ENVIRONMENTAL STANDARDS
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Data Validation Report
Tennessee Valley Authority
Bull Run Fossil Plant
Environmental Investigation Plan
Seep Water Samples
Chain-of-Custody: BRF_SEW_20190515_1A

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the four seep water samples and two aqueous blanks collected on May 15, 2019, at the Tennessee Valley Authority (TVA) Bull Run Fossil Plant facility. These samples were collectively analyzed by TestAmerica Laboratories, Inc. (TestAmerica), of Pittsburgh, Pennsylvania for total and dissolved metals by SW-846 Method 6020A; for total and dissolved mercury by SW-846 Method 7470A; for total dissolved solids by SM 2540C; for total suspended solids by SM 2540D; and for anions (specifically, chloride, fluoride, and sulfate) by SW-846 Method 9056A.

This review was performed in accordance with the Environmental Investigation Plan for the Tennessee Valley Authority Bull Run Fossil Plant Environmental Investigation (BRF EIP; 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 and Standard 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 and Standard 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 180-90258-1.

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-SEW-04-20190515	180-90258-1	180-90258-1	Aq	5/15/19	M, M*, Hg, Hg*, TSS, TDS, A
BRF-SEW-DUP01-20190515 (Field Duplicate of BRF-SEW-04-20190515)	180-90258-2	180-90258-1	Aq	5/15/19	M, M*, Hg, Hg*, TSS, TDS, A
BRF-SEW-01-20190515	180-90258-3	180-90258-1	Aq	5/15/19	M, M*, Hg, Hg*
BRF-SEW-03-20190515	180-90258-4	180-90258-1	Aq	5/15/19	M, M*, Hg, Hg*, A
BRF-SEW-TUB01-20190515 (Tubing Blank)	180-90258-5	180-90258-1	Aq	5/15/19	M, Hg
BRF-SEW-FLB01-20190515 (Filter Blank)	180-90258-6	180-90258-1	Aq	5/15/19	M*, Hg*

Parameters Examined

M - Total Metals by SW-846 Method 6020A.
M* - Dissolved Metals by SW-846 Method 6020A.
Hg - Mercury by SW-846 Method 7470A.
Hg* - Dissolved Mercury by SW-846 Method 7470A.
TDS - Total Dissolved Solids by SM 2540C.
TSS - Total Suspended Solids by SM 2540D.
A - Anions (specifically, chloride, fluoride, and sulfate) by SW-846 Method 9056A.
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	Total versus Dissolved Metals Comparison
Field Duplicate Results	Sample Preparation
Quantitation of Positive Results	Analytical Sequence

Comments and Exceptions

- All analyses performed for the sampling event were in compliance with the requirements set forth in the EIP.

Qualifier Summary

Analyte(s)	Job Number	Sample(s)	Validation Qualifier(s)	Reason(s) for Qualification
total arsenic, total chromium, and total vanadium	180-90258-1	BRF-SEW-04-20190515 and BRF-SEW-DUP01-20190515	U*	BF
total vanadium	180-90258-1	BRF-SEW-01-20190515	U*	BF
total sodium	180-90258-1	BRF-SEW-03-20190515	U*	BF
dissolved arsenic, dissolved chromium, and dissolved vanadium	180-90258-1	BRF-SEW-04-20190515 and BRF-SEW-DUP01-20190515	U*	BE, BF
dissolved vanadium	180-90258-1	BRF-SEW-01-20190515	U*	BE, BF
dissolved lithium	180-90258-1	BRF-SEW-01-20190515	U*	BE
total and dissolved boron	180-90258-1	BRF-SEW-01-20190515 and BRF-SEW-03-20190515	U*	BL
total calcium and total zinc	180-90258-1	BRF-SEW-04-20190515, BRF-SEW-DUP01-20190515, BRF-SEW-01-20190515, and BRF-SEW-03-20190515	J	M-
total and dissolved barium and total and dissolved cobalt	180-90258-1	BRF-SEW-04-20190515 and BRF-SEW-DUP01-20190515	J	FG
TSS	180-90258-1	BRF-SEW-04-20190515 and BRF-SEW-DUP01-20190515	J	FD

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: Danielle Coles, Quality Assurance Chemist
Review reviewed and approved by: Andrew L. Piasecki, Senior Quality Assurance Chemist
Review approved by: Rock J. Vitale, CEAC, Technical Director of Chemistry/Principal
Date review completed: 6/20/19

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

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.

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-1
Sys Sample Code	BRF-SEW-04-20190515
Sample Name	BRF-SeW-04-20190515
Sample Date	5/15/2019 11:18:00 AM
Location	SEW04
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
SM2540C	Total Dissolved	TDS	T	MG/L	935			10.0	10.0	10.0	Y	Yes	1	NA
SM2540D	Total Suspended	TSS	T	MG/L	382	J	FD	1.00	1.00	1.00	Y	Yes	1	NA
SW-846 6020A	Antimony	7440-36-0	D	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
			T	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
	Arsenic	7440-38-2	D	UG/L		U*	BE,BF	1.26	1.26	1.26	N	Yes	1	NA
			T	UG/L		U*	BF	1.28	1.28	1.28	N	Yes	1	NA
	Barium	7440-39-3	D	UG/L	116	J	FG	1.49	1.49	10.0	Y	Yes	1	NA
			T	UG/L	77.3	J	FG	1.49	1.49	10.0	Y	Yes	1	NA
	Beryllium	7440-41-7	D	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
			T	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
	Boron	7440-42-8	D	UG/L	1000			30.3	30.3	80.0	Y	Yes	1	NA
			T	UG/L	1000			30.3	30.3	80.0	Y	Yes	1	NA
	Cadmium	7440-43-9	D	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
			T	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
	Calcium	7440-70-2	D	UG/L	173000			116	116	500	Y	Yes	1	NA
			T	UG/L	176000	J	M-	116	116	500	Y	Yes	1	NA
	Chromium	7440-47-3	D	UG/L		U*	BE,BF	2.97	2.97	2.97	N	Yes	1	NA
			T	UG/L		U*	BF	2.98	2.98	2.98	N	Yes	1	NA
	Cobalt	7440-48-4	D	UG/L	3.32	J	FG	0.0750	0.0750	0.500	Y	Yes	1	NA
			T	UG/L	1.13	J	FG	0.0750	0.0750	0.500	Y	Yes	1	NA
	Copper	7440-50-8	D	UG/L	1.16	J	RL	0.627	0.627	2.00	Y	Yes	1	NA
			T	UG/L	0.952	J	RL	0.627	0.627	2.00	Y	Yes	1	NA
	Lead	7439-92-1	D	UG/L	0.342	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
			T	UG/L	0.253	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
	Lithium	7439-93-2	D	UG/L	537			3.14	3.14	5.00	Y	Yes	1	NA
			T	UG/L	528			3.14	3.14	5.00	Y	Yes	1	NA
	Molybdenum	7439-98-7	D	UG/L	1.67	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
			T	UG/L	1.41	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
	Nickel	7440-02-0	D	UG/L	16.2			0.312	0.312	1.00	Y	Yes	1	NA
			T	UG/L	28.5			0.312	0.312	1.00	Y	Yes	1	NA
	Selenium	7782-49-2	D	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
			T	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-1
Sys Sample Code	BRF-SEW-04-20190515
Sample Name	BRF-SeW-04-20190515
Sample Date	5/15/2019 11:18:00 AM
Location	SEW04
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	Silver	7440-22-4	D	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
			T	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
	Sodium	7440-23-5	D	UG/L	8100			251	251	500	Y	Yes	1	NA
			T	UG/L	7870			251	251	500	Y	Yes	1	NA
	Thallium	7440-28-0	D	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
			T	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Vanadium	7440-62-2	D	UG/L		U*	BE,BF	5.12	5.12	5.12	N	Yes	1	NA
			T	UG/L		U*	BF	4.66	4.66	4.66	N	Yes	1	NA
	Zinc	7440-66-6	D	UG/L	6.48			3.22	3.22	5.00	Y	Yes	1	NA
			T	UG/L	21.6	J	M-	3.22	3.22	5.00	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	D	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA
			T	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA
SW-846 9056A	Chloride	16887-00-6	N	MG/L	6.25			0.715	0.715	1.00	Y	Yes	1	NA
	Fluoride	16984-48-8	N	MG/L	0.237			0.0263	0.0263	0.100	Y	Yes	1	NA
	Sulfate	14808-79-8	N	MG/L	543			3.80	3.80	10.0	Y	Yes	10	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-2
Sys Sample Code	BRF-SEW-DUP01-20190515
Sample Name	BRF-SeW-DUP01-20190515
Sample Date	5/15/2019 12:00:00 AM
Location	SEW04
Sample Type	FD
Parent Sample	BRF-SEW-04-20190515

