eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-96668-1
Client Project/Site: BRF_BS_20191002_1B

For:
Environmental Standards Inc.
1140 Valley Forge Road
PO BOX 810
Valley Forge, Pennsylvania 19482-0810

Attn: Amanda Cover

Authorized for release by:
11/14/2019 5:11:35 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

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Job ID: 180-96668-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-96668-1

Receipt
The samples were received on 10/3/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.3º C, 1.8º C and 14.9º C.

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria due to a missing cooler. The temperature was 14.9 and there was evidence of melted ice in the cooler. BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09 (180-96668-6), BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09 (180-96668-7), BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09 (180-96668-8), BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09 (180-96668-9) and BRF-BS-DUP01-20191002 ~ NA (180-96668-12). The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09 (180-96668-9) was not received within a sealed bag, but was open to the melted ice. Water intrusion may have occured, but all received containers have an equal ammount of moisture in the containers. The plastic containers match the glass containers in moisture.

RAD
Method 901.1: Gamma Prep Batch 160-445701
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Ac-228	Ra-228
Bi-214	Ra-226

BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09 (180-96668-6), BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09 (180-96668-7), BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09 (180-96668-8), BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09 (180-96668-9), BRF-BS-DUP01-20191002 ~ NA (180-96668-12), (LCS 160-445701/2-A), (MB 160-445701/1-A), (180-96772-A-1-E) and (180-96772-A-1-F DU)

Method 901.1: Gamma Prep Batch 160-445718
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Ac-228	Ra-228
Bi-214	Ra-226

BRF-BS-FB03-20191002 ~ BRF BG09 (180-96668-11), (LCS 160-445718/2-A), (MB 160-445718/1-A), (180-96864-A-1-A) and (180-96864-A-1-B DU)

Method 901.1: Gamma Prep Batch 160-445888
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Job ID: 180-96668-1 (Continued)

Laboratory: Eurofins TestAmerica, Pittsburgh (Continued)

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Ac-228	Ra-228
Bi-214	Ra-226

BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09 (180-96668-1), BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09 (180-96668-2), BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09 (180-96668-3), BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09 (180-96668-4), BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09 (180-96668-5), BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09 (180-96668-10), (LCS 160-445888/2-A), (MB 160-445888/1-A), (180-96864-A-4-C) and (180-96864-A-4-D DU)

Method Fill_Geo-21: Gamma Prep batch 160-445701: Samples BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09 (180-96668-6), BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09 (180-96668-7), BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09 (180-96668-8), BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09 (180-96668-9) and BRF-BS-DUP01-20191002 ~ NA (180-96668-12) are a powdered soil which exhibits low density.

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

Definitions/Glossary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Qualifiers

Rad

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

Glossary

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

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Laboratory: Eurofins TestAmerica, Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	19-033-0	06-27-20
California	State	2891	04-30-20
Connecticut	State	PH-0688	09-30-20
Florida	NELAP	E871008	06-30-20
Georgia	State	PA 02-00416	04-30-20
Illinois	NELAP	004375	06-30-20
Kansas	NELAP	E-10350	03-31-20
Kentucky (UST)	State	162013	04-30-20
Kentucky (WW)	State	KY98043	12-31-19
Louisiana	NELAP	04041	06-30-20
Minnesota	NELAP	042-999-482	12-31-19
Nevada	State	PA00164	07-31-20
New Hampshire	NELAP	2030	04-04-20
New Jersey	NELAP	PA005	06-30-20
New York	NELAP	11182	04-01-20
North Carolina (WW/SW)	State	434	12-31-19
North Dakota	State	R-227	04-30-20
Oregon	NELAP	PA-2151	02-06-20
Pennsylvania	NELAP	02-00416	04-30-20
Rhode Island	State	LAO00362	12-30-19
South Carolina	State	89014	04-30-20
Texas	NELAP	T104704528	03-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P-Soil-01	06-26-22
USDA	US Federal Programs	P330-16-00211	06-26-22
Utah	NELAP	PA001462019-8	05-31-20
Virginia	NELAP	10043	09-15-20
West Virginia DEP	State	142	01-31-20
Wisconsin	State	998027800	08-31-20

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-19
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-19
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-19
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-19
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	12-01-19

