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ANALYTICAL REPORT

Eurofins TestAmerica, Nashville
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Nashville, TN 37204
Tel: (615)726-0177

Laboratory Job ID: 490-161170-3
Client Project/Site: CUF_SED_20181008_1B
Revision: 1

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

Attn: Jennifer N. Gable

Authorized for release by:
7/24/2019 2:15:43 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.

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Sample Summary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
490-161170-1	CUF-SED-CuR07-EB01-20181008	Water	10/08/18 16:05	10/12/18 16:00	
490-161170-2	CUF-SED-CuR07-CORLB-0.0/0.5-20181008	Sediment	10/08/18 16:10	10/12/18 16:00	
490-161170-4	CUF-SED-CuR07-DUP01-20181008	Solid	10/08/18 00:01	10/12/18 16:00	
490-161170-5	CUF-SED-CuR07-EB01-20181009	Water	10/09/18 09:10	10/12/18 16:00	
490-161170-6	CUF-SED-CuR07-CORCC-0.0/0.5-20181009	Solid	10/09/18 10:00	10/12/18 16:00	
490-161170-7	CUF-SED-CuR07-CORRB-0.0/0.5-20181009	Solid	10/09/18 10:54	10/12/18 16:00	
490-161170-11	CUF-SED-CuR06-CORLB-0.0/0.5-20181009	Solid	10/09/18 12:00	10/12/18 16:00	
490-161170-13	CUF-SED-CuR06-CORCC-0.0/0.5-20181009	Solid	10/09/18 12:50	10/12/18 16:00	
490-161170-14	CUF-SED-CuR06-CORRB-0.0/0.5-20181009	Solid	10/09/18 13:30	10/12/18 16:00	
490-161170-16	CUF-SED-CuR05-CORLB-0.0/0.5-20181009	Solid	10/09/18 14:15	10/12/18 16:00	
490-161170-19	CUF-SED-CuR05-CORCC-0.0/0.5-20181009	Solid	10/09/18 15:15	10/12/18 16:00	
490-161170-20	CUF-SED-CuR05-CORRB-0.0/0.5-20181009	Solid	10/09/18 15:30	10/12/18 16:00	
490-161170-22	CUF-SED-DC01-CORLB-0.0/0.5-20181009	Solid	10/09/18 16:00	10/12/18 16:00	
490-161170-24	CUF-SED-DC01-CORCC-0.0/0.5-20181009	Solid	10/09/18 16:30	10/12/18 16:00	
490-161170-26	CUF-SED-DC01-CORRB-0.0/0.5-20181009	Solid	10/09/18 16:55	10/12/18 16:00	
490-161170-27	CUF-SED-DC01-CORRB-0.5/2.2-20181009	Solid	10/09/18 16:55	10/12/18 16:00	
490-161170-30	CUF-SED-CuR04-EB01-20181010	Water	10/10/18 09:10	10/12/18 16:00	
490-161170-31	CUF-SED-CuR04-CORLB-0.0/0.5-20181010	Solid	10/10/18 09:25	10/12/18 16:00	
490-161170-35	CUF-SED-CuR04-CORCC-0.0/0.5-20181010	Solid	10/10/18 10:50	10/12/18 16:00	
490-161170-37	CUF-SED-CuR03-CORLB-0.0/0.5-20181010	Solid	10/10/18 12:00	10/12/18 16:00	
490-161170-39	CUF-SED-CuR03-CORRB-0.0/0.5-20181010	Solid	10/10/18 13:55	10/12/18 16:00	
490-161170-43	CUF-SED-CuR02-EB01-20181011	Water	10/11/18 08:50	10/12/18 16:00	
490-161170-44	CUF-SED-CuR02-CORCC-0.0/0.5-20181011	Solid	10/11/18 09:30	10/12/18 16:00	
490-161170-45	CUF-SED-CuR02-CORRB-0.0/0.5-20181011	Solid	10/11/18 10:00	10/12/18 16:00	
490-161170-46	CUF-SED-CuR01-CORRB-0.0/0.5-20181011	Solid	10/11/18 10:20	10/12/18 16:00	
490-161170-47	CUF-SED-CuR01-CORCC-0.0/0.5-20181011	Solid	10/11/18 10:40	10/12/18 16:00	
490-161170-48	CUF-SED-CuR01-CORLB-0.0/0.5-20181011	Solid	10/11/18 11:10	10/12/18 16:00	
490-161170-49	CUF-SED-WC10-CORLB-0.0/0.5-20181011	Solid	10/11/18 12:20	10/12/18 16:00	
490-161170-52	CUF-SED-WC10-CORCC-0.0/0.5-20181011	Solid	10/11/18 13:20	10/12/18 16:00	
490-161170-54	CUF-SED-WC10-CORRB-0.0/0.5-20181011	Solid	10/11/18 13:50	10/12/18 16:00	
490-161170-55	CUF-SED-WC09-CORCC-0.0/0.5-20181011	Solid	10/11/18 14:40	10/12/18 16:00	
490-161170-56	CUF-SED-WC09-CORRB-0.0/0.5-20181011	Solid	10/11/18 15:05	10/12/18 16:00	
490-161170-57	CUF-SED-WC08-CORRB-0.0/0.5-20181011	Solid	10/11/18 15:35	10/12/18 16:00	
490-161170-58	CUF-SED-WC08-CORCC-0.0/0.5-20181011	Solid	10/11/18 15:40	10/12/18 16:00	
490-161170-59	CUF-SED-WC08-CORLB-0.0/0.5-20181011	Solid	10/11/18 15:45	10/12/18 16:00	
490-161170-60	CUF-SED-WC07-CORLB-0.0/0.5-20181011	Solid	10/11/18 16:10	10/12/18 16:00	
490-161170-61	CUF-SED-WC07-CORCC-0.0/0.5-20181011	Solid	10/11/18 16:20	10/12/18 16:00	
490-161170-62	CUF-SED-WC07-CORRB-0.0/0.5-20181011	Solid	10/11/18 16:30	10/12/18 16:00	
490-161170-64	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	Solid	10/10/18 11:15	10/12/18 16:00	

Job ID: 490-161170-3

Laboratory: Eurofins TestAmerica, Nashville

Narrative

Job Narrative
490-161170-3

Revised Report
This report was revised to update the raw data and include the field/equipment blanks. This replaces the previous final report.

Receipt
The samples were received on 10/12/2018 4:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.8º C, 2.5º C, 3.7º C and 4.2º C.

RAD
Method(s) 901.1: Gamma Prep Batch 160-427797
Insufficient samples were provided for the following samples to fill a geometry (e.g. tuna can) calibrated for Ra-226 analysis by gamma spectroscopy: CUF-SED-CuR04-CORLB-0.0/0.5-20181010 (490-161170-31) and CUF-SED-WC08-CORCC-0.0/0.5-20181011 (490-161170-58). The use of a different geometry could potentially bias the results low due to the loss of radon into the headspace of the container.

Method(s) 901.1: Gamma Prep Batch 160-427797
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

CUF-SED-DC01-CORLB-0.0/0.5-20181009 (490-161170-22), CUF-SED-DC01-CORCC-0.0/0.5-20181009 (490-161170-24), CUF-SED-DC01-CORRB-0.0/0.5-20181009 (490-161170-26), CUF-SED-DC01-CORRB-0.5/2.2-20181009 (490-161170-27), CUF-SED-CuR04-CORLB-0.0/0.5-20181010 (490-161170-31), CUF-SED-CuR04-CORCC-0.0/0.5-20181010 (490-161170-35), CUF-SED-CuR03-CORLB-0.0/0.5-20181010 (490-161170-37), CUF-SED-CuR03-CORRB-0.0/0.5-20181010 (490-161170-39), CUF-SED-CuR02-CORCC-0.0/0.5-20181011 (490-161170-44), CUF-SED-CuR02-CORRB-0.0/0.5-20181011 (490-161170-45), CUF-SED-CuR01-CORRB-0.0/0.5-20181011 (490-161170-46), CUF-SED-CuR01-CORCC-0.0/0.5-20181011 (490-161170-47), CUF-SED-CuR01-CORLB-0.0/0.5-20181011 (490-161170-48), CUF-SED-WC10-CORLB-0.0/0.5-20181011 (490-161170-49), CUF-SED-WC10-CORCC-0.0/0.5-20181011 (490-161170-52), CUF-SED-WC10-CORRB-0.0/0.5-20181011 (490-161170-54), CUF-SED-WC09-CORCC-0.0/0.5-20181011 (490-161170-55), CUF-SED-WC09-CORRB-0.0/0.5-20181011 (490-161170-56), CUF-SED-WC08-CORRB-0.0/0.5-20181011 (490-161170-57), CUF-SED-WC08-CORCC-0.0/0.5-20181011 (490-161170-58), (LCS 160-427797/2-A), (MB 160-427797/1-A) and (490-161170-A-22-D DU)

Method(s) 901.1: Gamma Prep Batch 160-427812
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

Job ID: 490-161170-3 (Continued)

Laboratory: Eurofins TestAmerica, Nashville (Continued)

CUF-SED-CuR07-CORLB-0.0/0.5-20181008 (490-161170-2), CUF-SED-CuR07-DUP01-20181008 (490-161170-4), CUF-SED-CuR07-CORCC-0.0/0.5-20181009 (490-161170-6), CUF-SED-CuR07-CORRB-0.0/0.5-20181009 (490-161170-7), CUF-SED-CuR06-CORLB-0.0/0.5-20181009 (490-161170-11), CUF-SED-CuR06-CORCC-0.0/0.5-20181009 (490-161170-13), CUF-SED-CuR06-CORRB-0.0/0.5-20181009 (490-161170-14), CUF-SED-CuR05-CORLB-0.0/0.5-20181009 (490-161170-16), CUF-SED-CuR05-CORCC-0.0/0.5-20181009 (490-161170-19), CUF-SED-CuR05-CORRB-0.0/0.5-20181009 (490-161170-20), CUF-SED-WC08-CORLB-0.0/0.5-20181011 (490-161170-59), CUF-SED-WC07-CORLB-0.0/0.5-20181011 (490-161170-60), CUF-SED-WC07-CORCC-0.0/0.5-20181011 (490-161170-61), CUF-SED-WC07-CORRB-0.0/0.5-20181011 (490-161170-62), CUF-SED-CuR04-CORRB-0.0/0.5-20181010 (490-161170-64), (LCS 160-427812/2-A), (MB 160-427812/1-A) and (490-161170-A-64-D DU)

Method(s) Fill_Geo-21: Gamma Prep Batch 160-427797: Insufficient samples were provided for the following samples to fit the geometry: CUF-SED-CuR04-CORLB-0.0/0.5-20181010 (490-161170-31) and CUF-SED-WC08-CORRB-0.0/0.5-20181011 (490-161170-57).