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
SM2540C	Total Dissolved	TDS	T	MG/L	935			10.0	10.0	10.0	Y	Yes	1	NA
SM2540D	Total Suspended	TSS	T	MG/L	310	J	FD	1.00	1.00	1.00	Y	Yes	1	NA
SW-846 6020A	Antimony	7440-36-0	D	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
			T	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
	Arsenic	7440-38-2	D	UG/L		U*	BE,BF	1.65	1.65	1.65	N	Yes	1	NA
			T	UG/L		U*	BF	1.05	1.05	1.05	N	Yes	1	NA
	Barium	7440-39-3	D	UG/L	122	J	FG	1.49	1.49	10.0	Y	Yes	1	NA
			T	UG/L	76.1	J	FG	1.49	1.49	10.0	Y	Yes	1	NA
	Beryllium	7440-41-7	D	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
			T	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
	Boron	7440-42-8	D	UG/L	1010			30.3	30.3	80.0	Y	Yes	1	NA
			T	UG/L	997			30.3	30.3	80.0	Y	Yes	1	NA
	Cadmium	7440-43-9	D	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
			T	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
	Calcium	7440-70-2	D	UG/L	172000			116	116	500	Y	Yes	1	NA
			T	UG/L	172000	J	M-	116	116	500	Y	Yes	1	NA
	Chromium	7440-47-3	D	UG/L		U*	BE,BF	3.31	3.31	3.31	N	Yes	1	NA
			T	UG/L		U*	BF	3.04	3.04	3.04	N	Yes	1	NA
	Cobalt	7440-48-4	D	UG/L	3.70	J	FG	0.0750	0.0750	0.500	Y	Yes	1	NA
			T	UG/L	0.948	J	FG	0.0750	0.0750	0.500	Y	Yes	1	NA
	Copper	7440-50-8	D	UG/L	1.41	J	RL	0.627	0.627	2.00	Y	Yes	1	NA
			T	UG/L	0.843	J	RL	0.627	0.627	2.00	Y	Yes	1	NA
	Lead	7439-92-1	D	UG/L	0.439	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
			T	UG/L	0.146	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
	Lithium	7439-93-2	D	UG/L	542			3.14	3.14	5.00	Y	Yes	1	NA
			T	UG/L	525			3.14	3.14	5.00	Y	Yes	1	NA
	Molybdenum	7439-98-7	D	UG/L	1.74	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
			T	UG/L	1.29	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
	Nickel	7440-02-0	D	UG/L	17.0			0.312	0.312	1.00	Y	Yes	1	NA
			T	UG/L	27.8			0.312	0.312	1.00	Y	Yes	1	NA
	Selenium	7782-49-2	D	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
			T	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-2
Sys Sample Code	BRF-SEW-DUP01-20190515
Sample Name	BRF-SeW-DUP01-20190515
Sample Date	5/15/2019 12:00:00 AM
Location	SEW04
Sample Type	FD
Parent Sample	BRF-SEW-04-20190515