Sample Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-96668-1	BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09	Solid	10/02/19 11:45	10/03/19 09:00	
180-96668-2	BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09	Solid	10/02/19 12:05	10/03/19 09:00	
180-96668-3	BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09	Solid	10/02/19 13:00	10/03/19 09:00	
180-96668-4	BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09	Solid	10/02/19 13:25	10/03/19 09:00	
180-96668-5	BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09	Solid	10/02/19 14:10	10/03/19 09:00	
180-96668-6	BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09	Solid	10/02/19 14:30	10/03/19 09:00	
180-96668-7	BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09	Solid	10/02/19 15:00	10/03/19 09:00	
180-96668-8	BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09	Solid	10/02/19 15:20	10/03/19 09:00	
180-96668-9	BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09	Solid	10/02/19 15:45	10/03/19 09:00	
180-96668-10	BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09	Solid	10/02/19 16:05	10/03/19 09:00	
180-96668-11	BRF-BS-FB03-20191002 ~ BRF BG09	Water	10/02/19 16:15	10/03/19 09:00	
180-96668-12	BRF-BS-DUP01-20191002 ~ NA	Solid	10/02/19 00:00	10/03/19 09:00	

Method Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Method	Method Description	Protocol	Laboratory
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
Fill_Geo-21	Fill Geometry, 21-Day In-Growth	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency
None = None

Laboratory References:

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

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-1

Date Collected: 10/02/19 11:45 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			214.5 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448638	11/02/19 22:52	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-2

Date Collected: 10/02/19 12:05 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			216.6 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448708	11/02/19 22:51	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-3

Date Collected: 10/02/19 13:00 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			185.6 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448639	11/02/19 23:24	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-4

Date Collected: 10/02/19 13:25 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			161.9 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448766	11/05/19 08:00	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-5

Date Collected: 10/02/19 14:10 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			177.4 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448708	11/02/19 23:25	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-6

Date Collected: 10/02/19 14:30 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445569	10/09/19 12:58	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			182.2 g	1.0 g	445701	10/10/19 10:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			448515	11/01/19 09:11	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-7

Date Collected: 10/02/19 15:00 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445569	10/09/19 12:58	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			164.2 g	1.0 g	445701	10/10/19 10:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			448686	11/01/19 07:33	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-8

Date Collected: 10/02/19 15:20 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445569	10/09/19 12:58	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			226.4 g	1.0 g	445701	10/10/19 10:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			448515	11/01/19 08:33	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-9

Date Collected: 10/02/19 15:45 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445569	10/09/19 12:58	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			211.8 g	1.0 g	445701	10/10/19 10:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			448686	11/01/19 08:32	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-10

Date Collected: 10/02/19 16:05 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445723	10/10/19 13:25	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			221.2 g	1.0 g	445888	10/11/19 11:27	KRS	TAL SL
Total/NA	Analysis	901.1		1			448635	11/03/19 14:43	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-FB03-20191002 ~ BRF BG09 — Lab Sample ID: 180-96668-11

Date Collected: 10/02/19 16:15 — **Matrix: Water**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Fill_Geo-21			1000 mL	1.0 g	445718	10/10/19 12:54	KRS	TAL SL
Total/NA	Analysis	901.1		1			448641	11/04/19 03:57	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Client Sample ID: BRF-BS-DUP01-20191002 ~ NA — Lab Sample ID: 180-96668-12

Date Collected: 10/02/19 00:00 — **Matrix: Solid**
Date Received: 10/03/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	445569	10/09/19 12:58	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			184 g	1.0 g	445701	10/10/19 10:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			448686	11/01/19 09:10	KLS	TAL SL
	Instrument ID:	GAMMAVISION								

Laboratory References:

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

Analyst References:

Lab: TAL SL
- Batch Type: Leach
  - DRO = David Oetter
- Batch Type: Prep
  - KRS = Kurt Slama
- Batch Type: Analysis
  - KLS = Kody Saulters

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-1

Date Collected: 10/02/19 11:45
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	2.76		0.428	0.474			pCi/g	10/11/19 11:27	11/02/19 22:52	1
Radium-226	1.13		0.272	0.296	1.00	0.212	pCi/g	10/11/19 11:27	11/02/19 22:52	1
Radium-228	1.63		0.331	0.370		0.272	pCi/g	10/11/19 11:27	11/02/19 22:52	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-2

Date Collected: 10/02/19 12:05
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	2.79		0.540	0.578			pCi/g	10/11/19 11:27	11/02/19 22:51	1
Radium-226	1.20		0.303	0.328	1.00	0.206	pCi/g	10/11/19 11:27	11/02/19 22:51	1
Radium-228	1.59		0.447	0.476		0.232	pCi/g	10/11/19 11:27	11/02/19 22:51	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-3