Method(s) Fill_Geo-21: Gamma Prep Batch 160-427797: Samples are light fluffy dirt with low density.
CUF-SED-CuR02-CORCC-0.0/0.5-20181011 (490-161170-44), CUF-SED-CuR02-CORRB-0.0/0.5-20181011 (490-161170-45), CUF-SED-CuR01-CORRB-0.0/0.5-20181011 (490-161170-46), CUF-SED-CuR01-CORLB-0.0/0.5-20181011 (490-161170-48), CUF-SED-WC10-CORLB-0.0/0.5-20181011 (490-161170-49), CUF-SED-WC10-CORCC-0.0/0.5-20181011 (490-161170-52), CUF-SED-WC10-CORRB-0.0/0.5-20181011 (490-161170-54), CUF-SED-WC09-CORCC-0.0/0.5-20181011 (490-161170-55), CUF-SED-WC09-CORRB-0.0/0.5-20181011 (490-161170-56) and CUF-SED-WC08-CORCC-0.0/0.5-20181011 (490-161170-58)

Method(s) Fill_Geo-21: Gamma Prep Batch 160-427812: Insufficient sample was provided for the following sample to fit the geometry: CUF-SED-CuR07-DUP01-20181008 (490-161170-4).

Method(s) Fill_Geo-21: Gamma Prep Batch 160-472812: Samples are fluffy dirt with low density.
CUF-SED-CuR07-CORLB-0.0/0.5-20181008 (490-161170-2), CUF-SED-CuR07-CORCC-0.0/0.5-20181009 (490-161170-6), CUF-SED-CuR06-CORLB-0.0/0.5-20181009 (490-161170-11), CUF-SED-CuR06-CORRB-0.0/0.5-20181009 (490-161170-14), CUF-SED-WC08-CORLB-0.0/0.5-20181011 (490-161170-59), CUF-SED-WC07-CORLB-0.0/0.5-20181011 (490-161170-60), CUF-SED-WC07-CORCC-0.0/0.5-20181011 (490-161170-61) and CUF-SED-WC07-CORRB-0.0/0.5-20181011 (490-161170-62)

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

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

Definitions/Glossary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Qualifiers

Rad

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

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-EB01-20181008

Lab Sample ID: 490-161170-1

Date Collected: 10/08/18 16:05
Date Received: 10/12/18 16:00

Matrix: Water

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	**24.0**		15.5	15.7	50.0	16.2	pCi/L	10/19/18 10:28	11/09/18 10:34	1
Radium-228	7.90	U	18.1	18.1	50.0	23.0	pCi/L	10/19/18 10:28	11/09/18 10:34	1
Radium 226 and 228	**31.9**		23.8	24.0			pCi/L	10/19/18 10:28	11/09/18 10:34	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-CORLB-0.0/0.5-20181008

Lab Sample ID: 490-161170-2

Date Collected: 10/08/18 16:10

Matrix: Sediment

Date Received: 10/12/18 16:00

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	1.64		0.315	0.358	1.00	0.238	pCi/g	05/09/19 14:30	05/30/19 23:09	1
Radium-228	1.44		0.338	0.369		0.504	pCi/g	05/09/19 14:30	05/30/19 23:09	1
Radium 226 and Radium 228	3.08		0.462	0.514			pCi/g	05/09/19 14:30	05/30/19 23:09	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-DUP01-20181008

Lab Sample ID: 490-161170-4

Date Collected: 10/08/18 00:01
Matrix: Solid
Date Received: 10/12/18 16:00

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	1.27		0.229	0.260	1.00	0.142	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium-228	1.33		0.268	0.297		0.268	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium 226 and Radium 228	2.60		0.353	0.395			pCi/g	05/09/19 14:30	05/31/19 06:14	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-EB01-20181009

Lab Sample ID: 490-161170-5

Date Collected: 10/09/18 09:10
Date Received: 10/12/18 16:00

Matrix: Water

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	-2.33	U	3.09	3.10	50.0	31.5	pCi/L	10/19/18 10:28	11/09/18 10:49	1
Radium-228	-0.395	U	1.76	1.76	50.0	28.5	pCi/L	10/19/18 10:28	11/09/18 10:49	1
Radium 226 and 228	-2.73	U	3.56	3.56			pCi/L	10/19/18 10:28	11/09/18 10:49	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-CORCC-0.0/0.5-20181009

Lab Sample ID: 490-161170-6

Date Collected: 10/09/18 10:00
Date Received: 10/12/18 16:00

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	1.05		0.199	0.227	1.00	0.146	pCi/g	05/09/19 14:30	05/31/19 06:15	1
Radium-228	1.06		0.243	0.266		0.288	pCi/g	05/09/19 14:30	05/31/19 06:15	1
Radium 226 and Radium 228	2.11		0.314	0.350			pCi/g	05/09/19 14:30	05/31/19 06:15	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-CORRB-0.0/0.5-20181009

Lab Sample ID: 490-161170-7

Date Collected: 10/09/18 10:54
Date Received: 10/12/18 16:00

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	1.32		0.256	0.289	1.00	0.177	pCi/g	05/09/19 14:30	05/31/19 06:17	1
Radium-228	1.16		0.296	0.319		0.223	pCi/g	05/09/19 14:30	05/31/19 06:17	1
Radium 226 and Radium 228	2.48		0.391	0.430			pCi/g	05/09/19 14:30	05/31/19 06:17	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR06-CORLB-0.0/0.5-20181009

Lab Sample ID: 490-161170-11

Date Collected: 10/09/18 12:00
Date Received: 10/12/18 16:00

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	1.30		0.310	0.338	1.00	0.235	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium-228	1.20		0.260	0.287		0.218	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium 226 and Radium 228	2.50		0.405	0.443			pCi/g	05/09/19 14:30	05/31/19 06:14	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR06-CORCC-0.0/0.5-20181009

Lab Sample ID: 490-161170-13

Date Collected: 10/09/18 12:50
Date Received: 10/12/18 16:00

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	1.05		0.248	0.270	1.00	0.190	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium-228	0.841		0.312	0.323		0.471	pCi/g	05/09/19 14:30	05/31/19 06:14	1
Radium 226 and Radium 228	1.89		0.399	0.421			pCi/g	05/09/19 14:30	05/31/19 06:14	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR06-CORRB-0.0/0.5-20181009

Lab Sample ID: 490-161170-14

Date Collected: 10/09/18 13:30
Date Received: 10/12/18 16:00

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	1.20		0.216	0.250	1.00	0.153	pCi/g	05/09/19 14:30	05/31/19 06:49	1
Radium-228	1.15		0.251	0.277		0.120	pCi/g	05/09/19 14:30	05/31/19 06:49	1
Radium 226 and Radium 228	2.35		0.331	0.373			pCi/g	05/09/19 14:30	05/31/19 06:49	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR05-CORLB-0.0/0.5-20181009

Lab Sample ID: 490-161170-16

Date Collected: 10/09/18 14:15
Date Received: 10/12/18 16:00

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	1.16		0.262	0.287	1.00	0.222	pCi/g	05/09/19 14:30	05/31/19 06:58	1
Radium-228	0.954		0.388	0.400		0.522	pCi/g	05/09/19 14:30	05/31/19 06:58	1
Radium 226 and Radium 228	2.11		0.468	0.492			pCi/g	05/09/19 14:30	05/31/19 06:58	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR05-CORCC-0.0/0.5-20181009

Lab Sample ID: 490-161170-19

Date Collected: 10/09/18 15:15
Date Received: 10/12/18 16:00

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	0.807		0.216	0.232	1.00	0.180	pCi/g	05/09/19 14:30	05/31/19 06:58	1
Radium-228	0.926		0.383	0.395		0.327	pCi/g	05/09/19 14:30	05/31/19 06:58	1
Radium 226 and Radium 228	1.73		0.440	0.458			pCi/g	05/09/19 14:30	05/31/19 06:58	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR05-CORRB-0.0/0.5-20181009

Lab Sample ID: 490-161170-20

Date Collected: 10/09/18 15:30
Date Received: 10/12/18 16:00

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	1.06		0.210	0.236	1.00	0.118	pCi/g	05/09/19 14:30	05/31/19 07:41	1
Radium-228	0.955		0.275	0.292		0.159	pCi/g	05/09/19 14:30	05/31/19 07:41	1
Radium 226 and Radium 228	2.02		0.346	0.375			pCi/g	05/09/19 14:30	05/31/19 07:41	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-DC01-CORLB-0.0/0.5-20181009

Lab Sample ID: 490-161170-22

Date Collected: 10/09/18 16:00
Date Received: 10/12/18 16:00

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	0.873		0.176	0.198	1.00	0.139	pCi/g	05/09/19 12:15	05/30/19 14:08	1
Radium-228	0.520		0.163	0.171		0.0914	pCi/g	05/09/19 12:15	05/30/19 14:08	1
Radium 226 and Radium 228	1.39		0.240	0.262			pCi/g	05/09/19 12:15	05/30/19 14:08	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-DC01-CORCC-0.0/0.5-20181009

Lab Sample ID: 490-161170-24

Date Collected: 10/09/18 16:30
Date Received: 10/12/18 16:00

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	1.26		0.245	0.276	1.00	0.187	pCi/g	05/09/19 12:15	05/30/19 14:12	1
Radium-228	0.726		0.362	0.370		0.467	pCi/g	05/09/19 12:15	05/30/19 14:12	1
Radium 226 and Radium 228	1.99		0.437	0.462			pCi/g	05/09/19 12:15	05/30/19 14:12	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-DC01-CORRB-0.0/0.5-20181009

Lab Sample ID: 490-161170-26

Date Collected: 10/09/18 16:55
Date Received: 10/12/18 16:00

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	**1.04**		0.227	0.252	1.00	0.164	pCi/g	05/09/19 12:15	05/30/19 15:30	1
Radium-228	0.327	U	0.210	0.213		0.432	pCi/g	05/09/19 12:15	05/30/19 15:30	1
Radium 226 and Radium 228	**1.37**		0.309	0.330			pCi/g	05/09/19 12:15	05/30/19 15:30	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-DC01-CORRB-0.5/2.2-20181009

Lab Sample ID: 490-161170-27

Date Collected: 10/09/18 16:55
Matrix: Solid
Date Received: 10/12/18 16:00

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	**0.864**		0.222	0.239	1.00	0.152	pCi/g	05/09/19 12:15	05/30/19 15:33	1
Radium-228	0.204	U	0.307	0.307		0.501	pCi/g	05/09/19 12:15	05/30/19 15:33	1
Radium 226 and Radium 228	**1.07**		0.379	0.389			pCi/g	05/09/19 12:15	05/30/19 15:33	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-EB01-20181010