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	Silver	7440-22-4	D	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
			T	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
	Sodium	7440-23-5	D	UG/L	8140			251	251	500	Y	Yes	1	NA
			T	UG/L	7900			251	251	500	Y	Yes	1	NA
	Thallium	7440-28-0	D	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
			T	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Vanadium	7440-62-2	D	UG/L		U*	BE,BF	5.60	5.60	5.60	N	Yes	1	NA
			T	UG/L		U*	BF	5.14	5.14	5.14	N	Yes	1	NA
	Zinc	7440-66-6	D	UG/L	7.55			3.22	3.22	5.00	Y	Yes	1	NA
			T	UG/L	20.8	J	M-	3.22	3.22	5.00	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	D	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA
			T	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA
SW-846 9056A	Chloride	16887-00-6	N	MG/L	6.24			0.715	0.715	1.00	Y	Yes	1	NA
	Fluoride	16984-48-8	N	MG/L	0.230			0.0263	0.0263	0.100	Y	Yes	1	NA
	Sulfate	14808-79-8	N	MG/L	537			3.80	3.80	10.0	Y	Yes	10	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-3
Sys Sample Code	BRF-SEW-01-20190515
Sample Name	BRF-SeW-01-20190515
Sample Date	5/15/2019 2:23:00 PM
Location	SEW01
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	D	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
			T	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
	Arsenic	7440-38-2	D	UG/L	3.28			0.323	0.323	1.00	Y	Yes	1	NA
			T	UG/L	3.09			0.323	0.323	1.00	Y	Yes	1	NA
	Barium	7440-39-3	D	UG/L	94.8			1.49	1.49	10.0	Y	Yes	1	NA
			T	UG/L	104			1.49	1.49	10.0	Y	Yes	1	NA
	Beryllium	7440-41-7	D	UG/L	0.633	J	RL	0.155	0.155	1.00	Y	Yes	1	NA
			T	UG/L	0.574	J	RL	0.155	0.155	1.00	Y	Yes	1	NA
	Boron	7440-42-8	D	UG/L		U*	BL	41.3	41.3	80.0	N	Yes	1	NA
			T	UG/L		U*	BL	41.5	41.5	80.0	N	Yes	1	NA
	Cadmium	7440-43-9	D	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
			T	UG/L	0.130	J	RL	0.125	0.125	1.00	Y	Yes	1	NA
	Calcium	7440-70-2	D	UG/L	18500			116	116	500	Y	Yes	1	NA
			T	UG/L	26200	J	M-	116	116	500	Y	Yes	1	NA
	Chromium	7440-47-3	D	UG/L	18.0			1.53	1.53	2.00	Y	Yes	1	NA
			T	UG/L	16.7			1.53	1.53	2.00	Y	Yes	1	NA
	Cobalt	7440-48-4	D	UG/L	5.53			0.0750	0.0750	0.500	Y	Yes	1	NA
			T	UG/L	5.79			0.0750	0.0750	0.500	Y	Yes	1	NA
	Copper	7440-50-8	D	UG/L	10.2			0.627	0.627	2.00	Y	Yes	1	NA
			T	UG/L	10.5			0.627	0.627	2.00	Y	Yes	1	NA
	Lead	7439-92-1	D	UG/L	9.09			0.128	0.128	1.00	Y	Yes	1	NA
			T	UG/L	9.43			0.128	0.128	1.00	Y	Yes	1	NA
	Lithium	7439-93-2	D	UG/L		U*	BE	14.6	14.6	14.6	N	Yes	1	NA
			T	UG/L	13.9			3.14	3.14	5.00	Y	Yes	1	NA
	Molybdenum	7439-98-7	D	UG/L		U		0.610	0.610	5.00	N	Yes	1	NA
			T	UG/L		U		0.610	0.610	5.00	N	Yes	1	NA
	Nickel	7440-02-0	D	UG/L	14.1			0.312	0.312	1.00	Y	Yes	1	NA
			T	UG/L	13.6			0.312	0.312	1.00	Y	Yes	1	NA
	Selenium	7782-49-2	D	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
			T	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
	Silver	7440-22-4	D	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
			T	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-3
Sys Sample Code	BRF-SEW-01-20190515
Sample Name	BRF-SeW-01-20190515
Sample Date	5/15/2019 2:23:00 PM
Location	SEW01
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	Sodium	7440-23-5	D	UG/L		U		251	251	500	N	Yes	1	NA
			T	UG/L		U		251	251	500	N	Yes	1	NA
	Thallium	7440-28-0	D	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
			T	UG/L	0.134	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
	Vanadium	7440-62-2	D	UG/L		U*	BE,BF	18.9	18.9	18.9	N	Yes	1	NA
			T	UG/L		U*	BF	18.4	18.4	18.4	N	Yes	1	NA
	Zinc	7440-66-6	D	UG/L	39.2			3.22	3.22	5.00	Y	Yes	1	NA
			T	UG/L	41.9	J	M-	3.22	3.22	5.00	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	D	UG/L	0.137	J	RL	0.101	0.101	0.200	Y	Yes	1	NA
			T	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-4
Sys Sample Code	BRF-SEW-03-20190515
Sample Name	BRF-SeW-03-20190515
Sample Date	5/15/2019 4:22:00 PM
Location	SEW03
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	D	UG/L	0.615	J	RL	0.378	0.378	2.00	Y	Yes	1	NA
			T	UG/L	1.08	J	RL	0.378	0.378	2.00	Y	Yes	1	NA
	Arsenic	7440-38-2	D	UG/L	7.48			0.323	0.323	1.00	Y	Yes	1	NA
			T	UG/L	24.3			0.323	0.323	1.00	Y	Yes	1	NA
	Barium	7440-39-3	D	UG/L	103			1.49	1.49	10.0	Y	Yes	1	NA
			T	UG/L	327			1.49	1.49	10.0	Y	Yes	1	NA
	Beryllium	7440-41-7	D	UG/L	0.997	J	RL	0.155	0.155	1.00	Y	Yes	1	NA
			T	UG/L	3.31			0.155	0.155	1.00	Y	Yes	1	NA
	Boron	7440-42-8	D	UG/L		U*	BL	72.5	72.5	80.0	N	Yes	1	NA
			T	UG/L		U*	BL	105	105	105	N	Yes	1	NA
	Cadmium	7440-43-9	D	UG/L	0.188	J	RL	0.125	0.125	1.00	Y	Yes	1	NA
			T	UG/L	0.527	J	RL	0.125	0.125	1.00	Y	Yes	1	NA
	Calcium	7440-70-2	D	UG/L	32900			116	116	500	Y	Yes	1	NA
			T	UG/L	87500	J	M-	116	116	500	Y	Yes	1	NA
	Chromium	7440-47-3	D	UG/L	31.5			1.53	1.53	2.00	Y	Yes	1	NA
			T	UG/L	102			1.53	1.53	2.00	Y	Yes	1	NA
	Cobalt	7440-48-4	D	UG/L	8.87			0.0750	0.0750	0.500	Y	Yes	1	NA
			T	UG/L	39.2			0.0750	0.0750	0.500	Y	Yes	1	NA
	Copper	7440-50-8	D	UG/L	14.4			0.627	0.627	2.00	Y	Yes	1	NA
			T	UG/L	61.4			0.627	0.627	2.00	Y	Yes	1	NA
	Lead	7439-92-1	D	UG/L	13.1			0.128	0.128	1.00	Y	Yes	1	NA
			T	UG/L	52.9			0.128	0.128	1.00	Y	Yes	1	NA
	Lithium	7439-93-2	D	UG/L	20.3			3.14	3.14	5.00	Y	Yes	1	NA
			T	UG/L	60.8			3.14	3.14	5.00	Y	Yes	1	NA
	Molybdenum	7439-98-7	D	UG/L	0.682	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
			T	UG/L	1.35	J	RL	0.610	0.610	5.00	Y	Yes	1	NA
	Nickel	7440-02-0	D	UG/L	21.5			0.312	0.312	1.00	Y	Yes	1	NA
			T	UG/L	80.8			0.312	0.312	1.00	Y	Yes	1	NA
	Selenium	7782-49-2	D	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
			T	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
	Silver	7440-22-4	D	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
			T	UG/L	0.139	J	RL	0.121	0.121	1.00	Y	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-4
Sys Sample Code	BRF-SEW-03-20190515
Sample Name	BRF-SeW-03-20190515
Sample Date	5/15/2019 4:22:00 PM
Location	SEW03
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	Sodium	7440-23-5	D	UG/L	1090			251	251	500	Y	Yes	1	NA
			T	UG/L		U*	BF	1130	1130	1130	N	Yes	1	NA
	Thallium	7440-28-0	D	UG/L	0.309	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
			T	UG/L	0.658	J	RL	0.128	0.128	1.00	Y	Yes	1	NA
	Vanadium	7440-62-2	D	UG/L	39.1			0.899	0.899	1.00	Y	Yes	1	NA
			T	UG/L	106			0.899	0.899	1.00	Y	Yes	1	NA
	Zinc	7440-66-6	D	UG/L	50.9			3.22	3.22	5.00	Y	Yes	1	NA
			T	UG/L	182	J	M-	3.22	3.22	5.00	Y	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	D	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA
			T	UG/L		U		0.101	0.101	0.200	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	0.0700	J	RL	0.0263	0.0263	0.100	Y	Yes	1	NA
	Sulfate	14808-79-8	N	MG/L	21.1			0.380	0.380	1.00	Y	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-5
Sys Sample Code	BRF-SEW-TUB01-20190515
Sample Name	BRF-SeW-TUB01-20190515
Sample Date	5/15/2019 5:42:00 PM
Location	SEW03
Sample Type	TB
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	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
	Arsenic	7440-38-2	T	UG/L	0.437	J	RL	0.323	0.323	1.00	Y	Yes	1	NA
	Barium	7440-39-3	T	UG/L		U		1.49	1.49	10.0	N	Yes	1	NA
	Beryllium	7440-41-7	T	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
	Boron	7440-42-8	T	UG/L		U		30.3	30.3	80.0	N	Yes	1	NA
	Cadmium	7440-43-9	T	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
	Calcium	7440-70-2	T	UG/L		U		116	116	500	N	Yes	1	NA
	Chromium	7440-47-3	T	UG/L	2.81			1.53	1.53	2.00	Y	Yes	1	NA
	Cobalt	7440-48-4	T	UG/L	0.129	J	RL	0.0750	0.0750	0.500	Y	Yes	1	NA
	Copper	7440-50-8	T	UG/L		U		0.627	0.627	2.00	N	Yes	1	NA
	Lead	7439-92-1	T	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Lithium	7439-93-2	T	UG/L	3.37	J	RL	3.14	3.14	5.00	Y	Yes	1	NA
	Molybdenum	7439-98-7	T	UG/L		U		0.610	0.610	5.00	N	Yes	1	NA
	Nickel	7440-02-0	T	UG/L		U		0.312	0.312	1.00	N	Yes	1	NA
	Selenium	7782-49-2	T	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
	Silver	7440-22-4	T	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
	Sodium	7440-23-5	T	UG/L		U		251	251	500	N	Yes	1	NA
	Thallium	7440-28-0	T	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Vanadium	7440-62-2	T	UG/L	4.77			0.899	0.899	1.00	Y	Yes	1	NA
	Zinc	7440-66-6	T	UG/L		U		3.22	3.22	5.00	N	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	T	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA

TVA TDEC Program
Facility: Bull Run Fossil Plant
SDG: 180902581

Lab Sample ID	180-90258-6
Sys Sample Code	BRF-SEW-FLB01-20190515
Sample Name	BRF-SeW-FLB01-20190515
Sample Date	5/15/2019 5:59:00 PM
Location	SEW03
Sample Type	FLB
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	D	UG/L		U		0.378	0.378	2.00	N	Yes	1	NA
	Arsenic	7440-38-2	D	UG/L	0.396	J	RL	0.323	0.323	1.00	Y	Yes	1	NA
	Barium	7440-39-3	D	UG/L		U		1.49	1.49	10.0	N	Yes	1	NA
	Beryllium	7440-41-7	D	UG/L		U		0.155	0.155	1.00	N	Yes	1	NA
	Boron	7440-42-8	D	UG/L		U		30.3	30.3	80.0	N	Yes	1	NA
	Cadmium	7440-43-9	D	UG/L		U		0.125	0.125	1.00	N	Yes	1	NA
	Calcium	7440-70-2	D	UG/L		U		116	116	500	N	Yes	1	NA
	Chromium	7440-47-3	D	UG/L	2.41			1.53	1.53	2.00	Y	Yes	1	NA
	Cobalt	7440-48-4	D	UG/L		U		0.0750	0.0750	0.500	N	Yes	1	NA
	Copper	7440-50-8	D	UG/L		U		0.627	0.627	2.00	N	Yes	1	NA
	Lead	7439-92-1	D	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Lithium	7439-93-2	D	UG/L		U		3.14	3.14	5.00	N	Yes	1	NA
	Molybdenum	7439-98-7	D	UG/L		U		0.610	0.610	5.00	N	Yes	1	NA
	Nickel	7440-02-0	D	UG/L		U		0.312	0.312	1.00	N	Yes	1	NA
	Selenium	7782-49-2	D	UG/L		U		2.62	2.62	5.00	N	Yes	1	NA
	Silver	7440-22-4	D	UG/L		U		0.121	0.121	1.00	N	Yes	1	NA
	Sodium	7440-23-5	D	UG/L		U		251	251	500	N	Yes	1	NA
	Thallium	7440-28-0	D	UG/L		U		0.128	0.128	1.00	N	Yes	1	NA
	Vanadium	7440-62-2	D	UG/L	4.19			0.899	0.899	1.00	Y	Yes	1	NA
	Zinc	7440-66-6	D	UG/L		U		3.22	3.22	5.00	N	Yes	1	NA
SW-846 7470A	Mercury	7439-97-6	D	UG/L		U		0.101	0.101	0.200	N	Yes	1	NA

