753	1.400	0.000	2.031	3.006	2.821	0.721
Run	Time	47Ti	51V	52Cr	55Mn	56Fe	57Fe	59Co	60Ni
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	707.600	182.700	179.100	22130.000	226700.000	223900.000	279.100	135.000
2	18:25:40	742.000	184.600	183.200	22110.000	230700.000	226600.000	279.400	130.100
3	18:25:48	755.200	192.200	186.500	22280.000	233600.000	228600.000	281.300	131.600
X		734.900	186.500	182.900	22170.000	230300.000	226400.000	279.900	132.200
σ		24.590	5.039	3.711	92.410	3467.000	2374.000	1.213	2.543
%RSD		3.346	2.702	2.029	0.417	1.505	1.049	0.433	1.923
Run	Time	63Cu	65Cu	66Zn	68Zn	75As	78Se	82Se	83Kr
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	162.100	159.400	302.000	305.100	44.850	6.498	26.150	0.000
2	18:25:40	166.600	166.300	301.900	299.000	45.560	8.647	3.864	0.000
3	18:25:48	162.600	167.600	313.600	320.700	45.040	10.450	13.440	0.000
X		163.700	164.500	305.800	308.300	45.150	8.533	14.480	0.000
σ		2.450	4.425	6.724	11.180	0.368	1.980	11.180	0.000
%RSD		1.496	2.690	2.199	3.627	0.816	23.200	77.190	0.000
Run	Time	88Sr	89Y	95Mo	98Mo	103Rh	107Ag	109Ag	111Cd
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	73.400	0.000	5.493	5.014	70.264%	0.198	0.154	1.380
2	18:25:40	72.630	0.000	5.647	5.474	71.521%	0.174	0.156	1.307
3	18:25:48	74.080	0.000	5.674	5.029	72.364%	0.226	0.167	1.625
X		73.370	0.000	5.605	5.172	71.383%	0.199	0.159	1.437
σ		0.728	0.000	0.098	0.261	1.057%	0.026	0.007	0.166
%RSD		0.993	0.000	1.744	5.050	1.480	13.120	4.453	11.570
Run	Time	114Cd	115In	118Sn	121Sb	123Sb	135Ba	137Ba	159Tb
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:25:32	0.927	64.170%	56.570	2.542	2.721	1663.000	1637.000	82.617%
2	18:25:40	1.201	66.661%	53.560	2.151	2.625	1659.000	1640.000	84.097%
3	18:25:48	1.684	67.458%	55.120	2.461	2.128	1657.000	1642.000	83.358%
X		1.271	66.096%	55.080	2.385	2.491	1660.000	1640.000	83.357%
σ		0.383	1.715%	1.506	0.207	0.319	3.388	2.377	0.740%
%RSD		30.170	2.595	2.735	8.666	12.790	0.204	0.145	0.888
Run	Time	203Tl	205Tl	206Pb	207Pb	208Pb	209Bi		
		ppb	ppb	ppb	ppb	ppb	ppb		
1	18:25:32	1.407	1.420	631.600	574.200	607.100	64.833%		
2	18:25:40	1.500	1.381	629.600	576.400	605.400	66.146%		
3	18:25:48	1.428	1.506	621.000	567.100	597.600	66.510%		
X		1.445	1.436	627.400	572.600	603.400	65.830%		
σ		0.049	0.064	5.642	4.826	5.058	0.882%		
%RSD		3.363	4.455	0.899	0.843	0.838	1.340		