Lab Sample ID: 490-161170-30

Date Collected: 10/10/18 09:10
Date Received: 10/12/18 16:00

Matrix: Water

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	-4.00	U	21.0	21.0	50.0	35.1	pCi/L	10/19/18 10:28	11/11/18 16:50	1
Radium-228	9.58	U	20.3	20.3	50.0	26.2	pCi/L	10/19/18 10:28	11/11/18 16:50	1
Radium 226 and 228	5.59	U	29.2	29.2			pCi/L	10/19/18 10:28	11/11/18 16:50	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-CORLB-0.0/0.5-20181010

Lab Sample ID: 490-161170-31

Date Collected: 10/10/18 09:25
Date Received: 10/12/18 16:00

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	1.21		0.214	0.247	1.00	0.175	pCi/g	05/09/19 12:15	05/30/19 15:37	1
Radium-228	0.906		0.193	0.214		0.160	pCi/g	05/09/19 12:15	05/30/19 15:37	1
Radium 226 and Radium 228	2.12		0.288	0.327			pCi/g	05/09/19 12:15	05/30/19 15:37	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-CORCC-0.0/0.5-20181010

Lab Sample ID: 490-161170-35

Date Collected: 10/10/18 10:50
Date Received: 10/12/18 16:00

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	0.912		0.211	0.231	1.00	0.151	pCi/g	05/09/19 12:15	05/30/19 17:21	1
Radium-228	0.495		0.197	0.203		0.268	pCi/g	05/09/19 12:15	05/30/19 17:21	1
Radium 226 and Radium 228	1.41		0.289	0.308			pCi/g	05/09/19 12:15	05/30/19 17:21	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR03-CORLB-0.0/0.5-20181010

Lab Sample ID: 490-161170-37

Date Collected: 10/10/18 12:00
Date Received: 10/12/18 16:00

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	0.989		0.257	0.277	1.00	0.205	pCi/g	05/09/19 12:15	05/30/19 17:21	1
Radium-228	0.875		0.304	0.317		0.191	pCi/g	05/09/19 12:15	05/30/19 17:21	1
Radium 226 and Radium 228	1.86		0.398	0.421			pCi/g	05/09/19 12:15	05/30/19 17:21	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR03-CORRB-0.0/0.5-20181010

Lab Sample ID: 490-161170-39

Date Collected: 10/10/18 13:55
Matrix: Solid
Date Received: 10/12/18 16:00

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	**0.449**		0.123	0.132	1.00	0.0624	pCi/g	05/09/19 12:15	05/30/19 17:22	1
Radium-228	0.0881	U	0.250	0.250		0.365	pCi/g	05/09/19 12:15	05/30/19 17:22	1
Radium 226 and Radium 228	**0.537**		0.279	0.283			pCi/g	05/09/19 12:15	05/30/19 17:22	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR02-EB01-20181011

Lab Sample ID: 490-161170-43

Date Collected: 10/11/18 08:50
Date Received: 10/12/18 16:00

Matrix: Water

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	5.70	U	11.1	11.2	50.0	14.3	pCi/L	10/19/18 10:28	11/09/18 12:58	1
Radium-228	14.6	U	23.9	23.9	50.0	26.2	pCi/L	10/19/18 10:28	11/09/18 12:58	1
Radium 226 and 228	20.3	U	26.4	26.4			pCi/L	10/19/18 10:28	11/09/18 12:58	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR02-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-44

Date Collected: 10/11/18 09:30
Date Received: 10/12/18 16:00

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	1.20		0.223	0.255	1.00	0.164	pCi/g	05/09/19 12:15	05/30/19 17:16	1
Radium-228	1.26		0.304	0.330		0.134	pCi/g	05/09/19 12:15	05/30/19 17:16	1
Radium 226 and Radium 228	2.46		0.377	0.417			pCi/g	05/09/19 12:15	05/30/19 17:16	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR02-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-45

Date Collected: 10/11/18 10:00
Date Received: 10/12/18 16:00

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	1.15		0.231	0.259	1.00	0.173	pCi/g	05/09/19 12:15	05/30/19 17:20	1
Radium-228	1.07		0.260	0.282		0.153	pCi/g	05/09/19 12:15	05/30/19 17:20	1
Radium 226 and Radium 228	2.22		0.348	0.383			pCi/g	05/09/19 12:15	05/30/19 17:20	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR01-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-46

Date Collected: 10/11/18 10:20
Date Received: 10/12/18 16:00

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	1.44		0.286	0.323	1.00	0.214	pCi/g	05/09/19 12:15	05/30/19 17:27	1
Radium-228	1.17		0.275	0.300		0.144	pCi/g	05/09/19 12:15	05/30/19 17:27	1
Radium 226 and Radium 228	2.61		0.397	0.441			pCi/g	05/09/19 12:15	05/30/19 17:27	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR01-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-47

Date Collected: 10/11/18 10:40
Date Received: 10/12/18 16:00

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	0.427		0.117	0.126	1.00	0.0870	pCi/g	05/09/19 12:15	05/30/19 17:29	1
Radium-228	0.306		0.167	0.170		0.173	pCi/g	05/09/19 12:15	05/30/19 17:29	1
Radium 226 and Radium 228	0.733		0.204	0.212			pCi/g	05/09/19 12:15	05/30/19 17:29	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR01-CORLB-0.0/0.5-20181011

Lab Sample ID: 490-161170-48

Date Collected: 10/11/18 11:10
Date Received: 10/12/18 16:00

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	1.05		0.201	0.229	1.00	0.139	pCi/g	05/09/19 12:15	05/30/19 17:55	1
Radium-228	1.02		0.251	0.272		0.342	pCi/g	05/09/19 12:15	05/30/19 17:55	1
Radium 226 and Radium 228	2.07		0.322	0.356			pCi/g	05/09/19 12:15	05/30/19 17:55	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC10-CORLB-0.0/0.5-20181011

Lab Sample ID: 490-161170-49

Date Collected: 10/11/18 12:20
Date Received: 10/12/18 16:00

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	1.81		0.330	0.378	1.00	0.224	pCi/g	05/09/19 12:15	05/30/19 18:00	1
Radium-228	1.65		0.415	0.448		0.193	pCi/g	05/09/19 12:15	05/30/19 18:00	1
Radium 226 and Radium 228	3.46		0.530	0.586			pCi/g	05/09/19 12:15	05/30/19 18:00	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC10-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-52

Date Collected: 10/11/18 13:20
Date Received: 10/12/18 16:00

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	**1.54**		0.303	0.343	1.00	0.155	pCi/g	05/09/19 12:15	05/30/19 18:04	1
Radium-228	0.532	U	0.174	0.183		0.628	pCi/g	05/09/19 12:15	05/30/19 18:04	1
Radium 226 and Radium 228	**2.07**		0.349	0.389			pCi/g	05/09/19 12:15	05/30/19 18:04	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC10-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-54

Date Collected: 10/11/18 13:50

Matrix: Solid

Date Received: 10/12/18 16:00

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	1.53		0.331	0.367	1.00	0.224	pCi/g	05/09/19 12:15	05/30/19 18:03	1
Radium-228	1.03		0.547	0.557		0.735	pCi/g	05/09/19 12:15	05/30/19 18:03	1
Radium 226 and Radium 228	2.56		0.639	0.667			pCi/g	05/09/19 12:15	05/30/19 18:03	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC09-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-55

Date Collected: 10/11/18 14:40
Date Received: 10/12/18 16:00

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	2.01		0.378	0.430	1.00	0.254	pCi/g	05/09/19 12:15	05/30/19 18:03	1
Radium-228	1.35		0.265	0.298		0.227	pCi/g	05/09/19 12:15	05/30/19 18:03	1
Radium 226 and Radium 228	3.36		0.462	0.523			pCi/g	05/09/19 12:15	05/30/19 18:03	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC09-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-56

Date Collected: 10/11/18 15:05

Matrix: Solid

Date Received: 10/12/18 16:00

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	1.56		0.286	0.329	1.00	0.202	pCi/g	05/09/19 12:15	05/30/19 20:08	1
Radium-228	1.34		0.312	0.341		0.430	pCi/g	05/09/19 12:15	05/30/19 20:08	1
Radium 226 and Radium 228	2.90		0.423	0.474			pCi/g	05/09/19 12:15	05/30/19 20:08	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC08-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-57

Date Collected: 10/11/18 15:35
Matrix: Solid
Date Received: 10/12/18 16:00

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	1.68		0.301	0.342	1.00	0.218	pCi/g	05/09/19 12:15	05/30/19 17:35	1
Radium-228	1.48		0.409	0.433		0.385	pCi/g	05/09/19 12:15	05/30/19 17:35	1
Radium 226 and Radium 228	3.16		0.508	0.552			pCi/g	05/09/19 12:15	05/30/19 17:35	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC08-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-58

Date Collected: 10/11/18 15:40
Date Received: 10/12/18 16:00

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	2.45		0.407	0.478	1.00	0.261	pCi/g	05/09/19 12:15	05/30/19 20:06	1
Radium-228	1.70		0.491	0.521		0.695	pCi/g	05/09/19 12:15	05/30/19 20:06	1
Radium 226 and Radium 228	4.15		0.638	0.707			pCi/g	05/09/19 12:15	05/30/19 20:06	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC08-CORLB-0.0/0.5-20181011

Lab Sample ID: 490-161170-59

Date Collected: 10/11/18 15:45
Date Received: 10/12/18 16:00

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	1.68		0.291	0.339	1.00	0.147	pCi/g	05/09/19 14:30	05/31/19 07:46	1
Radium-228	1.35		0.398	0.421		0.313	pCi/g	05/09/19 14:30	05/31/19 07:46	1
Radium 226 and Radium 228	3.03		0.493	0.541			pCi/g	05/09/19 14:30	05/31/19 07:46	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC07-CORLB-0.0/0.5-20181011

Lab Sample ID: 490-161170-60

Date Collected: 10/11/18 16:10
Date Received: 10/12/18 16:00

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	1.27		0.363	0.387	1.00	0.320	pCi/g	05/09/19 14:30	05/31/19 07:47	1
Radium-228	1.42		0.412	0.437		0.470	pCi/g	05/09/19 14:30	05/31/19 07:47	1
Radium 226 and Radium 228	2.69		0.549	0.584			pCi/g	05/09/19 14:30	05/31/19 07:47	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC07-CORCC-0.0/0.5-20181011