SECTION 3

SUPPORTING DOCUMENTATION FOR QUALIFIERS

ENVIRONMENTAL STANDARDS

INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: TVA BRF EI Implementation
Sample Collection Dates: 5/15/19
Job Number: 20188395.A000
Project Manager: Amanda Cover
Laboratory: TA Pittsburgh

Reviewed by: Danielle Coles
Approved by: AP
Completion Date: 6/2019

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

Deliverable:			Sample No.	Lab Control No.
	CLP (Full)	( )		
	Level IV (Full)	(X)	180-90258-2	
	Limited	( )		
	Other:			

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

	Criteria Examined in Detail — Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified — Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments — Check (√) if Yes or Footnote Letter for Comments Below				
	6020A	7470	9056	Gen Chem		6020A	7470	9056	Gen Chem		6020A	7470	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		X					X				
Duplicate Analysis: (X) Field (X) Lab	X	X	X	X					X					X	
Quantitation of Results	X	X	X	X											
Detection Limit/Sensitivity															
Initial Calibrations	X	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														
ICP Post-Digestion Spike	X														
GFAA Post Digestion Spikes															
GFAA Duplicate Injections															
ICP Multiple Exposures	X														
GFAA Standard Additions															
CRDL Standards	X	X	X												
Condition on Receipt	X	X	X	X											
Percent Solids															
Others: total versus dissolved	X	X				X					X				

Comments: All results are acceptable unless otherwise qualified.

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

	Blank Type									
	Method									
Matrix (Aq., S.)	ICB	CCB	Prep.	Trip	Equip	Field	Blank Sample Number	Contaminant	Concentration (µg/L)	Qualification limit (5×)
Aq						X	BRF-SES-FB01-20190515	arsenic	0.348	1.74
								chromium	2.53	12.65
								sodium	263	1315
								vanadium	3.89	19.45
Aq						X	BRF-SEW-FB01-20190515	arsenic	0.396	1.98
								chromium	2.41	12.05
								vanadium	4.19	20.95
Aq					X		BRF-SEW-TUB01-20190515	arsenic	0.437	2.185
								chromium	2.81	14.05
								cobalt	0.129	0.645
								lithium	3.37	16.85
								vanadium	4.77	23.85
Aq		X					CCB	boron	34.8	174

Aq = Aqueous; S = Solid

Notes:

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_SES_20190515_1A

Job ID: 180-90259-1

Client Sample ID: BRF-SES-FB01-20190515

Date Collected: 05/15/19 11:04
Date Received: 05/17/19 09:00

Lab Sample ID: 180-90259-3

Matrix: Water

Method: EPA 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00	0.715	mg/L			05/26/19 18:06	1
Fluoride	ND		0.100	0.0263	mg/L			05/26/19 18:06	1
Sulfate	ND		1.00	0.380	mg/L			05/26/19 18:06	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.00200	0.000378	mg/L		05/22/19 11:55	05/23/19 18:25	1
Arsenic	**0.000348**	J	0.00100	0.000323	mg/L		05/22/19 11:55	05/23/19 18:25	1
Barium	ND		0.0100	0.00149	mg/L		05/22/19 11:55	05/23/19 18:25	1
Beryllium	ND		0.00100	0.000155	mg/L		05/22/19 11:55	05/23/19 18:25	1
Boron	ND		0.0800	0.0303	mg/L		05/22/19 11:55	05/23/19 18:25	1
Cadmium	ND		0.00100	0.000125	mg/L		05/22/19 11:55	05/23/19 18:25	1
Calcium	ND		0.500	0.116	mg/L		05/22/19 11:55	05/23/19 18:25	1
Chromium	**0.00253**		0.00200	0.00153	mg/L		05/22/19 11:55	05/23/19 18:25	1
Cobalt	ND		0.000500	0.0000750	mg/L		05/22/19 11:55	05/23/19 18:25	1
Copper	ND		0.00200	0.000627	mg/L		05/22/19 11:55	05/23/19 18:25	1
Lead	ND		0.00100	0.000128	mg/L		05/22/19 11:55	05/23/19 18:25	1
Lithium	ND		0.00500	0.00314	mg/L		05/22/19 11:55	05/23/19 18:25	1
Molybdenum	ND		0.00500	0.000610	mg/L		05/22/19 11:55	05/23/19 18:25	1
Nickel	ND		0.00100	0.000312	mg/L		05/22/19 11:55	05/23/19 18:25	1
Selenium	ND		0.00500	0.00262	mg/L		05/22/19 11:55	05/23/19 18:25	1
Silver	ND		0.00100	0.000121	mg/L		05/22/19 11:55	05/23/19 18:25	1
Sodium	**0.263**	J	0.500	0.251	mg/L		05/22/19 11:55	05/24/19 10:46	1
Thallium	ND		0.00100	0.000128	mg/L		05/22/19 11:55	05/23/19 18:25	1
Vanadium	**0.00389**		0.00100	0.000899	mg/L		05/22/19 11:55	05/23/19 18:25	1
Zinc	ND		0.00500	0.00322	mg/L		05/22/19 11:55	05/23/19 18:25	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200	0.000101	mg/L		05/22/19 10:24	05/24/19 11:01	1

As. 0.348 mg/L x 5 = 1.74 U: 1,2
Cr 2.53 mg/L x 5 = 12.65 U: 1,2
Na 263 mg/L x 5 = 1315 U: 4
V 3.89 mg/L x 5 = 19.45 U: 1,2,3

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_SEW_20190515_1A

Job ID: 180-90258-1

Client Sample ID: BRF-SEW-TUB01-20190515

Date Collected: 05/15/19 17:42
Date Received: 05/17/19 09:00

Lab Sample ID: 180-90258-5

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	x5	2.00	0.378	ug/L		05/23/19 11:51	05/24/19 15:17	1
Arsenic V:1,2	0.437	J 2.19	1.00	0.323	ug/L		05/23/19 11:51	05/24/19 15:17	1
Barium	ND		10.0	1.49	ug/L		05/23/19 11:51	05/24/19 15:17	1
Beryllium	ND		1.00	0.155	ug/L		05/23/19 11:51	05/24/19 15:17	1
Boron	ND		80.0	30.3	ug/L		05/23/19 11:51	05/24/19 15:17	1
Cadmium	ND		1.00	0.125	ug/L		05/23/19 11:51	05/24/19 15:17	1
Calcium	ND		500	116	ug/L		05/23/19 11:51	05/24/19 15:17	1
Chromium V:1,2	2.81	14.05	2.00	1.53	ug/L		05/23/19 11:51	05/24/19 15:17	1
Cobalt result 3x5x, no qual	0.129	J 0.645	0.500	0.0750	ug/L		05/23/19 11:51	05/24/19 15:17	1
Copper	ND		2.00	0.627	ug/L		05/23/19 11:51	05/24/19 15:17	1
Lead	ND		1.00	0.128	ug/L		05/23/19 11:51	05/24/19 15:17	1
Lithium V:3	3.37	J 16.85	5.00	3.14	ug/L		05/23/19 11:51	05/24/19 15:17	1
Molybdenum	ND		5.00	0.610	ug/L		05/23/19 11:51	05/24/19 15:17	1
Nickel	ND		1.00	0.312	ug/L		05/23/19 11:51	05/24/19 15:17	1
Selenium	ND		5.00	2.62	ug/L		05/23/19 11:51	05/24/19 15:17	1
Silver	ND		1.00	0.121	ug/L		05/23/19 11:51	05/24/19 15:17	1
Sodium	ND		500	251	ug/L		05/23/19 11:51	05/24/19 15:17	1
Thallium	ND		1.00	0.128	ug/L		05/23/19 11:51	05/24/19 15:17	1
Vanadium V:1,2,3	4.77	28.85	1.00	0.899	ug/L		05/23/19 11:51	05/24/19 15:17	1
Zinc	ND		5.00	3.22	ug/L		05/23/19 11:51	05/24/19 15:17	1

Method: EPA 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.101	ug/L		05/23/19 10:05	05/24/19 11:19	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_SEW_20190515_1A