! RSD > 20%
and
conc > Re
:: T qual

180-83548-A-5-A 11/5/2018 6:53:14 PM

User Pre-dilution: 1.000

Run	Time	6Li	7Li	9Be	10B	11B	13C	23Na	25Mg
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	94.672%	39.780	7.465	16.540	18.860	0.000	258.400	8423.000
2	18:52:30	92.500%	43.070	8.309	20.130	19.500	0.000	268.800	8705.000
3	18:52:38	93.696%	42.310	7.332	18.120	17.710	0.000	265.600	8752.000
X		93.623%	41.720	7.702	18.260	18.690	0.000	264.200	8627.000
σ		1.088%	1.722	0.530	1.801	0.906	0.000	5.338	177.700
%RSD		1.162	4.127	6.884	9.862	4.847	0.000	2.020	2.060
Run	Time	26Mg	27Al	28Si	37Cl	39K	43Ca	44Ca	45Sc
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	8444.000	67300.000	8507.000	0.000	4737.000	17090.000	16450.000	80.232%
2	18:52:30	8697.000	69350.000	8737.000	0.000	4909.000	17260.000	16900.000	78.380%
3	18:52:38	8739.000	69850.000	8764.000	0.000	4903.000	17330.000	16830.000	78.934%
X		8627.000	68830.000	8669.000	0.000	4850.000	17220.000	16730.000	79.182%
σ		159.600	1351.000	141.300	0.000	97.660	123.400	240.400	0.951%
%RSD		1.850	1.963	1.630	0.000	2.014	0.717	1.437	1.201
Run	Time	47Ti	51V	52Cr	55Mn	56Fe	57Fe	59Co	60Ni
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	516.500	230.300	467.700	8491.000	294700.000	290000.000	145.400	99.540
2	18:52:30	541.700	239.700	483.800	8789.000	303900.000	296600.000	149.500	105.700
3	18:52:38	543.000	240.200	482.000	8830.000	303500.000	297200.000	148.600	100.000
X		533.700	236.700	477.900	8703.000	300700.000	294600.000	147.800	101.700
σ		14.920	5.583	8.811	185.100	5188.000	3984.000	2.168	3.402
%RSD		2.795	2.358	1.844	2.127	1.725	1.352	1.467	3.344
Run	Time	63Cu	65Cu	66Zn	68Zn	75As	78Se	82Se	83Kr
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	145.600	142.700	605.200	604.500	88.200	10.070	13.870	0.000
2	18:52:30	149.000	148.600	618.400	614.300	90.080	5.153	18.600	0.000
3	18:52:38	146.400	148.300	615.000	630.200	88.030	5.908	15.030	0.000
X		147.000	146.500	612.900	616.300	88.770	7.045	15.830	0.000
σ		1.779	3.296	6.846	12.960	1.136	2.649	2.467	0.000
%RSD		1.210	2.249	1.117	2.103	1.280	37.600	15.580	0.000
Run	Time	88Sr	89Y	95Mo	98Mo	103Rh	107Ag	109Ag	111Cd
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	38.690	0.000	5.698	5.355	69.696%	0.179	0.154	1.381
2	18:52:30	37.370	0.000	5.562	5.370	70.331%	0.178	0.098	1.719
3	18:52:38	36.480	0.000	5.704	5.396	70.150%	0.210	0.126	1.630
X		37.510	0.000	5.655	5.374	70.059%	0.189	0.126	1.577
σ		1.112	0.000	0.081	0.021	0.327%	0.018	0.028	0.175
%RSD		2.965	0.000	1.427	0.391	0.466	9.562	22.200	11.120
Run	Time	114Cd	115In	118Sn	121Sb	123Sb	135Ba	137Ba	159Tb
		ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
1	18:52:22	1.442	64.825%	48.320	3.519	2.842	493.800	485.400	75.143%
2	18:52:30	1.468	65.092%	48.960	3.157	3.076	498.000	488.100	75.824%
3	18:52:38	1.467	64.766%	47.750	3.320	2.769	497.600	506.200	73.851%
X		1.459	64.895%	48.350	3.332	2.895	496.500	493.200	74.939%
σ		0.015	0.174%	0.606	0.181	0.160	2.306	11.310	1.002%
%RSD		1.002	0.268	1.254	5.442	5.533	0.465	2.294	1.337
Run	Time	203Tl	205Tl	206Pb	207Pb	208Pb	209Bi		
		ppb	ppb	ppb	ppb	ppb	ppb		
1	18:52:22	0.695	0.709	220.600	200.600	209.800	67.170%		
2	18:52:30	0.738	0.793	221.000	200.600	209.600	67.500%		
3	18:52:38	0.658	0.693	219.700	200.400	208.900	67.548%		
X		0.697	0.732	220.500	200.500	209.400	67.406%		
σ		0.040	0.054	0.678	0.107	0.501	0.206%		
%RSD		5.746	7.402	0.308	0.053	0.239	0.305		

γ RSD > 20%
and
conc > 1%
; 1 qual

SECTION 4

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

Case Narrative

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20181030_1A

TestAmerica Job ID: 180-83548-1

Job ID: 180-83548-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative 180-83548-1

Comments

No additional comments.