Lab Sample ID: 490-161170-61

Date Collected: 10/11/18 16:20
Date Received: 10/12/18 16:00

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	1.46		0.277	0.316	1.00	0.209	pCi/g	05/09/19 14:30	05/31/19 07:46	1
Radium-228	1.63		0.363	0.399		0.156	pCi/g	05/09/19 14:30	05/31/19 07:46	1
Radium 226 and Radium 228	3.09		0.457	0.509			pCi/g	05/09/19 14:30	05/31/19 07:46	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC07-CORRB-0.0/0.5-20181011

Lab Sample ID: 490-161170-62

Date Collected: 10/11/18 16:30

Matrix: Solid

Date Received: 10/12/18 16:00

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	1.96		0.405	0.452	1.00	0.316	pCi/g	05/09/19 14:30	05/31/19 07:47	1
Radium-228	1.54		0.364	0.396		0.499	pCi/g	05/09/19 14:30	05/31/19 07:47	1
Radium 226 and Radium 228	3.50		0.545	0.601			pCi/g	05/09/19 14:30	05/31/19 07:47	1

Client Sample Results

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-CORRB-0.0/0.5-20181010

Lab Sample ID: 490-161170-64

Date Collected: 10/10/18 11:15
Date Received: 10/12/18 16:00

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	0.687		0.138	0.155	1.00	0.0993	pCi/g	05/09/19 14:30	05/31/19 09:43	1
Radium-228	0.639		0.157	0.170		0.0918	pCi/g	05/09/19 14:30	05/31/19 09:43	1
Radium 226 and Radium 228	1.33		0.209	0.230			pCi/g	05/09/19 14:30	05/31/19 09:43	1

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

Lab Sample ID: MB 160-396015/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 400058 — **Prep Batch: 396015**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.4715	U	0.653	0.655	50.0	32.1	pCi/L	10/19/18 10:28	11/09/18 10:29	1
Radium-228	-3.415	U	25.9	25.9	50.0	31.2	pCi/L	10/19/18 10:28	11/09/18 10:29	1
Radium 226 and 228	-2.944	U	25.9	25.9			pCi/L	10/19/18 10:28	11/09/18 10:29	1

Lab Sample ID: LCS 160-396015/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 400059 — **Prep Batch: 396015**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132300		15300		379	pCi/L	97	90 - 111
Cesium-137	45200	43980		4410		121	pCi/L	97	90 - 111
Cobalt-60	31700	30750		3040		81.6	pCi/L	97	89 - 110

Lab Sample ID: 490-161170-1 DU — **Client Sample ID: CUF-SED-CuR07-EB01-20181008**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 400431 — **Prep Batch: 396015**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	24.0		41.68		15.0	50.0	13.9	pCi/L	0.58	1
Radium-228	7.90	U	22.26		12.0	50.0	12.9	pCi/L	0.48	1
Radium 226 and 228	31.9		63.93		19.2			pCi/L	0.74	1

Lab Sample ID: MB 160-427797/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430202 — **Prep Batch: 427797**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.04980	U	0.105	0.105	1.00	0.353	pCi/g	05/09/19 12:15	05/30/19 14:11	1
Radium-228	0.06708	U	0.144	0.144		0.356	pCi/g	05/09/19 12:15	05/30/19 14:11	1
Radium 226 and Radium 228	0.06708	U	0.144	0.144			pCi/g	05/09/19 12:15	05/30/19 14:11	1

Lab Sample ID: LCS 160-427797/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430199 — **Prep Batch: 427797**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	96.7	98.06		10.3		1.22	pCi/g	101	87 - 116
Cesium-137	27.7	27.38		2.96		0.253	pCi/g	99	87 - 120
Cobalt-60	11.6	11.17		1.20		0.0587	pCi/g	96	87 - 115

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

Lab Sample ID: 490-161170-22 DU — **Client Sample ID: CUF-SED-DC01-CORLB-0.0/0.5-20181009**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430197 — **Prep Batch: 427797**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.873			1.249		0.265	1.00	0.162	pCi/g			0.81	1
Radium-228	0.520			0.3396	U	0.152		0.440	pCi/g			0.56	1
Radium 226 and Radium 228	1.39			1.589		0.305			pCi/g			0.34	

Lab Sample ID: MB 160-427812/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430192 — **Prep Batch: 427812**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.04025	U	0.180	0.180	1.00	0.318	pCi/g	05/09/19 14:30	05/30/19 22:52	1
Radium-228	0.01640	U	0.0689	0.0689		0.256	pCi/g	05/09/19 14:30	05/30/19 22:52	1
Radium 226 and Radium 228	0.01640	U	0.06890	0.06890			pCi/g	05/09/19 14:30	05/30/19 22:52	1

Lab Sample ID: LCS 160-427812/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430193 — **Prep Batch: 427812**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Americium-241			96.7	92.17		9.70		1.19	pCi/g	95	87 - 116		
Cesium-137			27.7	27.57		2.94		0.200	pCi/g	100	87 - 120		
Cobalt-60			11.6	11.18		1.17		0.0757	pCi/g	96	87 - 115		

Lab Sample ID: 490-161170-64 DU — **Client Sample ID: CUF-SED-CuR04-CORRB-0.0/0.5-20181010**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 430305 — **Prep Batch: 427812**

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.687			0.7310		0.181	1.00	0.135	pCi/g			0.13	1
Radium-228	0.639			0.3989		0.289		0.296	pCi/g			0.52	1
Radium 226 and Radium 228	1.33			1.130		0.341			pCi/g			0.34	

QC Association Summary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Rad

Prep Batch: 396015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-161170-1	CUF-SED-CuR07-EB01-20181008	Total/NA	Water	Fill_Geo-21	
490-161170-5	CUF-SED-CuR07-EB01-20181009	Total/NA	Water	Fill_Geo-21	
490-161170-30	CUF-SED-CuR04-EB01-20181010	Total/NA	Water	Fill_Geo-21	
490-161170-43	CUF-SED-CuR02-EB01-20181011	Total/NA	Water	Fill_Geo-21	
MB 160-396015/1-A	Method Blank	Total/NA	Water	Fill_Geo-21	
LCS 160-396015/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-21	
490-161170-1 DU	CUF-SED-CuR07-EB01-20181008	Total/NA	Water	Fill_Geo-21	

Leach Batch: 426250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-161170-2	CUF-SED-CuR07-CORLB-0.0/0.5-20181008	Total/NA	Sediment	Dry and Grind	
490-161170-4	CUF-SED-CuR07-DUP01-20181008	Total/NA	Solid	Dry and Grind	
490-161170-6	CUF-SED-CuR07-CORCC-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-7	CUF-SED-CuR07-CORRB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-11	CUF-SED-CuR06-CORLB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-13	CUF-SED-CuR06-CORCC-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-14	CUF-SED-CuR06-CORRB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-16	CUF-SED-CuR05-CORLB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-19	CUF-SED-CuR05-CORCC-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-20	CUF-SED-CuR05-CORRB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-22	CUF-SED-DC01-CORLB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-24	CUF-SED-DC01-CORCC-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-26	CUF-SED-DC01-CORRB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-27	CUF-SED-DC01-CORRB-0.5/2.2-20181009	Total/NA	Solid	Dry and Grind	
490-161170-31	CUF-SED-CuR04-CORLB-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	
490-161170-35	CUF-SED-CuR04-CORCC-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	
490-161170-37	CUF-SED-CuR03-CORLB-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	
490-161170-39	CUF-SED-CuR03-CORRB-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	
490-161170-44	CUF-SED-CuR02-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-45	CUF-SED-CuR02-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-46	CUF-SED-CuR01-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-47	CUF-SED-CuR01-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-48	CUF-SED-CuR01-CORLB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-49	CUF-SED-WC10-CORLB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-52	CUF-SED-WC10-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-54	CUF-SED-WC10-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-55	CUF-SED-WC09-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-56	CUF-SED-WC09-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-57	CUF-SED-WC08-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-58	CUF-SED-WC08-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-59	CUF-SED-WC08-CORLB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-60	CUF-SED-WC07-CORLB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-61	CUF-SED-WC07-CORCC-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-62	CUF-SED-WC07-CORRB-0.0/0.5-20181011	Total/NA	Solid	Dry and Grind	
490-161170-64	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	
490-161170-22 DU	CUF-SED-DC01-CORLB-0.0/0.5-20181009	Total/NA	Solid	Dry and Grind	
490-161170-64 DU	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	Total/NA	Solid	Dry and Grind	

Prep Batch: 427797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-161170-22	CUF-SED-DC01-CORLB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250

Rad (Continued)

Prep Batch: 427797 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-161170-24	CUF-SED-DC01-CORCC-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-26	CUF-SED-DC01-CORRB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-27	CUF-SED-DC01-CORRB-0.5/2.2-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-31	CUF-SED-CuR04-CORLB-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250
490-161170-35	CUF-SED-CuR04-CORCC-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250
490-161170-37	CUF-SED-CuR03-CORLB-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250
490-161170-39	CUF-SED-CuR03-CORRB-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250
490-161170-44	CUF-SED-CuR02-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-45	CUF-SED-CuR02-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-46	CUF-SED-CuR01-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-47	CUF-SED-CuR01-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-48	CUF-SED-CuR01-CORLB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-49	CUF-SED-WC10-CORLB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-52	CUF-SED-WC10-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-54	CUF-SED-WC10-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-55	CUF-SED-WC09-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-56	CUF-SED-WC09-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-57	CUF-SED-WC08-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-58	CUF-SED-WC08-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
MB 160-427797/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-427797/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
490-161170-22 DU	CUF-SED-DC01-CORLB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250

Prep Batch: 427812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-161170-2	CUF-SED-CuR07-CORLB-0.0/0.5-20181008	Total/NA	Sediment	Fill_Geo-21	426250
490-161170-4	CUF-SED-CuR07-DUP01-20181008	Total/NA	Solid	Fill_Geo-21	426250
490-161170-6	CUF-SED-CuR07-CORCC-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-7	CUF-SED-CuR07-CORRB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-11	CUF-SED-CuR06-CORLB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-13	CUF-SED-CuR06-CORCC-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-14	CUF-SED-CuR06-CORRB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-16	CUF-SED-CuR05-CORLB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-19	CUF-SED-CuR05-CORCC-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-20	CUF-SED-CuR05-CORRB-0.0/0.5-20181009	Total/NA	Solid	Fill_Geo-21	426250
490-161170-59	CUF-SED-WC08-CORLB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-60	CUF-SED-WC07-CORLB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-61	CUF-SED-WC07-CORCC-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-62	CUF-SED-WC07-CORRB-0.0/0.5-20181011	Total/NA	Solid	Fill_Geo-21	426250
490-161170-64	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250
MB 160-427812/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-427812/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
490-161170-64 DU	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	Total/NA	Solid	Fill_Geo-21	426250