Job ID: 180-90258-1

Client Sample ID: BRF-SEW-FLB01-20190515

Date Collected: 05/15/19 17:59
Date Received: 05/17/19 09:00

Lab Sample ID: 180-90258-6

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND	x5	2.00	0.378	ug/L		05/23/19 11:54	05/24/19 15:21	1
Arsenic V:1,2	0.396	J 1.98	1.00	0.323	ug/L		05/23/19 11:54	05/24/19 15:21	1
Barium	ND		10.0	1.49	ug/L		05/23/19 11:54	05/24/19 15:21	1
Beryllium	ND		1.00	0.155	ug/L		05/23/19 11:54	05/24/19 15:21	1
Boron	ND		80.0	30.3	ug/L		05/23/19 11:54	05/24/19 15:21	1
Cadmium	ND		1.00	0.125	ug/L		05/23/19 11:54	05/24/19 15:21	1
Calcium	ND		500	116	ug/L		05/23/19 11:54	05/24/19 15:21	1
Chromium V:1,2	2.41	12.05	2.00	1.53	ug/L		05/23/19 11:54	05/24/19 15:21	1
Cobalt	ND		0.500	0.0750	ug/L		05/23/19 11:54	05/24/19 15:21	1
Copper	ND		2.00	0.627	ug/L		05/23/19 11:54	05/24/19 15:21	1
Lead	ND		1.00	0.128	ug/L		05/23/19 11:54	05/24/19 15:21	1
Lithium	ND		5.00	3.14	ug/L		05/23/19 11:54	05/24/19 15:21	1
Molybdenum	ND		5.00	0.610	ug/L		05/23/19 11:54	05/24/19 15:21	1
Nickel	ND		1.00	0.312	ug/L		05/23/19 11:54	05/24/19 15:21	1
Selenium	ND		5.00	2.62	ug/L		05/23/19 11:54	05/24/19 15:21	1
Silver	ND		1.00	0.121	ug/L		05/23/19 11:54	05/24/19 15:21	1
Sodium	ND		500	251	ug/L		05/23/19 11:54	05/24/19 15:21	1
Thallium	ND		1.00	0.128	ug/L		05/23/19 11:54	05/24/19 15:21	1
Vanadium V:1,2,3	4.19	20.95	1.00	0.899	ug/L		05/23/19 11:54	05/24/19 15:21	1
Zinc	ND		5.00	3.22	ug/L		05/23/19 11:54	05/24/19 15:21	1

Method: EPA 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.200	0.101	ug/L		05/22/19 10:24	05/24/19 11:00	1

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Matrix: ⦿ Aqueous ○ Non aq
Reporting Level: ⦿ MDL ○ QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 × Highest QL

Sample ID:	BRF-SEW-04-20190515				Duplicate Sample ID:	BRF-SEW-DUP01-20190515					
Analyte	Sample Concentration	Qual	QL	MDL	Duplicate Concentration	Qual	QL	MDL	Difference	RPD	Flag
Chloride	6.25		1	0.715	6.24		1	0.715	NA	0%	
Fluoride	0.237		0.1	0.0263	0.23		0.1	0.0263	0.007	NA	
Sulfate	543		10	3.8	537		10	3.8	NA	1%	
Arsenic	1.28		1	0.323	1.05		1	0.323	0.23	NA	
Barium	77.3		10	1.49	76.1		10	1.49	NA	2%	
Boron	1000		80	30.3	997		80	30.3	NA	0%	
Calcium	176000	J	500	116	172000	J	500	116	NA	2%	
Chromium	2.98		2	1.53	3.04		2	1.53	0.06	NA	
Cobalt	1.13		0.5	0.075	0.948		0.5	0.075	0.182	NA	
Copper	0.952	J	2	0.627	0.843	J	2	0.627	NA	NA	
Lead	0.253	J	1	0.128	0.146	J	1	0.128	NA	NA	
Lithium	528		5	3.14	525		5	3.14	NA	1%	
Molybdenum	1.41	J	5	0.61	1.29	J	5	0.61	NA	NA	
Nickel	28.5		1	0.312	27.8		1	0.312	NA	2%	
Sodium	7870		500	251	7900		500	251	NA	0%	
Vanadium	4.66		1	0.899	5.14		1	0.899	0.48	NA	
Zinc	21.6	J	5	3.22	20.8	J	5	3.22	0.8	NA	
Arsenic (D)	1.26	U*	1.26	1.26	1.65	U*	1.65	1.65	NA	NA	
Barium (D)	116		10	1.49	122		10	1.49	NA	5%	
Boron (D)	1000		80	30.3	1010		80	30.3	NA	1%	
Calcium (D)	173000	J	500	116	172000	J	500	116	NA	1%	
Chromium (D)	2.97	U*	2.97	2.97	3.31	U*	3.31	3.31	NA	NA	
Cobalt (D)	3.32		0.5	0.075	3.7		0.5	0.075	NA	11%	
Copper (D)	1.16	J	2	0.627	1.41	J	2	0.627	NA	NA	
Lead (D)	0.342	J	1	0.128	0.439	J	1	0.128	NA	NA	
Lithium (D)	537		5	3.14	542		5	3.14	NA	1%	
Molybdenum (D)	1.67	J	5	0.61	1.74	J	5	0.61	NA	NA	
Nickel (D)	16.2		1	0.312	17		1	0.312	NA	5%	
Sodium (D)	8100		500	251	8140		500	251	NA	0%	
Vanadium (D)	5.12	U*	5.12	5.12	5.6	U*	5.6	5.6	NA	NA	
Zinc (D)	6.48	J	5	3.22	7.55	J	5	3.22	1.07	NA	
TDS	935		10	10	935		10	10	NA	0%	
TSS	382		1	1	310		1	1	NA	21%	J

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF TOTAL vs. DISSOLVED CONCENTRATIONS

Reporting Level: (•) MDL ( ) QL
Units: ug/L
1

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 10
If Either Result < 5 × Its QL, Dif. ≤: 1 × Highest QL

Total Sample ID: BRF-SEW-04-20190515 | Dissolved Sample ID: BRF-SEW-04-20190515

Analyte	Total Concentration	Qual	QL	MDL	Dissolved Concentration	Qual	QL	MDL	Difference	RPD	Flag
Barium	77.3		10	1.49	116		10	1.49	NA	40.0%	J
Cobalt	1.13		0.5	0.075	3.32		0.5	0.075	2.19	NA	J
Copper	0.952	J	2	0.627	1.16	J	2	0.627	0.208	NA	
Lead	0.253	J	1	0.128	0.342	1	1	0.128	0.089	NA	
Lithium	528		5	3.14	537		5	3.14	NA	2.0%	
Molybdenum	1.41	J	5	0.61	1.67	J	5	0.61	0.26	NA	
Sodium	7870		500	251	8100		500	251	NA	3.0%	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified
U* The result was blank qualified. The RL will be used for comparison purposes.

Comments:

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF TOTAL vs. DISSOLVED CONCENTRATIONS

Reporting Level: ⦿ MDL ○ QL
Units: ug/L
1

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 10
If Either Result < 5 × Its QL, Dif. ≤: 1 × Highest QL

Total Sample ID: BRF-SEW-DUP01-20190515 | Dissolved Sample ID: BRF-SEW-DUP01-20190515

Analyte	Total Concentration	Qual	QL	MDL	Dissolved Concentration	Qual	QL	MDL	Difference	RPD	Flag
Arsenic	1.05		1	0.323	***1.65***	***U****	***1***	***0.323***	NA	NA	
Barium	76.1		10	1.49	122		10	1.49	NA	46%	J
Boron	997		80	30.3	1010		80	30.3	NA	1.0%	
Chromium	3.04		2	1.53	***3.31***	***U****	***2***	***1.53***	NA	NA	
Cobalt	0.948		0.5	0.075	3.7		0.5	0.075	2.752	NA	J
Copper	0.843	J	2	0.627	1.41	J	2	0.627	0.567	NA	
Lead	0.146	J	1	0.128	0.439	J	1	0.128	0.293	NA	
Lithium	525		5	3.14	542		5	3.14	NA	3.0%	
Molybdenum	1.29	J	5	0.61	1.74	J	5	0.61	0.45	NA	
Sodium	7900		500	251	8140		500	251	NA	3.0%	
Vanadium	5.14		1	0.899	***5.6***	***U****	***1***	***0.899***	NA	NA	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated The RL will be used for comparison purposes
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated The RL is approximate
R: The analyte was analyzed for and detected, but sample results are unreliable The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified The RL will be used for comparison purposes.