Date Collected: 10/02/19 13:00
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	1.79		0.548	0.563			pCi/g	10/11/19 11:27	11/02/19 23:24	1
Radium-226	0.909		0.200	0.221	1.00	0.154	pCi/g	10/11/19 11:27	11/02/19 23:24	1
Radium-228	0.882		0.510	0.518		0.522	pCi/g	10/11/19 11:27	11/02/19 23:24	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-4

Date Collected: 10/02/19 13:25
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	3.22		0.656	0.697			pCi/g	10/11/19 11:27	11/05/19 08:00	1
Radium-226	1.53		0.437	0.465	1.00	0.305	pCi/g	10/11/19 11:27	11/05/19 08:00	1
Radium-228	1.69		0.489	0.519		0.310	pCi/g	10/11/19 11:27	11/05/19 08:00	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-5

Date Collected: 10/02/19 14:10
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	2.69		0.520	0.556			pCi/g	10/11/19 11:27	11/02/19 23:25	1
Radium-226	1.10		0.291	0.313	1.00	0.192	pCi/g	10/11/19 11:27	11/02/19 23:25	1
Radium-228	1.59		0.431	0.460		0.497	pCi/g	10/11/19 11:27	11/02/19 23:25	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-6

Date Collected: 10/02/19 14:30
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	3.12		0.499	0.549			pCi/g	10/10/19 10:30	11/01/19 09:11	1
Radium-226	1.36		0.344	0.371	1.00	0.282	pCi/g	10/10/19 10:30	11/01/19 09:11	1
Radium-228	1.76		0.362	0.404		0.331	pCi/g	10/10/19 10:30	11/01/19 09:11	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-7

Date Collected: 10/02/19 15:00
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	2.52		0.557	0.587			pCi/g	10/10/19 10:30	11/01/19 07:33	1
Radium-226	1.14		0.330	0.350	1.00	0.263	pCi/g	10/10/19 10:30	11/01/19 07:33	1
Radium-228	1.38		0.449	0.471		0.708	pCi/g	10/10/19 10:30	11/01/19 07:33	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-8

Date Collected: 10/02/19 15:20
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	1.43		0.382	0.396			pCi/g	10/10/19 10:30	11/01/19 08:33	1
Radium-226	0.670		0.200	0.212	1.00	0.172	pCi/g	10/10/19 10:30	11/01/19 08:33	1
Radium-228	0.762		0.326	0.335		0.468	pCi/g	10/10/19 10:30	11/01/19 08:33	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-9

Date Collected: 10/02/19 15:45
Date Received: 10/03/19 09:00

Matrix: Solid

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	1.47		0.647	0.657			pCi/g	10/10/19 10:30	11/01/19 08:32	1
Radium-226	0.540		0.192	0.200	1.00	0.161	pCi/g	10/10/19 10:30	11/01/19 08:32	1
Radium-228	0.930		0.618	0.626		0.651	pCi/g	10/10/19 10:30	11/01/19 08:32	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-10

Date Collected: 10/02/19 16:05

Matrix: Solid

Date Received: 10/03/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	1.91		0.306	0.338			pCi/g	10/11/19 11:27	11/03/19 14:43	1
Radium-226	0.721		0.205	0.218	1.00	0.187	pCi/g	10/11/19 11:27	11/03/19 14:43	1
Radium-228	1.19		0.227	0.258		0.128	pCi/g	10/11/19 11:27	11/03/19 14:43	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-FB03-20191002 ~ BRF BG09

Lab Sample ID: 180-96668-11

Date Collected: 10/02/19 16:15

Matrix: Water

Date Received: 10/03/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	**27.7**		18.3	18.4			pCi/L	10/10/19 12:54	11/04/19 03:57	1
Radium-226	15.8	U	14.4	14.5	50.0	18.3	pCi/L	10/10/19 12:54	11/04/19 03:57	1
Radium-228	**11.9**		11.3	11.4	50.0	11.7	pCi/L	10/10/19 12:54	11/04/19 03:57	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Client Sample ID: BRF-BS-DUP01-20191002 ~ NA

Lab Sample ID: 180-96668-12

Date Collected: 10/02/19 00:00
Matrix: Solid
Date Received: 10/03/19 09:00

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	3.23		0.643	0.691			pCi/g	10/10/19 10:30	11/01/19 09:10	1
Radium-226	0.937		0.267	0.284	1.00	0.186	pCi/g	10/10/19 10:30	11/01/19 09:10	1
Radium-228	2.29		0.585	0.630		0.273	pCi/g	10/10/19 10:30	11/01/19 09:10	1