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR07-EB01-20181008 — Lab Sample ID: 490-161170-1

Date Collected: 10/08/18 16:05 — **Matrix: Water**
Date Received: 10/12/18 16:00

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	396015	10/19/18 10:28	EAW	TAL SL
Total/NA	Analysis	901.1		1			400060	11/09/18 10:34	KLS	TAL SL

Client Sample ID: CUF-SED-CuR07-CORLB-0.0/0.5-20181008 — Lab Sample ID: 490-161170-2

Date Collected: 10/08/18 16:10 — **Matrix: Sediment**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			204.1 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430190	05/30/19 23:09	KLS	TAL SL

Client Sample ID: CUF-SED-CuR07-DUP01-20181008 — Lab Sample ID: 490-161170-4

Date Collected: 10/08/18 00:01 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			116.2 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430309	05/31/19 06:14	KLS	TAL SL

Client Sample ID: CUF-SED-CuR07-EB01-20181009 — Lab Sample ID: 490-161170-5

Date Collected: 10/09/18 09:10 — **Matrix: Water**
Date Received: 10/12/18 16:00

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	396015	10/19/18 10:28	EAW	TAL SL
Total/NA	Analysis	901.1		1			400061	11/09/18 10:49	KLS	TAL SL

Client Sample ID: CUF-SED-CuR07-CORCC-0.0/0.5-20181009 — Lab Sample ID: 490-161170-6

Date Collected: 10/09/18 10:00 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			230.6 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430302	05/31/19 06:15	KLS	TAL SL

Client Sample ID: CUF-SED-CuR07-CORRB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-7

Date Collected: 10/09/18 10:54 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			261.7 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430301	05/31/19 06:17	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR06-CORLB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-11

Date Collected: 10/09/18 12:00 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			230.9 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430307	05/31/19 06:14	KLS	TAL SL

Client Sample ID: CUF-SED-CuR06-CORCC-0.0/0.5-20181009 — Lab Sample ID: 490-161170-13

Date Collected: 10/09/18 12:50 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			261.8 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430310	05/31/19 06:14	KLS	TAL SL

Client Sample ID: CUF-SED-CuR06-CORRB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-14

Date Collected: 10/09/18 13:30 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			229.1 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430302	05/31/19 06:49	KLS	TAL SL

Client Sample ID: CUF-SED-CuR05-CORLB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-16

Date Collected: 10/09/18 14:15 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			254.2 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430301	05/31/19 06:58	KLS	TAL SL

Client Sample ID: CUF-SED-CuR05-CORCC-0.0/0.5-20181009 — Lab Sample ID: 490-161170-19

Date Collected: 10/09/18 15:15 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			272.8 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430307	05/31/19 06:58	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR05-CORRB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-20

Date Collected: 10/09/18 15:30 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			283.2 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430310	05/31/19 07:41	KLS	TAL SL

Client Sample ID: CUF-SED-DC01-CORLB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-22

Date Collected: 10/09/18 16:00 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			301.4 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430198	05/30/19 14:08	KLS	TAL SL

Client Sample ID: CUF-SED-DC01-CORCC-0.0/0.5-20181009 — Lab Sample ID: 490-161170-24

Date Collected: 10/09/18 16:30 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			283.9 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430197	05/30/19 14:12	KLS	TAL SL

Client Sample ID: CUF-SED-DC01-CORRB-0.0/0.5-20181009 — Lab Sample ID: 490-161170-26

Date Collected: 10/09/18 16:55 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			320.8 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430199	05/30/19 15:30	KLS	TAL SL

Client Sample ID: CUF-SED-DC01-CORRB-0.5/2.2-20181009 — Lab Sample ID: 490-161170-27

Date Collected: 10/09/18 16:55 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			300 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430201	05/30/19 15:33	KLS	TAL SL

Client Sample ID: CUF-SED-CuR04-EB01-20181010 — Lab Sample ID: 490-161170-30

Date Collected: 10/10/18 09:10 — **Matrix: Water**
Date Received: 10/12/18 16:00

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	396015	10/19/18 10:28	EAW	TAL SL
Total/NA	Analysis	901.1		1			400430	11/11/18 16:50	CDR	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-CORLB-0.0/0.5-20181010 — Lab Sample ID: 490-161170-31

Date Collected: 10/10/18 09:25 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			137.7 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430198	05/30/19 15:37	KLS	TAL SL

Client Sample ID: CUF-SED-CuR04-CORCC-0.0/0.5-20181010 — Lab Sample ID: 490-161170-35

Date Collected: 10/10/18 10:50 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			292.1 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430202	05/30/19 17:21	KLS	TAL SL

Client Sample ID: CUF-SED-CuR03-CORLB-0.0/0.5-20181010 — Lab Sample ID: 490-161170-37

Date Collected: 10/10/18 12:00 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			262.8 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430199	05/30/19 17:21	KLS	TAL SL

Client Sample ID: CUF-SED-CuR03-CORRB-0.0/0.5-20181010 — Lab Sample ID: 490-161170-39

Date Collected: 10/10/18 13:55 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			297.2 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430201	05/30/19 17:22	KLS	TAL SL

Client Sample ID: CUF-SED-CuR02-EB01-20181011 — Lab Sample ID: 490-161170-43

Date Collected: 10/11/18 08:50 — **Matrix: Water**
Date Received: 10/12/18 16:00

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	396015	10/19/18 10:28	EAW	TAL SL
Total/NA	Analysis	901.1		1			400060	11/09/18 12:58	KLS	TAL SL

Client Sample ID: CUF-SED-CuR02-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-44

Date Collected: 10/11/18 09:30 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			205.4 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430198	05/30/19 17:16	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR02-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-45

Date Collected: 10/11/18 10:00 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			246 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430197	05/30/19 17:20	KLS	TAL SL

Client Sample ID: CUF-SED-CuR01-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-46

Date Collected: 10/11/18 10:20 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			218.6 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430192	05/30/19 17:27	KLS	TAL SL

Client Sample ID: CUF-SED-CuR01-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-47

Date Collected: 10/11/18 10:40 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			336.5 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430193	05/30/19 17:29	KLS	TAL SL

Client Sample ID: CUF-SED-CuR01-CORLB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-48

Date Collected: 10/11/18 11:10 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			228.3 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430198	05/30/19 17:55	KLS	TAL SL

Client Sample ID: CUF-SED-WC10-CORLB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-49

Date Collected: 10/11/18 12:20 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			195.1 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430197	05/30/19 18:00	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC10-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-52

Date Collected: 10/11/18 13:20 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			198 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430201	05/30/19 18:04	KLS	TAL SL

Client Sample ID: CUF-SED-WC10-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-54

Date Collected: 10/11/18 13:50 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			188.6 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430199	05/30/19 18:03	KLS	TAL SL

Client Sample ID: CUF-SED-WC09-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-55

Date Collected: 10/11/18 14:40 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			198.6 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430202	05/30/19 18:03	KLS	TAL SL

Client Sample ID: CUF-SED-WC09-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-56

Date Collected: 10/11/18 15:05 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			181.6 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430198	05/30/19 20:08	KLS	TAL SL

Client Sample ID: CUF-SED-WC08-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-57

Date Collected: 10/11/18 15:35 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			92.6 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430200	05/30/19 17:35	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-WC08-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-58

Date Collected: 10/11/18 15:40 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			191 g	1.0 g	427797	05/09/19 12:15	KRS	TAL SL
Total/NA	Analysis	901.1		1			430197	05/30/19 20:06	KLS	TAL SL

Client Sample ID: CUF-SED-WC08-CORLB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-59

Date Collected: 10/11/18 15:45 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			204.4 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430309	05/31/19 07:46	KLS	TAL SL

Client Sample ID: CUF-SED-WC07-CORLB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-60

Date Collected: 10/11/18 16:10 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			182.3 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430307	05/31/19 07:47	KLS	TAL SL

Client Sample ID: CUF-SED-WC07-CORCC-0.0/0.5-20181011 — Lab Sample ID: 490-161170-61

Date Collected: 10/11/18 16:20 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			176.2 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430302	05/31/19 07:46	KLS	TAL SL

Client Sample ID: CUF-SED-WC07-CORRB-0.0/0.5-20181011 — Lab Sample ID: 490-161170-62

Date Collected: 10/11/18 16:30 — **Matrix: Solid**
Date Received: 10/12/18 16:00

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			178.5 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430301	05/31/19 07:47	KLS	TAL SL

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Client Sample ID: CUF-SED-CuR04-CORRB-0.0/0.5-20181010

Lab Sample ID: 490-161170-64

Date Collected: 10/10/18 11:15
Date Received: 10/12/18 16:00

Matrix: Solid

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	426250	04/30/19 12:30	DRO	TAL SL
Total/NA	Prep	Fill_Geo-21			300 g	1.0 g	427812	05/09/19 14:30	KRS	TAL SL
Total/NA	Analysis	901.1		1			430302	05/31/19 09:43	KLS	TAL SL

Laboratory References:

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

Method Summary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

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

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

Laboratory: Eurofins TestAmerica, Nashville

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

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-19
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	09-30-19
Arizona	State Program	9	AZ0473	05-05-20
Arkansas DEQ	State Program	6	88-0737	04-25-20
California	State Program	9	2938	06-30-20
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-20
Georgia	State Program	4	E87358(FL)/453.07(A2LA)	06-30-20
Illinois	NELAP	5	200010	12-09-19
Iowa	State Program	7	131	04-01-20
Kansas	NELAP	7	E-10229	10-31-19
Kentucky (UST)	State Program	4	19	06-30-20
Kentucky (WW)	State Program	4	90038	12-31-19
Louisiana	NELAP	6	30613	06-30-20
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-20
Massachusetts	State Program	1	M-TN032	06-30-20
Minnesota	NELAP	5	047-999-345	12-31-19
Mississippi	State Program	4	N/A	06-30-19 *
Montana (UST)	State Program	8	NA	02-17-19
Nevada	State Program	9	TN00032	07-31-19 *
New Hampshire	NELAP	1	2963	10-09-19
New Jersey	NELAP	2	TN965	06-30-20
New York	NELAP	2	11342	03-31-20
North Carolina (WW/SW)	State Program	4	387	12-31-19
North Dakota	State Program	8	R-146	06-30-19 *
Ohio VAP	State Program	5	CL0033	04-30-19
Oklahoma	State Program	6	9412	08-31-19 *
Oregon	NELAP	10	TN200001	04-26-20
Pennsylvania	NELAP	3	68-00585	07-31-19 *
Rhode Island	State Program	1	LAO00268	12-30-19
South Carolina	State Program	4	84009 (001)	02-28-19 *
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-19
USDA	Federal		P330-13-00306	04-10-20
Utah	NELAP	8	TN00032	07-31-19
Virginia	NELAP	3	460152	06-14-20
Washington	State Program	10	C789	07-19-19 *
West Virginia DEP	State Program	3	219	02-28-20
Wisconsin	State Program	5	998020430	08-31-19 *
Wyoming (UST)	A2LA	8	453.07	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Environmental Standards Inc.
Project/Site: CUF_SED_20181008_1B