Comments:

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Pittsburgh Job No.: 180-90258-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 180-279753/53 05/24/2019 12:56		CCB 180-279753/67 05/24/2019 13:43		CCB 180-279753/80 05/24/2019 14:27		CCB 180-279753/92 05/24/2019 15:07	
		Found	C	Found	C	Found	C	Found	C
Antimony	2.00	ND		ND		ND		ND	
Arsenic	1.00	ND		ND		ND		ND	
Barium	10.0	ND		ND		ND		ND	
Beryllium	1.00	ND		ND		ND		ND	
Boron	80.0	ND		34.32	J	34.80	J	ND	
Cadmium	1.00	ND		ND		ND		ND	
Calcium	500	ND		ND		ND		ND	
Chromium	2.00	ND		ND		ND		ND	
Cobalt	0.500	ND		ND		ND		ND	
Copper	2.00	ND		ND		ND		ND	
Lead	1.00	ND		ND		ND		ND	
Lithium	5.00	ND		ND		ND		ND	
Molybdenum	5.00	ND		ND		ND		ND	
Nickel	1.00	ND		ND		ND		ND	
Selenium	5.00	ND		ND		ND		ND	
Silver	1.00	ND		ND		ND		ND	
Sodium	500	ND		ND		ND		ND	
Thallium	1.00	ND		ND		ND		ND	
Vanadium	1.00	ND		ND		ND		ND	
Zinc	5.00	ND		ND		ND		ND	

does not bracket, no eval

Clear

34.80 ug/L x 5 = 174.0

V*: 3 (total + diss)
4 (total + diss)

Italicized analytes were not requested for this sequence.

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS - TOTAL RECOVERABLE

* associated total results

Client ID: BRF-SEW-03-20190515 MS

Lab ID: 180-90258-4 MS

Lab Name: Eurofins TestAmerica, Pittsburgh

Job No.: 180-90258-1

SDG No.:

Matrix: Water

Concentration Units: ug/L

% Solids:

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Antimony	264.5		1.08	J	250	105	75-125		EPA 6020A
Arsenic	975.4		24.3		1000	95	75-125		EPA 6020A
Barium	1286		327		1000	96	75-125		EPA 6020A
Beryllium	536.1		3.31		500	107	75-125		EPA 6020A
Boron	1268		105		1250	93	75-125		EPA 6020A
Cadmium	547.6		0.527	J	500	109	75-125		EPA 6020A
Calcium	68980		87500		25000	-74	75-125	F1	EPA 6020A
Chromium	630.0		102		500	106	75-125		EPA 6020A
Cobalt	600.9		39.2		500	112	75-125		EPA 6020A
Copper	616.8		61.4		500	111	75-125		EPA 6020A
Lead	555.6		52.9		500	101	75-125		EPA 6020A
Lithium	522.3		60.8		500	92	75-125		EPA 6020A
Molybdenum	527.1		1.35	J	500	105	75-125		EPA 6020A
Nickel	637.6		80.8		500	111	75-125		EPA 6020A
Selenium	1073		ND		1000	107	75-125		EPA 6020A
Silver	262.0		0.139	J	250	105	75-125		EPA 6020A
Sodium	26510		1130		25000	102	75-125		EPA 6020A
Thallium	1001		0.658	J	1000	100	75-125		EPA 6020A
Vanadium	623.2		106		500	103	75-125		EPA 6020A
Zinc	334.6		182		250	61	75-125	F1	EPA 6020A

SSR = Spiked Sample Result

J,M-: 1-4 (total)

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

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS - TOTAL RECOVERABLE

4 total

Client ID: BRF-SEW-03-20190515 MSD | Lab ID: 180-90258-4 MSD

Lab Name: Eurofins TestAmerica, Pittsburgh | Job No.: 180-90258-1

SDG No.:

Matrix: Water | Concentration Units: ug/L

% Solids:

Analyte	(SDR) C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Antimony	272.2	250	108	75-125	3	20		EPA 6020A
Arsenic	1007	1000	98	75-125	3	20		EPA 6020A
Barium	1318	1000	99	75-125	2	20		EPA 6020A
Beryllium	548.4	500	109	75-125	2	20		EPA 6020A
Boron	1360	1250	100	75-125	7	20		EPA 6020A
Cadmium	561.0	500	112	75-125	2	20		EPA 6020A
Calcium	78340	25000	-37	75-125	13	20	F1	EPA 6020A
Chromium	646.0	500	109	75-125	3	20		EPA 6020A
Cobalt	607.6	500	114	75-125	1	20		EPA 6020A
Copper	624.4	500	113	75-125	1	20		EPA 6020A
Lead	583.7	500	106	75-125	5	20		EPA 6020A
Lithium	548.4	500	98	75-125	5	20		EPA 6020A
Molybdenum	538.1	500	107	75-125	2	20		EPA 6020A
Nickel	643.9	500	113	75-125	1	20		EPA 6020A
Selenium	1089	1000	109	75-125	2	20		EPA 6020A
Silver	267.8	250	107	75-125	2	20		EPA 6020A
Sodium	27200	25000	104	75-125	3	20		EPA 6020A
Thallium	1057	1000	106	75-125	5	20		EPA 6020A
Vanadium	635.8	500	106	75-125	2	20		EPA 6020A
Zinc	352.7	250	68	75-125	5	20	F1	EPA 6020A

SDR = Sample Duplicate Result

J, M-:1-4 (total)

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

FORM VD - IN

SECTION 4

CASE NARRATIVE AND CHAIN-OF-CUSTODY RECORD

Job ID: 180-90258-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-90258-1

Receipt
The samples were received on 5/17/2019 9:00 AM; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 5 coolers at receipt time were 2.4° C, 2.6° C, 2.8° C, 3.0° C and 3.0° C.

Receipt Exceptions
Only nitric preserved bottles were received for sample BRF-SEW-01-20190515 (180-90258-3). The sample was only logged for metals analysis.
Only nitric preserved bottles and small unpreserved bottles were received for sample BRF-SEW-03-20190515 (180-90258-4). The sample was only logged for metals and anion analysis.
All bottle types were received for BRF-SEW-TUB01-20190515 (180-90258-5). Since the sample is a tubing blank, only metals analysis was logged.

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

Metals
Method 6020A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 180-279574 and analytical batch 180-279753 were outside control limits for magnesium, manganese, zinc, and calcium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 6020A: The post digestion spike % recovery for selenium associated with batch 180-279753 was outside of control limits. BRF-SEW-03-20190515 (180-90258-4) was impacted.

Samples BRF-SEW-04-20190515 (180-90258-1) and BRF-SEW-DUP01-20190515 (180-90258-2) total and dissolved bottles were raw scanned to double check the metals results. The results were confirmed.

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_SEW_20190515_1A

Job ID: 180-90258-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-90258-1	BRF-SEW-04-20190515	Water	05/15/19 11:18	05/17/19 09:00	
180-90258-2	BRF-SEW-DUP01-20190515	Water	05/15/19 00:00	05/17/19 09:00	
180-90258-3	BRF-SEW-01-20190515	Water	05/15/19 14:23	05/17/19 09:00	
180-90258-4	BRF-SEW-03-20190515	Water	05/15/19 16:22	05/17/19 09:00	
180-90258-5	BRF-SEW-TUB01-20190515	Water	05/15/19 17:42	05/17/19 09:00	
180-90258-6	BRF-SEW-FLB01-20190515	Water	05/15/19 17:59	05/17/19 09:00	

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	5
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages			
Task Desc:	BRF_SEW		

Rev 1 03 5/26/19

06/06/2019

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S Bolden, A.Wilson & D. Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	801 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	[illegible]	Send EDD/Hard Copy to:	[illegible]
Lab Email:	[illegible]				

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered	Preserve	AW 5/6/2019
1	BRF-SeW-04-20190515	~~SeW04~~	NA	NA	SEW	G	N	5/15/2019	1118	5			X			N		
2	~~BRF-SeW-DUP01-20190515~~	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5			X			Y		
3	BRF-SeW-01-20190515	~~SeW01~~	NA	NA	SEW	C	N	5/15/2019	1423	2			X			N		
4	~~BRF-SeW-03-20190515~~	~~SeW03~~	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X					
5	BRF-SeW-TUB01-20190515	~~SeW03~~	NA	NA	AQ	G	TB	5/15/2019	1742	4				X				
6	BRF-SeW-FLB01-20190515	~~SeW03~~	NA	NA	AQ	G	FLB	5/15/2019	1759	1					X			

A014
A011
A013
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03 5/26/19

AW 5/6/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suame Bolden / Stantec	5/16/2019	15:00	[illegible]		
			5/17/19	0900	