QC Sample Results

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-445701/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 448515 — **Prep Batch: 445701**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	0.2606		0.218	0.218			pCi/g	10/10/19 10:30	11/01/19 07:34	1
Radium-226	0.1203	U	0.0909	0.0917	1.00	0.248	pCi/g	10/10/19 10:30	11/01/19 07:34	1
Radium-228	0.1403	U	0.198	0.198		0.230	pCi/g	10/10/19 10:30	11/01/19 07:34	1

Lab Sample ID: LCS 160-445701/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 448446 — **Prep Batch: 445701**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	96.6	99.19		11.7		1.26	pCi/g	103	87 - 116
Cesium-137	27.4	30.16		3.17		0.249	pCi/g	110	87 - 120
Cobalt-60	11.0	11.19		1.25		0.216	pCi/g	102	87 - 115

Lab Sample ID: 180-96772-A-1-F DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 448408 — **Prep Batch: 445701**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium 226 and 228 (positive only)	1.77		2.519		0.546			pCi/g	0.62	
Radium-226	1.00		1.405		0.376	1.00	0.263	pCi/g	0.59	1
Radium-228	0.765		1.114		0.396		0.235	pCi/g	0.35	1

Lab Sample ID: MB 160-445718/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 448663 — **Prep Batch: 445718**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	12.69	U	29.2	29.3			pCi/L	10/10/19 12:54	11/01/19 19:46	1
Radium-226	-21.74	U	17.4	17.5	50.0	40.0	pCi/L	10/10/19 12:54	11/01/19 19:46	1
Radium-228	12.69	U	23.5	23.5	50.0	28.7	pCi/L	10/10/19 12:54	11/01/19 19:46	1

Lab Sample ID: LCS 160-445718/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 448666 — **Prep Batch: 445718**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	128600		14900		297	pCi/L	95	90 - 111
Cesium-137	44200	43960		4400		79.5	pCi/L	100	90 - 111
Cobalt-60	27900	27150		2680		50.6	pCi/L	97	89 - 110

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

Lab Sample ID: 180-96864-A-1-B DU
Matrix: Water
Analysis Batch: 448665

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 445718

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium 226 and 228 (positive only)	0.000	U		28.33		23.7			pCi/L			0.50	
Radium-226	-18.5	U		17.74		14.0	50.0	17.5	pCi/L			1.03	1
Radium-228	-6.85	U		10.59	U	19.1	50.0	26.0	pCi/L			0.39	1

Lab Sample ID: MB 160-445888/1-A
Matrix: Solid
Analysis Batch: 448638

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 445888

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228 (positive only)	0.06539	U	0.160	0.161			pCi/g	10/11/19 11:27	11/02/19 22:13	1
Radium-226	-0.1594	U	0.141	0.142	1.00	0.429	pCi/g	10/11/19 11:27	11/02/19 22:13	1
Radium-228	0.06539	U	0.0765	0.0768		0.306	pCi/g	10/11/19 11:27	11/02/19 22:13	1

Lab Sample ID: LCS 160-445888/2-A
Matrix: Solid
Analysis Batch: 448639

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 445888

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Americium-241			96.6	93.54		9.81		1.01	pCi/g	97	87 - 116		
Cesium-137			27.4	26.43		2.81		0.184	pCi/g	96	87 - 120		
Cobalt-60			11.0	10.42		1.09		0.0659	pCi/g	95	87 - 115		

Lab Sample ID: 180-96864-A-4-D DU
Matrix: Solid
Analysis Batch: 448634

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 445888

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium 226 and 228 (positive only)	7.08			8.455		1.02			pCi/g			0.76	
Radium-226	3.75			4.794		0.768	1.00	0.382	pCi/g			0.80	1
Radium-228	3.33			3.661		0.668		0.324	pCi/g			0.26	1

QC Association Summary

Client: Environmental Standards Inc.
Project/Site: BRF_BS_20191002_1B

Job ID: 180-96668-1

Rad

Leach Batch: 445444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96772-A-1-F DU	Duplicate	Total/NA	Solid	Dry and Grind	

Leach Batch: 445569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96668-6	BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-7	BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-8	BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-9	BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-12	BRF-BS-DUP01-20191002 ~ NA	Total/NA	Solid	Dry and Grind	

Prep Batch: 445701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96668-6	BRF-BS-BG09-26.5/28.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445569
180-96668-7	BRF-BS-BG09-31.5/33.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445569
180-96668-8	BRF-BS-BG09-36.5/38.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445569
180-96668-9	BRF-BS-BG09-40.0/42.0-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445569
180-96668-12	BRF-BS-DUP01-20191002 ~ NA	Total/NA	Solid	Fill_Geo-21	445569
MB 160-445701/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-445701/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
180-96772-A-1-F DU	Duplicate	Total/NA	Solid	Fill_Geo-21	445444