Job ID: 490-161170-3

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	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	Dept. of Defense ELAP		L2305	04-06-22
ANAB	DoD		L2305	04-06-22
ANAB	DOE		L2305.01	04-06-22
Arizona	State		AZ0813	12-08-19
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-20
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-20
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-20
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-20
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19 *
Nevada	State Program	9	MO000542018-1	07-31-19 *
New Jersey	NELAP	2	MO002	06-30-20
New York	NELAP	2	11616	03-31-20
New York	NELAP		11616	04-01-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State		9997	08-31-19
Oklahoma	State Program	6	9997	08-31-19 *
Pennsylvania	NELAP	3	68-00540	02-28-20
Pennsylvania	NELAP		68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19 *
Texas	NELAP	6	T104704193-18-13	07-31-19 *
Texas	NELAP		T104704193-19-13	07-31-20
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19 *
Virginia	NELAP	3	460230	06-14-20
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

490-161170 Chain of Custody

Cooler Received/Opened On_____10-12-2018_@__1600

Time Samples Removed From Cooler_____ Time Samples Placed In Storage_____ (2 Hour Window)

1. Tracking #_____(last 4 digits, FedEx) Courier: Client

   IR Gun ID___31470368_____ pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 0.8 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 Side 1 Front 1 Back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) ADT

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

   b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) ADT

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

   b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) ADT

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) ADT

I certify that I attached a label with the unique LIMS number to each container (intial) ADT

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

Revised 7/24/2019 (Rev. 1)

Loc: 490
161170

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

Cooler Received/Opened On 10-12-2018 @ 1600

Time Samples Removed From Cooler_____ Time Samples Placed In Storage_____ (2 Hour Window)

1. Tracking #_____(last 4 digits, FedEx) Courier: Client

   IR Gun ID 31470368 pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 3-7 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 Side 1 Front 1 Back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) ADH

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

   b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) ADH

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

   b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) ADH

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) ADH

I certify that I attached a label with the unique LIMS number to each container (intial) ADH

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment

Loc: 490
161170

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

Cooler Received/Opened On_____10-12-2018_@_1600

Time Samples Removed From Cooler_____ Time Samples Placed In Storage_____ (2 Hour Window)

1. Tracking #_____(last 4 digits, FedEx) Courier: Client

   IR Gun ID___31470368_____ pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 25 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 Side 1 Front 1 Back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) ADH

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

   b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) ADH

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

   b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) ADH

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) ADH

I certify that I attached a label with the unique LIMS number to each container (intial) ADH

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment

Loc: 490
161170

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

Cooler Received/Opened On_____10-12-2018_@ 1600

Time Samples Removed From Cooler_____ Time Samples Placed In Storage_____ (2 Hour Window)

1. Tracking #_____(last 4 digits, FedEx) Courier: Client

   IR Gun ID___31470368_____ pH Strip Lot N/A Chlorine Strip Lot N/A

2. Temperature of rep. sample or temp blank when opened: 4.2 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

   If yes, how many and where: 1 Side 1 Front 1 Back

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) ADT

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

   Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

   b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) ADT

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

   b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) ADT

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) ASH

I certify that I attached a label with the unique LIMS number to each container (intial) ADT

21. Were there Non-Conformance issues at login? YES...NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-7
End of Form

Revised 8/31/17 7/24/2019 (Rev. 1)

Loc: 490

161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1 of 4
COC No:	CUF_SED_20181008_1B
1 of 5 Pages	
Task Desc:	CUF_SED

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
Lab Manager Contact Information		Site PM Name:	Roy Quinn		
Lab PM:	Gail Lage	Phone/Fax:	423-751-3763	Sampling Team Number:	1
Phone/Fax:	615-301-5741/615-726-3404	Site PM Email:	rquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@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 (Standard)

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: CUF_SEDIMENT_RAD	Analysis: CUF_SEDIMENT_BLANKS_RAD	Filtered: N	Filtered: N	Preserve: None	Preserve: HNO3
1	CUF-SED-CuR07-EB01-20181008	CuR07			W	G	EB	10/8/2018	1605	3		☐		X				
2	CUF-SED-CuR07-CORLB-0.0/0.5-20181008	CuR07			SED	G	N	10/8/2018	1610	1		☐	X					
3	CUF-SED-CuR07-CORLB-0.5/4.3-20181008	CuR07			SED	G	N	10/8/2018	1610	1	Hold	☐	X					
4	CUF-SED-CuR07-DUP01-20181008	CuR07			SED	G	FD	10/8/2018	NA	1		☐	X					
5	CUF-SED-CuR07-EB01-20181009	CuR07			W	G	EB	10/9/2018	0910	3		☐		X				
6	CUF-SED-CuR07-CORCC-0.0/0.5-20181009	CuR07			SED	G	N	10/9/2018	1000	1		☐	X					
7	CUF-SED-CuR07-CORRB-0.0/0.5-20181009	CuR07			SED	G	N	10/9/2018	1054	1		☐	X					
8	CUF-SED-CuR07-CORRB-0.5/3.4-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
9	CUF-SED-CuR07-CORRB-3.4/4.8-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
10	CUF-SED-CuR07-CORRB-4.8/5.7-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
11	CUF-SED-CuR06-CORLB-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1200	1		☐	X					
12	CUF-SED-CuR06-CORLB-0.5/6.0-20181009	CuR06			SED	G	N	10/9/2018	1200	1	Hold	☐	X					
13	CUF-SED-CuR06-CORCC-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1250	1		☐	X					

Additional Comments/Special Instructions:

Hold: please hold samples designated for storage; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	2345			
	10/12/18	1600	TA-NAS		

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
	Tyler Baker Tyler Baker / TVA

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

0.8, 3.7, 2.5, 4.2

Form TVA 30067A

Loc: 490
161170

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 4
COC No:	CUF_SED_20181008_1B
2 of 5 Pages	
Task Desc:	CUF_SED

Required Ship to Lab:

Lab Name: TestAmerica Nashville
Lab Address: 29360 Foster Creighton Dr, Nashville, TN 37204

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 #: CUMBERLAND FOSSIL PLANT
Project #:
Site Address: 815 Cumberland City Road
City: Cumberland City State, Zip: TN, 37763
Site PM Name: Roy Quinn
Phone/Fax: 423-751-3753
Site PM Email: jrquinn@tva.gov

Required Sampler Information

Sampler: Tyler Baker
Sampling Company: TVA
Address: TVA Chickamauga Power Service Center, 4601 N. Access Road
City/State: Chattanooga, TN Phone: 423-876-6733
Sampling Team Number: 1
Send EDD/Hard Copy to: tva-ei@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 (Standard)

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	Preserve (None)	Preserve (HNO3)	Analysis: CUF_SEDIMENT_RAD	Analysis: CUF_SEDIMENT_BLANKS_RAD
1	CUF-SED-CuR06-CORRB-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1330	1		☐	N			X	
2	CUF-SED-CuR06-CORRB-0.5/1.7-20181009	CuR06			SED	G	N	10/9/2018	1330	1	Hold	☐	N			X	
3	CUF-SED-CuR05-CORLB-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1415	1		☐				X	
4	CUF-SED-CuR05-CORLB-0.5/2.0-20181009	CuR05			SED	G	N	10/9/2018	1415	1	Hold	☐				X	
5	CUF-SED-CuR05-CORLB-2.0/4.7-20181009	CuR05			SED	G	N	10/9/2018	1415	1	Hold	☐				X	
6	CUF-SED-CuR05-CORCC-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1515	1		☐				X	
7	CUF-SED-CuR05-CORRB-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1530	1		☐				X	
8	CUF-SED-CuR05-CORRB-0.5/1.6-20181009	CuR05			SED	G	N	10/9/2018	1530	1	Hold	☐				X	
9	CUF-SED-DC01-CORLB-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1600	1		☐				X	
10	CUF-SED-DC01-CORLB-0.5/1.9-20181009	DC01			SED	G	N	10/9/2018	1600	1	Hold	☐				X	
11	CUF-SED-DC01-CORCC-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1630	1		☐				X	
12	CUF-SED-DC01-CORCC-0.5/1.0-20181009	DC01			SED	G	N	10/9/2018	1630	1	Hold	☐				X	
13	CUF-SED-DC01-CORRB-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1655	1		☐				X	

Hold 10/12/18

Additional Comments/Special Instructions:

Hold: Samples designated hold should be stored; do not analyze.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1345			
[illegible]	10/12/18	1600	TA-NAS		

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: Tyler Baker Tyler Baker / TVA

Form TVA 30067A

Loc: 490

161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	1
COC No:	CUF_SED_20181008_1B		
3 of 5 Pages			
Task Desc:	CUF_SED		

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@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 (Standard)

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: CUF_SEDIMENT_RAD (Filtered N, Preserve None)	Analysis: CUF_SEDIMENT_BLANKS_RAD (Filtered N, Preserve HNO3)
1	CUF-SED-DC01-CORRB-0.5/2.2-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
2	CUF-SED-DC01-CORRB-2.2/5.6-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
3	CUF-SED-DC01-CORRB-5.6/6.0-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
4	CUF-SED-CuR04-EB01-20181010	CuR04			W	G	EB	10/10/2018	0910	3		☐		X
5	CUF-SED-CuR04-CORLB-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	0925	1		☐	X	
6	CUF-SED-CuR04-CORLB-0.5/2.1-20181010	CuR04			SED	G	N	10/10/2018	0925	1	Hold	☐	X	
7	CUF-SED-CuR04-CORLB-2.1/2.9-20181010	CuR04			SED	G	N	10/10/2018	0925	1	Hold	☐	X	
8	CUF-SED-CuR04-DUP01-20181010	CuR04			SED	G	FD	10/10/2018	NA	1	Hold	☐	X	
9	CUF-SED-CuR04-CORCC-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	1050	1		☐	X	
10	CUF-SED-CuR04-CORRB-0.5/1.3-20181010	CuR04			SED	G	N	10/10/2018	1115	1	Hold	☐	X	
11	CUF-SED-CuR03-CORLB-0.0/0.5-20181010	CuR03			SED	G	N	10/10/2018	1200	1		☐	X	
12	CUF-SED-CuR03-CORLB-0.5/5.0-20181010	CuR03			SED	G	N	10/10/2018	1200	1	Hold	☐	X	
13	CUF-SED-CuR03-CORRB-0.0/0.5-20181010	CuR03			SED	G	N	10/10/2018	1355	1		☐	X	