Sample Receipt Conditions: Temperature in °C; Sample on Ice? Yes/No; Sample Intact? Yes/No; Trip Blank? Yes/No

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suame Bolden / [illegible]
	Anna Wilson / [illegible]
	Dominic Norman / [illegible]

0982 -3.0 TUB 7363 - 2.6
7341 -3.0 03 5/26/19 FB 03 5/26/19 7374 -2.4
7352 -2.8

180-90258 Chain of Custody

Form TVA 30087A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	2	of	5
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages			
Task Desc:	BRF_SEW		

Rev 1
BJ 5/26/19

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S Bolden, A.Wilson & D. Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	601 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	[illegible]	Send EDD/Hard Copy to:	[illegible]
Lab Email	[illegible]				

Analysis Turnaround Time
- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____
- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered	Preserve: HNO3
1	~~BRF-SeW-04-20190515~~	~~SeWV04~~	NA	NA	SEW	G	N	5/15/2019	1118	5			X			N	
2	~~BRF-SeW-DUP01-20190515~~	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5			X			Y	
3	BRF-SeW-01-20190515	~~SeWV01~~	NA	NA	SEW	C	N	5/15/2019	1423	2			X			N	
4	~~BRF-SeW-03-20190515~~	~~SeWV03~~	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X				
5	BRF-SeW-TUB01-20190515	~~SeWV03~~	NA	NA	AQ	G	~~TB~~	5/15/2019	1742	4				X			
6	~~BRF-SeW-FLB01-20190515~~	~~SeWV03~~	NA	NA	AQ	G	~~FLB~~	5/15/2019	1759	1					X		

AW 10/2019

AW 10/2019

AW 10/2019

A014
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A013
BJ 5/26/19

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suzane Bolden / Stantec	5/16/2019	16:00			

Sample Receipt Conditions: Temperature in °C; Sample on Ice? (Yes / No); Sample Intact? (Yes / No); Trip Blank? (Yes / No)

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suzane Bolden /
	Anna Wilson /
	Dominic Norman /

TB FB
BJ 5/29/19

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06/06/2019

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	3	of	3
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages	[redacted]		
Task Desc:	BRF_SEW		

RW/ B5/26/19

06/06/2019

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:			Required Sampler Information			
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant		Sampler:	S Belden, A Wilson & D Norman		
Lab Address:	301 Alpha Drive	Project #:	NA		Sampling Company:	Stantec		
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd		Address	601 Grassmere Park Road, Suite 22		
		City	Clinton	State, Zip: TN 37716	City/State	Nashville TN	Phone:	(615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn					
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753		Sampling Team Number:	1		
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	[redacted]		Send EDD/Hard Copy to:	[redacted]		
Lab Email:	[redacted]							

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	Start Depth	End Depth	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB
1	BRF-SeW-04-20190515	~~SeW04~~			NA	NA	SEW	G	N	5/15/2019	1118	5			X		
2	BRF-SeW-DUP01-20190515	NA			NA	NA	SEW	G	FD	5/15/2019	NA	5			X		
3	BRF-SeW-01-20190515	~~SeW01~~			NA	NA	SEW	C	N	5/15/2019	1423	2			X		
4	BRF-SeW-03-20190515	~~SeW03~~			NA	NA	SEW	C	N	5/15/2019	1622	9		X	X		
5	BRF-SeW-TUB01-20190515	~~SeW03~~			NA	NA	AQ	G	~~TB~~	5/15/2019	1742	4				X	
6	BRF-SeW-FLB01-20190515	~~SeW03~~			NA	NA	AQ	G	~~FLB~~	5/15/2019	1759	1					X

AW 5/16/2019

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B5/26/19

TUB FB

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suerna Belden / Stantec	5/15/2019	16:00			

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suerna Belden /
	Anna Wilson /
	Dominic Norman /

Sample Receipt Conditions	Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
Yes / No	Yes / No	Yes / No	Yes / No	
Yes / No	Yes / No	Yes / No	Yes / No	
Yes / No	Yes / No	Yes / No	Yes / No	
Yes / No	Yes / No	Yes / No	Yes / No	

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TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	4	of	5
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages			
Task Desc:	BRF_SEW		

Rev 1 BJ 5/26/19

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S Bolden, A Wilson & D Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15236	Site Address	1265 Edgemoor Rd	Address	601 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	[illegible]	Send EDD/Hard Copy to:	[illegible]
Lab Email:	[illegible]				

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	Start Depth	End Depth	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered: K	Filtered: Y	Filtered: N	Preserve: Field comments	Preserve: Lab comments	Preserve: HNO3
1	BRF-SeW-04-20190515	~~SeW04~~			NA	NA	SEW	G	N	5/15/2019	1118	5			X								
2	~~BRF-SeW-DUP01-20190515~~	NA			NA	NA	SEW	G	FD	5/15/2019	NA	5			X								
3	BRF-SeW-01-20190515	~~SeW01~~			NA	NA	SEW	C	N	5/15/2019	1423	2			X								
4	BRF-SeW-03-20190515	~~SeW03~~			NA	NA	SEW	C	N	5/15/2019	1622	9		X	X								
5	BRF-SeW-TUB01-20190515	~~SeW03~~			NA	NA	AQ	G	~~TB~~	5/15/2019	1742	4				X							
6	BRF-SeW-FLB01-20190515	~~SeW03~~			NA	NA	AQ	G	~~FLB~~	5/15/2019	1759	1					X						

AW 5/16/2019

AW 5/16/2019

AW 5/16/2019

A014
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BJ 5/26/19

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suerne Bolden / Stantec	5/16/2019	15:00			

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suerne Bolden /
	Anna Wilson /
	Dominic Norman /

Sample Receipt Conditions			
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No
Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?

TUB FB
BJ 5/26/19

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Tennessee Valley Authority

COOLER No.:	5	of	5
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages			
Task Desc:	BRF_SEW		

Rev 1 BJ 5/26/19

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S Bolden, A Wilson & D Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	601 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	[illegible]	Send EDD/Hard Copy to:	[illegible]
Lab Email:	[illegible]				

Analysis Turnaround Time
- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____
- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☒ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth (Depth Unit)	Sample Depth: End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered (Y/N)	Preserve (see comments)	Preserve (see comments)	Preserve (HNO3)
1	BRF-SeW-04-20190515	~~SeW04~~	NA	NA	SEW	G	N	5/15/2019	1118	5			X						
2	BRF-SeW-DUP01-20190515	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5			X						
3	BRF-SeW-01-20190515	~~SeW01~~	NA	NA	SEW	C	N	5/15/2019	1423	2			X						
4	~~BRF-SeW-03-20190515~~	~~SeW03~~	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X						
5	~~BRF-SeW-TUB01-20190515~~	~~SeW03~~	NA	NA	AQ	G	~~FB~~ TUB	5/15/2019	1742	4				X					
6	~~BRF-SeW-FLB01-20190515~~	~~SeW03~~	NA	NA	AQ	G	~~FLB~~ FB	5/15/2019	1759	1					X				

A014
A01 1
A013
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A013

AW 5/16/2019

BJ 5/26/19

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suama Bolden / Stantec	5/16/2019	18:00			

Sample Receipt Conditions: Temperature to °C; Sample on Ice? (Yes / No); Sample Intact? (Yes / No); Trip Blank? (Yes / No)

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suama Bolden /
	Anna Wilson /
	Dominic Norman /

TUB FB

BJ 5/26/19

Form TVA 30087A

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 5
COC No:	BRF_SEW_20190515_1A
1 of 1 Pages	
Task Desc:	BRF_SEW

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S.Bolden, A.Wilson & D. Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	601 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	rquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@arcadis.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth	Sample Depth: End Depth	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered: N	Filtered: Y	Filtered: N	Preserve: HNO3
1	BRF-SeW-04-20190515	SeW04	NA	NA	SEW	G	N	5/15/2019	1118	5		·	X						
2	BRF-SeW-DUP01-20190515	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5		·	X						
3	BRF-SeW-01-20190515	SeW01	NA	NA	SEW	C	N	5/15/2019	1423	2		·	X						
4	BRF-SeW-03-20190515	SeW03	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X						
5	BRF-SeW-TUB01-20190515	SeW03	NA	NA	AQ	G	TB	5/15/2019	1742	4		·		X					
6	BRF-SeW-FLB01-20190515	SeW03	NA	NA	AQ	G	FLB	5/15/2019	1759	1		·			X				

AW 5/15/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suanna Bolden / Stantec	5/16/2019	16:00	7N/7B		
			5/17/19	0900	