Prep Batch: 445718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96668-11	BRF-BS-FB03-20191002 ~ BRF BG09	Total/NA	Water	Fill_Geo-21	
MB 160-445718/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-445718/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
180-96864-A-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-21	

Leach Batch: 445723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96668-1	BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-2	BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-3	BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-4	BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-5	BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96668-10	BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09	Total/NA	Solid	Dry and Grind	
180-96864-A-4-D DU	Duplicate	Total/NA	Solid	Dry and Grind	

Prep Batch: 445888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-96668-1	BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
180-96668-2	BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
180-96668-3	BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
180-96668-4	BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
180-96668-5	BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
180-96668-10	BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09	Total/NA	Solid	Fill_Geo-21	445723
MB 160-445888/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-445888/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
180-96864-A-4-D DU	Duplicate	Total/NA	Solid	Fill_Geo-21	445723

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 3
COC No:	BRF_BS_20191002_1B
	1 of 1 Pages
Task Desc:	BRF_BS

Rev 1 BB 10/22/19

11/14/2019

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 #:	175568274		
Site Address	1265 Edgemoor Road		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	jrquinn@tva.gov		

Required Sampler Information

Sampler:	Kevin Nguyen		
Sampling Company:	Stantec		
Address	601 Grassmere Park Suite 22		
City/State	Nashville, TN	Phone:	615-885-1144
Sampling Team Number:	3		
Send EDD/Hard Copy to:	tva_deliverables@envsid.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: BACKGROUNDSOIL_RAD	Analysis: BACKGROUNDSOIL_BLANK6_RAD
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐	X	
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐	X	
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐	X	
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐	X	
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐	X	
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐	X	
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐	X	
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐	X	
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐	X	
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐	X	
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ FD KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐		X
12												☐		
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	~~N~~ FD	KN 10/2/19 10/2/2019	NA	2	NA	☐	X	

Filtered: N N KN 10/2/19

Preserve: None HNO3 KN 10/2/19

KN 10/2/19

180-96668 Chain of Custody

KN 10/2

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700	[illegible]	10/7/19	900
BB 10/22/19					
KN 10/2/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen
KN 10/2/19	

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

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	2	of	3
COC No:	BRF_BS_20191002_1B		
1 of 1 Pages			
Task Desc:	BRF_BS		

Rev' BJ 10/22/19

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:	Kevin Nguyen
Lab Address:	301 Alpha Drive	Project #:	175568274	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Road	Address	601 Grassmere Park 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:	3
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envstd.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

180-96668 Chain of Custody

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: BACKGROUNDSOIL_RAD	Analysis: BACKGROUNDSOIL_BLANKS_RAD
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐	X	
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐	X	
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐	X	
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐	X	
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐	X	
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐	X	
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐	X	
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐	X	
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐	X	
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐	X	
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐		X
12								KN 10/2/19				☐		
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	~~N~~ FD	10/2/2019	NA	2	NA	☐	X	

KN 10/2/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700		10/3/19	900
BJ 10/22/19					
KN 10/2/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen
KN 10/2/19	

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

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	3	of	3
COC No:	BRF_BS_20191002_1B		
1 of 1 Pages			
Task Desc:	BRF_BS		

Rev 1 BS 10/22/19

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:	Kevin Nguyen
Lab Address:	301 Alpha Drive	Project #:	175568274	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Road	Address	601 Grassmere Park 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:	3
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envsld.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 / 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: BACKGROUNDSOIL_RAD	BACKGROUNDSOIL_BLANKS_RAD	Filtered: N	N	Preserve: None	HNO3
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐	X					
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐	X					
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐	X					
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐	X					
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐	X					
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐	X					
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐	X					
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐	X					
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐	X					
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐	X					
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐		X				
12								KN 10/2/19				☐						
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	~~N~~ FD	10/2/2019	NA	2	NA	☐	X					

KN 10/2/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700	[signature] TASSIM	10/3/19	0900
BS 10/22/19					
KN 10/2/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen
KN 10/2/19	

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

Form TVA 30067A

11/14/2019

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 3
COC No:	BRF_BS_20191002_1B
1 of 1 Pages	
Task Desc:	BRF_BS

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 #:	175568274		
Site Address	1265 Edgemoor Road		
City	Clinton	State, Zip:	TN, 37716
Site PM Name:	Roy Quinn		
Phone/Fax:	423-751-3753		
Site PM Email:	jrquinn@tva.gov		