Receipt

The samples were received on 10/31/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.3° C and 1.5° C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): BRF-BS-BG14-6.0/8.0-20181030 (180-83548-2) and BRF-BS-BG14-0.0/0.5-20181030 (180-83548-3). The container labels list opposite sample times for the 2 samples. Sample 2 has a time of 1231 and sample 3 has a time of 1225 on the labels, but is the reverse on the chain of custody. Samples were logged as per the chain of custody. The client was contacted, and confirmed that the chain was correct. ✓

GC Semi VOA

Method(s) 9056A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 180-261890 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

Metals

Method(s) 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 261739 were outside control limits for several analytes. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020A: The serial dilution performed for the following sample associated with batch 261739 was outside control limits for calcium.: BRF-BS-BG01-6.5/8.5-20181030 (180-83548-7)

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

General Chemistry

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

Sample Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20181030_1A

TestAmerica Job ID: 180-83548-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-83548-1	BRF-BS-BG14-1.5/3.5-20181030	Solid	10/30/18 12:04 ✓	10/31/18 16:25
180-83548-2	BRF-BS-BG14-6.0/8.0-20181030	Solid	10/30/18 12:25 ✓	10/31/18 16:25
180-83548-3	BRF-BS-BG14-0.0/0.5-20181030	Solid	10/30/18 12:31 ✓	10/31/18 16:25
180-83548-4	BRF-BS-FB01-20181030	Water	10/30/18 14:15 ✓	10/31/18 16:25
180-83548-5	BRF-BS-BG01-0.0/0.5-20181030	Solid	10/30/18 15:42 ✓	10/31/18 16:25
180-83548-6	BRF-BS-BG01-1.25/3.25-20181030	Solid	10/30/18 15:40 ✓	10/31/18 16:25
180-83548-7	BRF-BS-BG01-6.5/8.5-20181030	Solid	10/30/18 15:26 ✓	10/31/18 16:25
180-83548-8	BRF-BS-EB01-20181030	Water	10/30/18 16:10 ✓	10/31/18 16:25

✓

TestAmerica Pittsburgh



Tennessee Valley Authority

TVA Environmental Investigations

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	2
DOC No.:	BRF_BS_20181030_1A		
1	of	1	Paged
Task Desc.:	BRF_BS		

Required Ship to Lab:		Required Project Information:			Required Sampler Information:		
Lab Name:	TestAmerica Pittsburgh	Site ID #:	BULL RUN FOSSIL PLANT		Sampler:	T. Henning, E. Smith and S. Bolden	
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238	Project #:	173568274		Sampling Company:	Stantec	
		Site Address:	1265 Edgemore Rd		Address:	Warehouse Row North 1110 Market Street, Suite 214A	
		City:	Clinton	State, Zip:	TN 37115	City/State:	Chattanooga TN
Lab Manager Contact Information:		Site PM Name:	Roy Quinn		Phone:	(317) 220-9374	
Lab PM:	Gas Lager		Phone/Fax:	423-751-3753		Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404		Site PM Email:	lager@tva.gov		Send EDD/Hard Copy to:	tva.deliverables@deliverables.com
Lab Email:	GasLager@testamericapittsburgh.com						

Analysis Turnaround Time

 CALENDAR DAYS WORKING DAYS

TAT if different from below

- 24 Hours
 3 Business Days
 5 Business Days
 10 Business Days (Standard)

Present		Absent	
Sample	Gas cylinder, unbroken	None	
Analysis	BACKGROUNDSOIL_BLANKS	BACKGROUNDSOIL_PH	
	X	X	
	X	X	
	X	X	
	X	X	
	X	X	
	X	X	
	X	X	
	X	X	