Additional Comments/Special Instructions:

Hold; Samples designated hold should be stored; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1345			
[signature]	10/12/18	1600	TA-NAS		

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
	Tyler Baker Tyler Baker / TVA

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

Form TVA 30067A

Loc: 490

161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	4
COC No:	CUF_SED_20181008_1B		
4 of 5 Pages			
Task Desc:	CUF_SED		

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@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 (Standard)

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	Filtered N	Preserve None	Preserve HNO3	Analysis CUF_SEDIMENT_RAD	Analysis CUF_SEDIMENT_BLANKS_RAD
1	CUF-SED-CuR03-CORRB-0.5/2.1-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐					X	
2	CUF-SED-CuR03-CORRB-2.1/2.6-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐					X	
3	CUF-SED-CuR03-CORRB-2.6/3.1-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐					X	
4	CUF-SED-CuR02-EB01-20181011	CuR02			W	G	EB	10/11/2018	0850	3		☐				X		
5	CUF-SED-CuR02-CORCC-0.0/0.5-20181011	CuR02			SED	G	N	10/11/2018	0930	1		☐					X	
6	CUF-SED-CuR02-CORRB-0.0/0.5-20181011	CuR02			SED	G	N	10/11/2018	0950	1		☐					X	
7	CUF-SED-CuR01-CORRB-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1020	1		☐					X	
8	CUF-SED-CuR01-CORCC-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1040	1		☐					X	
9	CUF-SED-CuR01-CORLB-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1110	1		☐					X	
10	CUF-SED-WC10-CORLB-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1220	1		☐					X	
11	CUF-SED-WC10-CORLB-0.5/3.0-20181011	WC10			SED	G	N	10/11/2018	1220	1	Hold	☐					X	
12	CUF-SED-WC10-CORLB-3.0/3.5-20181011	WC10			SED	G	N	10/11/2018	1220	1	Hold	☐					X	
13	CUF-SED-WC10-CORCC-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1320	1		☐					X	

Additional Comments/Special Instructions:

Model: Samples designated hold should be stored in storage; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1325			
	10/12/18	1600	TA-NAS		

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
	Tyler Baker Tyler Baker

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?

Form TVA 30067A

Loc: 490
161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	4
COC No:	CUF_SED_20181008_1B		
5 of 5 Pages	[redacted]		
Task Desc:	CUF_SED		

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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:	jrquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@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 (Standard)

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	Filtered: N	Preserve: None	Preserve: HNO3	Analysis: CUF_SEDIMENT_RAD	Analysis: CUF_SEDIMENT_BLANKS_RAD
1	CUF-SED-WC10-CORCC-0.5/2.9-20181011	WC10			SED	G	N	10/11/2018	1320	1	Hold	☐	N			X	
2	CUF-SED-WC10-CORRB-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1350	1		☐	N			X	
3	CUF-SED-WC09-CORCC-0.0/0.5-20181011	WC09			SED	G	N	10/11/2018	1440	1		☐	N			X	
4	CUF-SED-WC09-CORRB-0.0/0.5-20181011	WC09			SED	G	N	10/11/2018	1505	1		☐	N			X	
5	CUF-SED-WC08-CORCC-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1540	1		☐	N			X	
6	CUF-SED-WC08-CORRB-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1535	1		☐	N			X	
7	CUF-SED-WC08-CORLB-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1545	1		☐	N			X	
8	CUF-SED-WC07-CORLB-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1610	1		☐	N			X	
9	CUF-SED-WC07-CORCC-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1620	1		☐	N			X	
10	CUF-SED-WC07-CORRB-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1630	1		☐	N			X	
11	CUF-SED-CuR01-CORRB-0.5/1.4-20181011	CuR01			SED	G	N	10/11/2018	1020	1	Hold	☐	N			X	
12	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	1115	1		☐	N			X	
13												☐					

TFB 10/12/18

Additional Comments/Special Instructions:

Hold: samples designated hold should be placed in storage: do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1245			
[signature]	10/12/18	1600	TA-NAS		

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
	Tyler Baker Tyler Baker / TVA

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 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)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: CUF_SED_20181008_1B
Site:

Sampler:
Phone:
Due Date Requested: 5/16/2019
TAT Requested (days):
PO #:
WO #:
Project #: 49014071
SSOW#:

Lab PM: Lage, Gail
E-Mail: gail.lage@testamericainc.com
Carrier Tracking No(s):
State of Origin: Tennessee
Accreditations Required (See note):

COC No: 180-360626.1
Page: Page 1 of 4
Job #: 490-161170-3

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:

Analysis Requested

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 (MOD) Radium-226/228	901.1_Ra/Fill_Geo_21 (MOD) Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
CUF-SED-CuR07-CORLB-0.0/0.5-20181008 (490-161170-2)	10/8/18	16:10 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR07-DUP01-20181008 (490-161170-4)	10/8/18	00:01 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR07-CORCC-0.0/0.5-20181009 (490-161170-6)	10/9/18	10:00 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR07-CORRB-0.0/0.5-20181009 (490-161170-7)	10/9/18	10:54 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR06-CORLB-0.0/0.5-20181009 (490-161170-11)	10/9/18	12:00 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR06-CORCC-0.0/0.5-20181009 (490-161170-13)	10/9/18	12:50 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR06-CORRB-0.0/0.5-20181009 (490-161170-14)	10/9/18	13:30 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR05-CORLB-0.0/0.5-20181009 (490-161170-16)	10/9/18	14:15 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR05-CORCC-0.0/0.5-20181009 (490-161170-19)	10/9/18	15:15 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna

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	Company	Received by	Date/Time	Company
[signature]	4/19/19 1700	TAST	[signature]	4-20-19 0815	TAST

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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)

Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North, ,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: CUF_SED_20181008_1B
Site:

Sampler:
Phone:
Due Date Requested: 5/16/2019
TAT Requested (days):
PO #:
WO #:
Project #: 49014071
SSOW#:

Lab PM: Lage, Gail
E-Mail: gail.lage@testamericainc.com
Carrier Tracking No(s):
State of Origin: Tennessee
Accreditations Required (See note):

COC No: 180-360626.2
Page: Page 2 of 4
Job #: 490-161170-3

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:

Analysis Requested

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 (MOD) Radium-226/228	901.1_Ra/Fill_Geo_21 (MOD) Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
CUF-SED-CuR05-CORRB-0.0/0.5-20181009 (490-161170-20)	10/9/18	15:30 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-DC01-CORLB-0.0/0.5-20181009 (490-161170-22)	10/9/18	16:00 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-DC01-CORCC-0.0/0.5-20181009 (490-161170-24)	10/9/18	16:30 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-DC01-CORRB-0.0/0.5-20181009 (490-161170-26)	10/9/18	16:55 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-DC01-CORRB-0.5/2.2-20181009 (490-161170-27)	10/9/18	16:55 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR04-CORLB-0.0/0.5-20181010 (490-161170-31)	10/10/18	09:25 Central		Solid			X	X	2	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR04-CORCC-0.0/0.5-20181010 (490-161170-35)	10/10/18	10:50 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR03-CORLB-0.0/0.5-20181010 (490-161170-37)	10/10/18	12:00 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR03-CORRB-0.0/0.5-20181010 (490-161170-39)	10/10/18	13:55 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna

490-161170-01 Chain of Custody

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. I

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:	Company	Received by:	Date/Time:	Company
	4/19/19 1700	TAS		4-20-19 08:25	TA STL
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

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: Lage, Gail	Carrier Tracking No(s):	COC No: 180-360626.3
Client Contact: Shipping/Receiving	Phone:	E-Mail: gail.lage@testamericainc.com	State of Origin: Tennessee	Page: Page 3 of 4
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 490-161170-3
Address: 13715 Rider Trail North, ,	Due Date Requested: 5/16/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: CUF_SED_20181008_1B	Project #: 49014071			
Site:	SSOW#:			

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:

Analysis Requested

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 (MOD) Radium-226/228	901.1_Ra/Fill_Geo_21 (MOD) Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
CUF-SED-CuR02-CORCC-0.0/0.5-20181011 (490-161170-44)	10/11/18	09:30 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR02-CORRB-0.0/0.5-20181011 (490-161170-45)	10/11/18	10:00 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR01-CORRB-0.0/0.5-20181011 (490-161170-46)	10/11/18	10:20 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR01-CORCC-0.0/0.5-20181011 (490-161170-47)	10/11/18	10:40 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR01-CORLB-0.0/0.5-20181011 (490-161170-48)	10/11/18	11:10 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC10-CORLB-0.0/0.5-20181011 (490-161170-49)	10/11/18	12:20 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC10-CORCC-0.0/0.5-20181011 (490-161170-52)	10/11/18	13:20 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC10-CORRB-0.0/0.5-20181011 (490-161170-54)	10/11/18	13:50 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC09-CORCC-0.0/0.5-20181011 (490-161170-55)	10/11/18	14:40 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna

490-161170-02 Chain of Custody

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. I

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:	Company	Received by:	Date/Time:	Company
	4/19/19 1700	Shipt		4-20-19 08:25	TASR
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

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: Lage, Gail	Carrier Tracking No(s):	COC No: 180-360626.4
Client Contact: Shipping/Receiving	Phone:	E-Mail: gail.lage@testamericainc.com	State of Origin: Tennessee	Page: Page 4 of 4
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 490-161170-3
Address: 13715 Rider Trail North, ,	Due Date Requested: 5/16/2019			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: CUF_SED_20181008_1B	Project #: 49014071			
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 (MOD) Radium-226/228	901.1_Ra/Fill_Geo_21 (MOD) Radium-226/228	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
CUF-SED-WC09-CORRB-0.0/0.5-20181011 (490-161170-56)	10/11/18	15:05 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC08-CORRB-0.0/0.5-20181011 (490-161170-57)	10/11/18	15:35 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC08-CORCC-0.0/0.5-20181011 (490-161170-58)	10/11/18	15:40 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC08-CORLB-0.0/0.5-20181011 (490-161170-59)	10/11/18	15:45 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC07-CORLB-0.0/0.5-20181011 (490-161170-60)	10/11/18	16:10 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC07-CORCC-0.0/0.5-20181011 (490-161170-61)	10/11/18	16:20 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-WC07-CORRB-0.0/0.5-20181011 (490-161170-62)	10/11/18	16:30 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna
CUF-SED-CuR04-CORRB-0.0/0.5-20181010 (490-161170-64)	10/10/18	11:15 Central		Solid			X	X	1	TVA - Batch alone. Quarantine zone soils. Contact PM if insufficient volume for Tuna

490-161170-03 Chain of Custody

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.