Required Sampler Information

Sampler:	Kevin Nguyen		
Sampling Company:	Stantec		
Address	601 Grassmere Park Suite 22		
City/State	Nashville, TN	Phone:	615-885-1144
Sampling Team Number:	3		
Send EDD/Hard Copy to:	tva_deliverables@envstd.com		

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

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

180-96668 Chain of Custody

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth: Depth Unit / 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: BACKGROUNDSOIL_RAD	BACKGROUNDSOIL_BLANKS_RAD
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐	X	
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐	X	
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐	X	
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐	X	
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐	X	
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐	X	
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐	X	
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐	X	
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐	X	
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐	X	
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐		X
12								KN 10/2/19				☐		
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	N	10/2/2019	NA	2	NA	☐	X	

KN 10/2/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700	[signature]	10/3/19	900
KN 10/2/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen
KN 10/2/19	

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

Form TVA 30067A

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	3	of	3
COC No:	BRF_BS_20191002_1B		
1 of 1 Pages			
Task Desc:	BRF_BS		

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:	Kevin Nguyen
Lab Address:	301 Alpha Drive	Project #:	175568274	Sampling Company:	Stantec
	Pittsburgh, PA 15238	Site Address	1265 Edgemoor Road	Address	601 Grassmere Park 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:	3
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva_deliverables@envstd.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: BACKGROUNDSOIL_RAD	Analysis: BACKGROUNDSOIL_BLANKS_RAD
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐	X	
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐	X	
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐	X	
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐	X	
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐	X	
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐	X	
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐	X	
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐	X	
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐	X	
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐	X	
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐		X
12								KN 10/2/19				☐		
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	N	10/2/2019	NA	2	NA	☐	X	

Filtered: N, N — KN 10/2/19

Preserve: None, HNO3 — KN 10/2/19

KN 10/2/19

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700	TAPPAR	10/3/19	900
KN 10/2/19					

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	Kevin Nguyen
KN 10/2/19	

Form TVA 30067A

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 3
COC No:	BRF_BS_20191002_1B
1 of 1 Pages	
Task Desc:	BRF_BS

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 #:	175568274
Site Address	1265 Edgemoor Road
City	Clinton State, Zip: TN, 37716
Site PM Name:	Roy Quinn
Phone/Fax:	423-751-3753
Site PM Email:	jrquinn@tva.gov

Required Sampler Information	
Sampler:	Kevin Nguyen
Sampling Company:	Stantec
Address	601 Grassmere Park Suite 22
City/State	Nashville, TN Phone: 615-885-1144
Sampling Team Number:	3
Send EDD/Hard Copy to:	tva_deliverables@envstd.com

Analysis Turnaround Time

☐ CALENDAR DAYS ☑ WORKING DAYS

TAT if different from Below _____

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☑ 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	Filtered N	Preserve None	Preserve HNO3	Analysis BACKGROUNDSOIL_RAD	Analysis BACKGROUNDSOIL_BLANKS_RAD
1	BRF-BS-BG09-1.5/3.5-20191002	BRF BG09	1.5	3.5	BS	G	N	10/2/2019	1145	2	NA	☐				X	
2	BRF-BS-BG09-6.5/8.5-20191002	BRF BG09	6.5	8.5	BS	G	N	10/2/2019	1205	2	NA	☐				X	
3	BRF-BS-BG09-11.5/13.5-20191002	BRF BG09	11.5	13.5	BS	G	N	10/2/2019	1300	2	NA	☐				X	
4	BRF-BS-BG09-16.5/18.5-20191002	BRF BG09	16.5	18.5	BS	G	N	10/2/2019	1325	2	NA	☐				X	
5	BRF-BS-BG09-21.5/23.5-20191002	BRF BG09	21.5	23.5	BS	G	N	10/2/2019	1410	2	NA	☐				X	
6	BRF-BS-BG09-26.5/28.5-20191002	BRF BG09	26.5	28.5	BS	G	N	10/2/2019	1430	2	NA	☐				X	
7	BRF-BS-BG09-31.5/33.5-20191002	BRF BG09	31.5	33.5	BS	G	N	10/2/2019	1500	2	NA	☐				X	
8	BRF-BS-BG09-36.5/38.5-20191002	BRF BG09	36.5	38.5	BS	G	N	10/2/2019	1520	2	NA	☐				X	
9	BRF-BS-BG09-40.0/42.0-20191002	BRF BG09	40.0	42.0	BS	G	N	10/2/2019	1545	2	NA	☐				X	
10	BRF-BS-BG09-0.0/0.5-20191002	BRF BG09	0.0	0.5	BS	G	N	10/2/2019	1605	2	NA	☐				X	
11	BRF-BS-FB03-20191002	BRF BG09	NA	NA	~~BS~~ KN 10/2/19	G	FB	10/2/2019	1615	3	NA	☐			X		
12								KN 10/2/19				☐					
13	BRF-BS-DUP01-20191002	NA	NA	NA	BS	G	N	10/2/2019	NA	2	NA	☐				X	

KN 10/2/19

180-96668 Chain of Custody

Additional Comments/Special Instructions:

Additional volume collected should be used for laboratory duplicate analysis.