180-83548 Chain of Custody

ITEM #	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	BRF-BS-BG14-1.5/3.5-20181030	BRF-BG-14	1.5	3.5	S G	N	10/30/2018	1204	✓ 2		<input type="checkbox"/>
2	BRF-BS-BG14-6.0/9.0-20181030	BRF-BG-14	6.0	8.0	S G	N	10/30/2018	1225	✓ 2		<input type="checkbox"/>
3	BRF-BS-BG14-0.0/0.5-20181030	BRF-BG-14	0.0	0.5	S G	N	10/30/2018	1231	✓ 2		<input type="checkbox"/>
4	BRF-BS-FB01-20181030	FB01	NA	NA	W G	FB	10/30/2018	1415	✓ 2		<input type="checkbox"/>
5	BRF-BS-BG01-0.0/0.5-20181030	BRF-BG-01	0.0	0.5	S G	N	10/30/2018	1542	✓ 2		<input type="checkbox"/>
6	BRF-BS-BG01-1.25/3.25-20181030	BRF-BG-01	1.25	3.25	S G	N	10/30/2018	1540	✓ 2		<input type="checkbox"/>
7	BRF-BS-BG01-6.5/8.5-20181030	BRF-BG-01	6.5	8.5	S G	N	10/30/2018	1526	✓ 2		<input type="checkbox"/>
8	BRF-BS-EB01-20181030 ✓	EB01	NA	NA	W G	FB	10/30/2018	1610	✓ 2		<input type="checkbox"/>
9											
10											
11											
12											
13											

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

BACKGROUNDSOIL: Perform MS/MSD on sample identified above

BACKGROUNDSOIL_BLANKS: Anions – unpreserved; Metals – preserved w/ HNO3 to pH<2

RElinquished By / AFFILIATION			DATE	TIME	ACCEPTED BY / AFFILIATION
Suanna Bolden (Stantec)			10/30/2018	18:00	<i>Sherry DAH</i>

SHIPPING METHOD:		SAMPLER NAME AND SIGNATURE	
Courier		Suanna Bolden	
		Tyler Henning	
		Edgar Smith	

Temperature in °	C	Sample intact?	Sample Impact?	Trap Blank?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes



Tennessee Valley Authority

TVA Environmental Investigations

Chain-of-Custody / Analytical Request Document

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

COOLER No.:	2	of	2
COC No.:	BRF_BS_20181030_1A		
1	of 1	Pages	
Task Desc:			BRF_BS

Required Ship to Lab:		Required Project Information:		Required Sampler Information:	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	BULL RUN FOSSIL PLANT	Sampler:	T. Henning, E. Smith and S. Bolden
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238	Project #:	175563274	Sampling Company:	Stantec
		Site Address:	1205 Edgemore Rd	Address:	Warehouse Row North 1110 Market Street, Suite 215A
		City:	Clinton	City/State:	Chattanooga TN
		State, Zip:	TN 37316	Phone:	(317) 220-9374
Lab Manager/Contact Information		Site PM Name:	Roy Quinn		
Lab P/M:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	gail.lage@testamerica.com	Send EDI/Hard Copy to:	Bus. Analysts@enviro.tva.com
Lab Email:	gail.lage@testamerica.com				

Analysis Turnaround Time												
LT CALENDAR DAYS						LT WORKING DAYS						
TAT is different from below												
<input type="checkbox"/> 24 Hours <input type="checkbox"/> 3 Business Days <input checked="" type="checkbox"/> 5 Business Days <input type="checkbox"/> 10 Business Days (Standard)												
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.	INSTANTD
			Depth Unit	Select Unit								
1	BRF-BS-BG14-1.5/3.5-20181030	BRF-BG-14	1.5	3.5	S	G	N	10/30/2018	1204	2		<input type="checkbox"/>
2	BRF-BS-BG14-6.0/8.0-20181030	BRF-BG-14	6.0	8.0	S	G	N	10/30/2018	1225	2		<input type="checkbox"/>
3	BRF-BS-BG14-0.00-5-20181030	BRF-BG-14	0.0	0.5	S	G	N	10/30/2018	1231	2		<input type="checkbox"/>
4	BRF-BS-BG01-20181030	FB01	NA	NA	W	G	FB	10/30/2018	1415	2		<input type="checkbox"/>
5	BRF-BS-BG01-0.00-5-20181030	BRF-BG-01	0.0	0.5	S	G	N	10/30/2018	1542	2		<input type="checkbox"/>
6	BRF-BS-BG01-1.25/3.25-20181030	BRF-BG-01	1.25	3.25	S	G	N	10/30/2018	1540	2		<input type="checkbox"/>
7	BRF-BS-BG01-6.5/8.5-20181030	BRF-BG-01	6.5	8.5	S	G	N	10/30/2018	1526	2		<input type="checkbox"/>
8	BRF-BS-EB01-20181030	EB01	NA	NA	W	G	EB	10/30/2018	1610	2		<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: Perform MS/MSD on sample identified above