Sample Receipt Conditions: Temperature in °C; Sample on Ice? Yes / No; Sample Intact? Yes / No; Trip Blank? Yes / No

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suanna Bolden /
	Anna Wilson /
	Dominic Norman /

9582 -3.0

7341 -3.0

7352 -2.8

7363 - 2.6

7374 -2.4

180-90258 Chain of Custody

Form TVA 30087A

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.:	2 of 5
COC No:	BRF_SEW_20190515_1A
1 of 1 Pages	
Task Desc.:	BRF_SEW

Required Ship to Lab:

Lab Name:	TestAmerica Pittsburgh
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238

Lab Manager Contact Information

Lab PM:	Gail Lage
Phone/Fax:	615-301-5741/615-726-3404
Lab Email:	Gail.Lage@testamericainc.com

Required Project Information:

Site ID #:	Bull Run Fossil Plant		
Project #:	NA		
Site Address	1265 Edgemoor Rd		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	rquinn@tva.gov		

Required Sampler Information

Sampler:	S.Bolden, A.Wilson & D. Norman		
Sampling Company:	Stantec		
Address	501 Grassmere Park Road, Suite 22		
City/State	Nashville, TN	Phone:	(615) 886-1144
Sampling Team Number:	1		
Send EDD/Hard Copy to:	tva_deliverables@stantec.com		

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	Start Depth	End Depth	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered	Preserve: see comments	Preserve: see comments	Preserve: HNO3
1	BRF-SeW-04-20190515	SeW04			NA	NA	SEW	G	N	5/15/2019	1118	5		·	X			N			
2	BRF-SeW-DUP01-20190515	NA			NA	NA	SEW	G	FD	5/15/2019	NA	5		·	X			Y			
3	BRF-SeW-01-20190515	SeW01			NA	NA	SEW	C	N	5/15/2019	1423	2		·	X			N			
4	BRF-SeW-03-20190515	SeW03			NA	NA	SEW	C	N	5/15/2019	1622	9		X	X						
5	BRF-SeW-TUB01-20190515	SeW03			NA	NA	AQ	G	TB	5/15/2019	1742	4		·		X					
6	BRF-SeW-FLB01-20190515	SeW03			NA	NA	AQ	G	FLB	5/15/2019	1759	1		·			X				

AW 5/16/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suame Bolden / Stantec	5/16/2019	15:00			

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample intact?	Trip Blank?
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suame Bolden /
	Anna Wilson /
	Dominic Norman /

Form TVA 30087A

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.:	3 of 5
COC No:	BRF_SEW_20190515_1A
1 of 1 Pages	
Task Desc:	BRF_SEW

Required Ship to Lab:

Lab Name:	TestAmerica Pittsburgh
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238

Lab Manager Contact Information

Lab PM:	Gail Lage
Phone/Fax:	615-301-5741/615-726-3404
Lab Email:	Gail.Lage@testamericainc.com

Required Project Information:

Site ID #:	Bull Run Fossil Plant		
Project #:	NA		
Site Address	1265 Edgemoor Rd		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	rquinn@tva.gov		

Required Sampler Information

Sampler:	S.Bolden, A Wilson & D. Norman		
Sampling Company:	Stantec		
Address	601 Grassmere Park Road, Suite 22		
City/State	Nashville, TN	Phone:	(615) 886-1144
Sampling Team Number:	1		
Send EDD/Hard Copy to:	tva_delivery_ab_es@erv.vsid.com		

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth	Sample Depth: End Depth	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB
1	BRF-SeW-04-20190515	SeW04	NA	NA	SEW	G	N	5/15/2019	1118	5		·	X		
2	BRF-SeW-DUP01-20190515	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5		·	X		
3	BRF-SeW-01-20190515	SeW01	NA	NA	SEW	C	N	5/15/2019	1423	2		·	X		
4	BRF-SeW-03-20190515	SeW03	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X		
5	BRF-SeW-TUB01-20190515	SeW03	NA	NA	AQ	G	TB	5/15/2019	1742	4		·		X	
6	BRF-SeW-FLB01-20190515	SeW03	NA	NA	AQ	G	FLB	5/15/2019	1759	1		·			X

Filtered: N, Y, N

Preserve: HNO3

AW 5/16/2019

AW 5/16/2019

AW 5/16/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suama Bolden / Stantec	5/16/2019	15:00			

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No
· Yes · No	· Yes · No	· Yes · No	· Yes · No

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Suama Bolden /
	Anna Wilson /
	Dominic Norman /

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	4	of	5
COC No:	BRF_SEW_20190515_1A		
1 of 1 Pages			
Task Desc:	BRF_SEW		

Chain-of-Custody / Analytical Request Document

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S Bolden, A.Wilson & D. Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	601 Greenmere Park Road, Suite 22
		City	Clinton; State, Zip: TN, 37716	City/State	Nashville, TN; Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	rtquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@stantec.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time
- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____
- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit	Sample Depth: Select Unit	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered	Preserve: see comments	Preserve: see comments	Preserve: HNO3
1	BRF-SeW-04-20190515	SeW04	NA	NA	SEW	G	N	5/15/2019	1118	5		-	X			N			
2	BRF-SeW-DUP01-20190515	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5		-	X			Y			
3	BRF-SeW-01-20190515	SeW01	NA	NA	SEW	C	N	5/15/2019	1423	2		-	X			N			
4	BRF-SeW-03-20190515	SeW03	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X						
5	BRF-SeW-TUB01-20190515	SeW03	NA	NA	AQ	G	TB	5/15/2019	1742	4		-		X					
6	BRF-SeW-FLB01-20190515	SeW03	NA	NA	AQ	G	FLB	5/15/2019	1759	1		-			X				

AW 5/16/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suama Bolden / Stantec	5/16/2019	15:00			

Sample Receipt Conditions: Temperature in °C; Sample on Ice? Yes / No; Sample Intact? Yes / No; Trip Blank? Yes / No

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
Courier	Suama Bolden /
	Anna Wilson /
	Dominic Norman /

Form TVA 30087A

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.:	5 of 5
COC No:	BRF_SEW_20190515_1A
1 of 1 Pages	
Task Desc:	BRF_SEW

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Bull Run Fossil Plant	Sampler:	S.Bolden, A.Wilson & D. Norman
Lab Address:	301 Alpha Drive	Project #:	NA	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Rd	Address	601 Grassmere Park Road, Suite 22
		City	Clinton State, Zip: TN, 37716	City/State	Nashville, TN Phone: (615) 885-1144
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3753	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	rquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@avista.com
Lab Email:	Gail.Lage@testamericainc.com				

Analysis Turnaround Time

- CALENDAR DAYS
- WORKING DAYS

TAT if different from Below _____

- ☐ 24 Hours
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☑ 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Start Depth (Depth Unit)	Sample Depth: End Depth (Select Unit)	MATRIX CODE	G= GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	Analysis: SEEP_WATER	Analysis: SEEP_WATER_BLANKS	Analysis: SEEP_WATER_FLB	Filtered: N	Filtered: Y	Filtered: N	Preserve: use comments	Preserve: use comments	Preserve: 1 HCK
1	BRF-SeW-04-20190515	SeW04	NA	NA	SEW	G	N	5/15/2019	1118	5			X								
2	BRF-SeW-DUP01-20190515	NA	NA	NA	SEW	G	FD	5/15/2019	NA	5			X								
3	BRF-SeW-01-20190515	SeW01	NA	NA	SEW	C	N	5/15/2019	1423	2			X								
4	BRF-SeW-03-20190515	SeW03	NA	NA	SEW	C	N	5/15/2019	1622	9		X	X								
5	BRF-SeW-TUB01-20190515	SeW03	NA	NA	AQ	G	TB	5/15/2019	1742	4				X							
6	BRF-SeW-FLB01-20190515	SeW03	NA	NA	AQ	G	FLB	5/15/2019	1759	1					X						

AW 5/16/2019

Additional Comments/Special Instructions:

Additional volume collected should be used for MS/MSDs.

SEEP_WATER: Anions, TSS, and TDS unpreserved; Metals preserved w/ HNO3 to pH <2

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Suanna Bolden / Stantec	5/16/2019	16:00			

Sample Receipt Conditions

Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No
Yes / No	Yes / No	Yes / No	Yes / No

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Suanna Bolden /
	Anna Wilson /
	Dominic Norman /

Form TVA 30087A

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-90258-1

Login Number: 90258
List Number: 1
Creator: DiNardo, Nicholas J

List Source: Eurofins TestAmerica, Pittsburgh

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	