KN 10/2/19

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Kevin Nguyen / Stantec	10/2/19	1700	[illegible]	10/7/19	900
KN 10/2/19					

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
Courier	Kevin Nguyen
KN 10/2/19	

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

Form TVA 30067A

eurofins | Environment Testing TestAmerica

Custody Seal 10/2/19

DATE SIGNATURE

D:GKTA (865) 621-1653
RS
ICA KNOX LAB
DLEBROOK PIKE
E, TN 37921
STATES US

SHIP DATE: 02OCT19
ACTWGT: 58.40 LB
CAD: 006995125/SSF
DIMS: 24x13x13 IN

BILL RECIPIENT

MPLE RECEIVING
ROFINS TESTAMERICA
ALPHA DR RIDC PARK

TTSBURGH PA 15238
3-7058 REF:
DEPT:

Fe

2 of 3
7801 7186 7390
tr# 8120 5914 9387
0215

THU - 03 OCT
STANDARD OV

IA AGCA

PA-

Uncorrected temp 43 °C
Thermometer ID 10
CF 0 Initials B

PT-WI-SR-001 effective 11/8/18

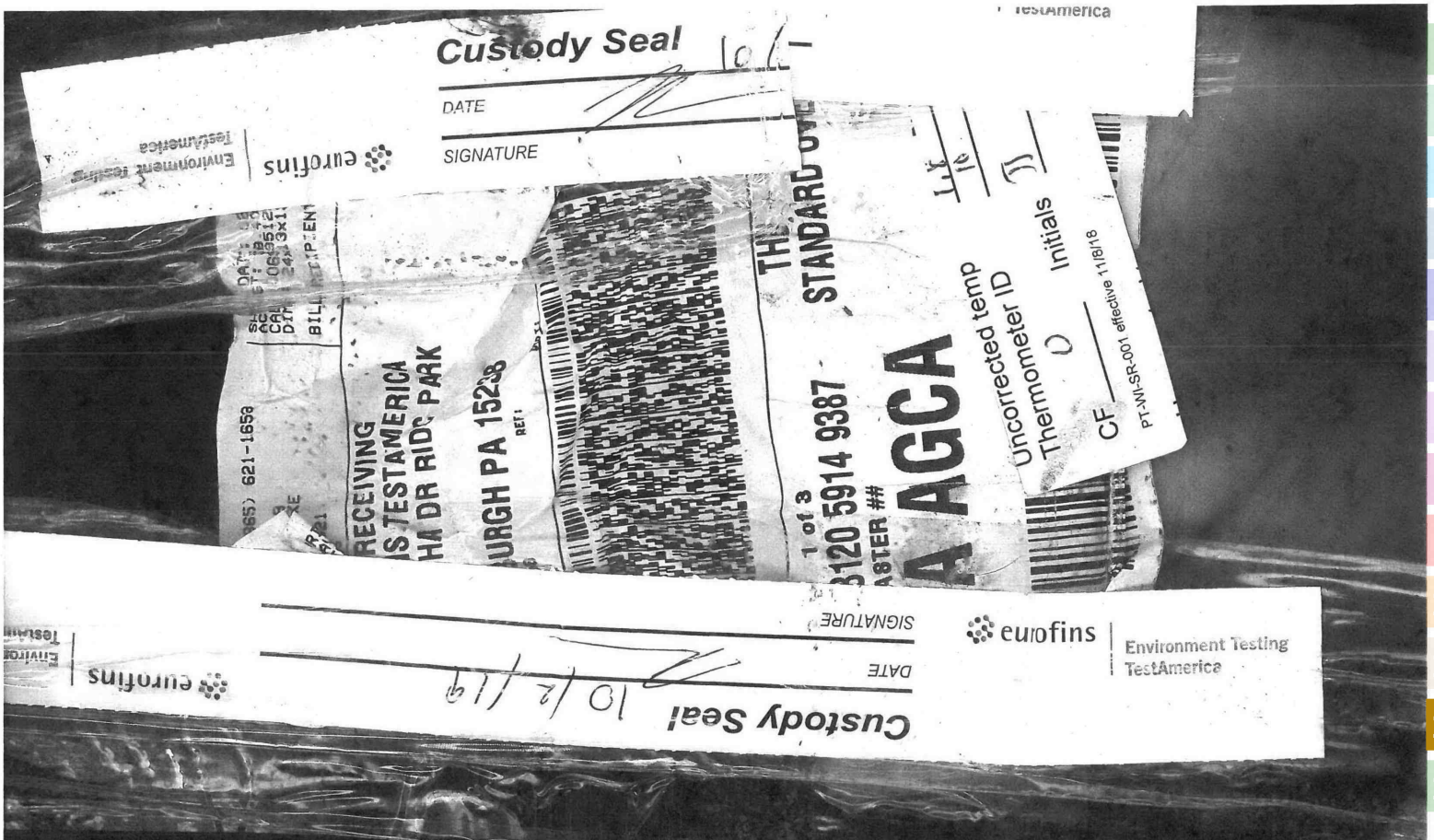
180-96668 Waybill

eurofins | Environment Testing TestAmerica

Custody Seal 10/2/19

DATE SIGNATURE

eurofins | Environment Testing TestAmerica


Custody Seal
DATE
SIGNATURE
eurofins
Environment Testing
TestAmerica
1 of 3
5120 5914 9387
MASTER ##
AGCA
Uncorrected temp
Thermometer ID
Initials
CF
PT-WI-SR-001 effective 11/8/18
RECEIVING
S TESTAMERICA
HA DR RIDGE PARK
URGH PA 15238
621-1658
STANDARD
Custody Seal
10/2/19

180-96668 Waybill

ORIGIN ID:HNBA (317) 481-7766

FEDEX OVERGOODS
6648 SOUTH PERIMETER ROAD

INDIANAPOLIS, IN 46241
UNITED STATES US

SHIP DATE: 04OCT19
ACTWGT: 50.00 LB
CAD: 112147526/WSXI3100

BILL THIRD PARTY

TO EUROFINS TESTAMERICA PITTSBURGH
EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RIDC PARK
PITTSBURGH PA 15238

(412) 963-7058 REF: PK:8915439
INV:
PO: DEPT:

567J3/2A3C/05A2

FedEx Express

J192119091980V

REL#
3785346

TRK# 0201 7764 9727 0227

MON - 07 OCT 3:00P
STANDARD OVERNIGHT

TT AGCA

15238
PA-US PIT

Uncorrected temp 14.9 °C
Thermometer ID
CF 0 Initials

PT-WI-SR-001 effective 11/8/18

Part # 168148-434 Rev EXP 07/20

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive RIDC Park
Pittsburgh, PA 15238
Phone: 412-963-7058 Fax: 412-963-2468