BACKGROUNDSOIL_BLANKS: Anions – unpreserved; Metals – preserved w/ HNO3 to pH<2

RELINQUISHED BY / AFFILIATION				DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Sample Receipt Conditions			
Suzanne Bolden (Stantec)				10/30/2018	18:00	Edgar Smith	10/31/2018	9:00	<input type="checkbox"/> GfR	<input type="checkbox"/> Yes	<input type="checkbox"/> 94%	<input type="checkbox"/> Yes
									<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> 0%	<input type="checkbox"/> No
									<input type="checkbox"/> GfR	<input type="checkbox"/> Yes	<input type="checkbox"/> 0%	<input type="checkbox"/> Yes
									<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> 0%	<input type="checkbox"/> No
									<input type="checkbox"/> GfR	<input type="checkbox"/> Yes	<input type="checkbox"/> 0%	<input type="checkbox"/> Yes
									<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> 0%	<input type="checkbox"/> No
									<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> 0%	<input type="checkbox"/> Yes
									<input type="checkbox"/> No	<input type="checkbox"/> No	<input type="checkbox"/> 0%	<input type="checkbox"/> No
SHIPPING METHOD				SAMPLER NAME AND SIGNATURE								
Counter				Suzanne Bolden <i>Suzanne Bolden</i>								
				Tyler Henning <i>T. Henning</i>								
				Edgar Smith <i>Edgar Smith</i>								
								Temperature in °C	Sample on Ice?	Sample intact?		Trig Blank?

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582919

Align Open End of FedEx Pouch Here

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582919

Customer Seal
01/14
Signature
DATE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582919

SHIP DATE: 30 OCT 18
ACTWT: 58.00 LB
CAD: 006985125/SSFE1922
DIMS: 24X19X14 IN

BILL RECIPIENT

ORIGIN ID:GKTA (865) 621-1653
DAVE MYERS
TEST AMERICA KNOXVILLE LAB
5815 MIDDLEBROOK PIKE

KNOXVILLE, TN 37921
UNITED STATES US

TO SAMPLE RECEIVING
TEST AMERICAN PITTSBURG
301 ALPHA DR RIDC PK

PITTSBURGH PA 15238

(412) 968-7068
INT'L
PDT:

REF#

DEPT#



1 of 2
TRK# 0215 8120 5915 0108
MASTER

WED - 31 OCT 3:00
STANDARD OVERNIGHT

1523
PA-US P

NA AGCA

Uncorrected temp
Thermometer ID

1/11/13 °C
10

CF 0.2 Initials TS

PT-WI-SR-001 effective



180-83548 Waybill

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582918

Custody Seal
DATE
10/30/18
SIGNATURE
TAP

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582918

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582916

TestAmerica

ORIGIN ID: GITA (865) 621-1653
DAVE RIVERS TEST AMERICA KNOXVILLE LAB
5915 HIDDLEBROOK PIKE
KNOXVILLE, TN 37921
UNITED STATES US

SHIP DATE: 30 OCT 18
ACT WGT: 53.00 LB
CAD: 0068891255SFET92
DIMS: 24x3x12 IN
BILL RECIPIENT

Custody Seal

DATE

SIGNATURE

10/30/18

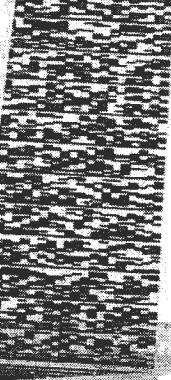
474

FedEx

To SAMPLE RECEIVING
TEST AMERICAN PITTSBURG
301 ALPHA DR RIDC PK

PITTSBURG 97
(412) 888-7058

A
1170
10.31



2 of 2 MPS# 7835 1907 1170 WED - 31 OCT
00881 Mat# 8120 6915 0108 STANDARD OVER!
0215

NA AGCA

PA-US

Uncorrected temp 17.5 °C
Thermometer ID 10

CF 0 L Initials T3

582916

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582916

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582917

Custody Seal

DATE

SIGNATURE

10/30/18

475

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
582917

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-83548-1

Login Number: 83548

List Source: 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	✓