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rumble, Jennifer L	Carrier Tracking No(s):	COC No: 180-375746.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: jennifer.rumble@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-96668-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/4/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: BRF_BS_20191002_1B	Project #: 18019624			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1_Ra/Dry_Grind Radium-226/228	901.1_Ra/Fill_Geo_21 Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
BRF-BS-BG09-1.5/3.5-20191002 ~ BRF BG09 (180-96668-1)	10/2/19	11:45 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG09-6.5/8.5-20191002 ~ BRF BG09 (180-96668-2)	10/2/19	12:05 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG09-11.5/13.5-20191002 ~ BRF BG09 (180-96668-3)	10/2/19	13:00 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG09-16.5/18.5-20191002 ~ BRF BG09 (180-96668-4)	10/2/19	13:25 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG09-21.5/23.5-20191002 ~ BRF BG09 (180-96668-5)	10/2/19	14:10 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-BG09-0.0/0.5-20191002 ~ BRF BG09 (180-96668-10)	10/2/19	16:05 Eastern		Solid			X		2	TVA - Batch alone. Quarantine zone soil. Contact PM if insufficient volume for Tuna
BRF-BS-FB03-20191002 ~ BRF BG09 (180-96668-11)	10/2/19	16:15 Eastern		Water				X	3	TVA - Batch alone

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 10/9/19 1700	Company TAPT	Received by: Michael Hum	Date/Time: 10-10-19 09:00	Company TAPT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-96668-1

Login Number: 96668
List Number: 1
Creator: Say, Thomas C

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	

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-96668-1

Login Number: 96668
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/09/19 11:49 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-96668-1

Login Number: 96668
List Number: 3
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/10/19 11:03 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	20.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-96668-1

Login Number: 96668
List Number: 4
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/10/19 11:52 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	21.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (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").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	