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: 4/19/19 1700	Company TAAM	Received by:	Date/Time: 4-20-19 08:25	Company TA STL
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: 490-161170-3

Login Number: 161170
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/18/18 10:39 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.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	12.0
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.	N/A	
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	

Loc: 490

161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1 of 4
COC No:	CUF_SED_20181008_1B
1 of 5 Pages	
Task Desc:	CUF_SED

Rev_1 KH 12/1/2020

Rev 2 TFB 9-27-2021

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37765	City/State: Chattanooga, TN	Phone: 423-876-6733
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:	royquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@env-sld.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 (Standard)

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: CUF_SEDIMENT_SAD	Analysis: CUF_SEDIMENT_BLANKS_RAD	Preservative: None	Preservative: HNO3	Filtered: N	Filtered: N
1	CUF-SED-CuR07-EB01-20181008	CuR07			W	G	EB	10/8/2018	1605	3		☐		X				
2	CUF-SED-CuR07-CORLB-0.0/0.5-20181008	CuR07			SED	G	N	10/8/2018	1610	1		☐	X					
3	CUF-SED-CuR07-CORLB-0.5/4.3-20181008	CuR07			SED	G	N	10/8/2018	1610	1	Hold	☐	X					
4	CUF-SED-CuR07-DUP01-20181008	CuR07			SED	G	FD	10/8/2018	NA	1		☐	X					
5	CUF-SED-CuR07-EB01-20181009	CuR07			W	G	EB	10/9/2018	0910	3		☐		X				
6	CUF-SED-CuR07-CORCC-0.0/0.5-20181009	CuR07			SED	G	N	10/9/2018	1000	1		☐	X					
7	CUF-SED-CuR07-CORRB-0.0/0.5-20181009	CuR07			SED	G	N	10/9/2018	1054	1		☐	X					
8	CUF-SED-CuR07-CORRB-0.5/3.4-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
9	CUF-SED-CuR07-CORRB-3.4/4.8-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
10	CUF-SED-CuR07-CORRB-4.8/5.7-20181009	CuR07			SED	G	N	10/9/2018	1054	1	Hold	☐	X					
11	CUF-SED-CuR06-CORLB-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1200	1		☐	X					
12	CUF-SED-CuR06-CORLB-0.5/6.0-20181009	CuR06			SED	G	N	10/9/2018	1200	1	Hold	☐	X					
13	CUF-SED-CuR06-CORCC-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1250	1		☐	X					

TFB 10/10/18

TFB 10/12/18

Additional Comments/Special Instructions:

Hold; please hold samples designated for storage; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	2315			
	10/12/18	1600	TA-NAS		

SHIPPING METHOD	SAMPLER NAME AND SIGNATURE
	Tyler Baker / TVA

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

0.8, 3.7, 2.5, 4.2

Form TVA 30087A

Loc: 490
161170

TVA Environmental Investigations

TVA Tennessee Valley Authority

COOLER No.:	1 of 4
COC No:	CUF_SED_20181008_1B
	2 of 5 Pages
Task Desc:	CUF_SED

Rev_1 KH 12/1/2020
Rev 2 TFB 9-27-2021

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4601 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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-ei@envsid.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 (Standard)

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: CUF_SEDIMENT_RAD	CUF_SEDIMENT_BLANKS_RAD	Filtered: N	Filtered: N	Preserve: None	Preserve: HNO3
										HB101218								
1	CUF-SED-CuR06-CORRB-0.0/0.5-20181009	CuR06			SED	G	N	10/9/2018	1330	1		☐	X					
2	CUF-SED-CuR06-CORRB-0.5/1.7-20181009	CuR06			SED	G	N	10/9/2018	1330	1	Hold	☐	X					
3	CUF-SED-CuR05-CORLB-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1415	1		☐	X					
4	CUF-SED-CuR05-CORLB-0.5/2.0-20181009	CuR05			SED	G	N	10/9/2018	1415	1	Hold	☐	X					
5	CUF-SED-CuR05-CORLB-2.0/4.7-20181009	CuR05			SED	G	N	10/9/2018	1415	1	Hold	☐	X					
6	CUF-SED-CuR05-CORCC-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1515	1		☐	X					
7	CUF-SED-CuR05-CORRB-0.0/0.5-20181009	CuR05			SED	G	N	10/9/2018	1530	1		☐	X					
8	CUF-SED-CuR05-CORRB-0.5/1.8-20181009	CuR05			SED	G	N	10/9/2018	1530	1	Hold	☐	X					
9	CUF-SED-DC01-CORLB-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1600	1		☐	X					
10	CUF-SED-DC01-CORLB-0.5/1.9-20181009	DC01			SED	G	N	10/9/2018	1600	1	Hold	☐	X					
11	CUF-SED-DC01-CORCC-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1630	1		☐	X					
12	CUF-SED-DC01-CORCC-0.5/1.0-20181009	DC01			SED	G	N	10/9/2018	1630	1	Hold	☐	X					
13	CUF-SED-DC01-CORRB-0.0/0.5-20181009	DC01			SED	G	N	10/9/2018	1655	1		☐	X					

Additional Comments/Special Instructions:

Hold: Samples designated hold should be stored; do not analyze.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1345			
	10/12/18	1600	TA-NAS		

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: Tyler Baker Tyler Baker / TVA

Form TVA 30087A

Loc: 490

TVA Environmental Investigations 161170

Tennessee Valley Authority

COOLER No.:	1	of	2
COC No:	CUF_SED_20181008_1B		
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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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4801 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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:	rrquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@provtd.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 (Standard)

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: CUF_SEDIMENT_RAD	Analysis: CUF_SEDIMENT_BLANKS_RAD
1	CUF-SED-DC01-CORRB-0.5/2.2-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
2	CUF-SED-DC01-CORRB-2.2/5.6-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
3	CUF-SED-DC01-CORRB-5.6/6.0-20181009	DC01			SED	G	N	10/9/2018	1655	1	Hold	☐	X	
4	CUF-SED-CuR04-EB01-20181010	CuR04			W	G	EB	10/10/2018	0910	3		☐		X
5	CUF-SED-CuR04-CORLB-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	0925	1		☐	X	
6	CUF-SED-CuR04-CORLB-0.5/2.1-20181010	CuR04			SED	G	N	10/10/2018	0925	1	Hold	☐	X	
7	CUF-SED-CuR04-CORLB-2.1/2.9-20181010	CuR04			SED	G	N	10/10/2018	0925	1	Hold	☐	X	
8	CUF-SED-CuR04-DUP01-20181010	CuR04			SED	G	FD	10/10/2018	NA	1	Hold	☐	X	
9	CUF-SED-CuR04-CORCC-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	1050	1		☐	X	
10	CUF-SED-CuR04-CORRB-0.5/1.3-20181010	CuR04			SED	G	N	10/10/2018	1115	1	Hold	☐	X	
11	CUF-SED-CuR03-CORLB-0.0/0.5-20181010	CuR03			SED	G	N	10/10/2018	1200	1		☐	X	
12	CUF-SED-CuR03-CORLB-0.5/5.0-20181010	CuR03			SED	G	N	10/10/2018	1200	1	Hold	☐	X	
13	CUF-SED-CuR03-CORRB-0.0/0.5-20181010	CuR03			SED	G	N	10/10/2018	1355	1		☐	X	

Filtered: N N

Preserve: None HNO3

Additional Comments/Special Instructions:

Hold: Samples designated hold should be stored; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1345			
[signature]	10/12/18	1600	TA-NAS		

SHIPPING METHOD:	SAMPLER NAME AND SIGNATURE
	Tyler Baker Tyler Baker / TVA

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

Form TVA 30067A

Loc: 490

161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	4
COC No:	CUF_SED_20181008_1B		
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Task Desc:	CUF_SED		

Rev_1 KH 12/1/2020

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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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	29360 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4801 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-878-6733
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:	rmquinn@tva.gov	Send EDD/Hard Copy to:	tva-ei@envsid.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 (Standard)

ITEM#	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: CUF_SEDIMENT_RAD	Analysis: CUF_SEDIMENT_BLANKS_RAD	Filtered N	Filtered N	Preserve None	Preserve HNO3
1	CUF-SED-CuR03-CORRB-0.5/2.1-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐	X					
2	CUF-SED-CuR03-CORRB-2.1/2.8-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐	X					
3	CUF-SED-CuR03-CORRB-2.8/3.1-20181010	CuR03			SED	G	N	10/10/2018	1355	1	Hold	☐	X					
4	CUF-SED-CuR02-EB01-20181011	CuR02			W	G	EB	10/11/2018	0850	3		☐		X				
5	CUF-SED-CuR02-CORCC-0.0/0.5-20181011	CuR02			SED	G	N	10/11/2018	0930	1		☐	X					
6	CUF-SED-CuR02-CORRB-0.0/0.5-20181011	CuR02			SED	G	N	10/11/2018	~~0950~~	1	1000 KH 12/1/20	☐	X					
7	CUF-SED-CuR01-CORRB-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1020	1		☐	X					
8	CUF-SED-CuR01-CORCC-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1040	1		☐	X					
9	CUF-SED-CuR01-CORLB-0.0/0.5-20181011	CuR01			SED	G	N	10/11/2018	1110	1		☐	X					
10	CUF-SED-WC10-CORLB-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1220	1		☐	X					
11	CUF-SED-WC10-CORLB-0.5/3.0-20181011	WC10			SED	G	N	10/11/2018	1220	1	Hold	☐	X					
12	CUF-SED-WC10-CORLB-3.0/3.5-20181011	WC10			SED	G	N	10/11/2018	1220	1	Hold	☐	X					
13	CUF-SED-WC10-CORCC-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1320	1		☐	X					

TFB 10/12/18

TFB 10/12/18

Additional Comments/Special Instructions:

Hold: Samples designated hold should be stored in storage; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1345			
	10/12/18	1600	TA-NAS		

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: Tyler Baker Tyler Baker

Form TVA 30067A

Loc: 490
161170

TVA Environmental Investigations

Tennessee Valley Authority

COOLER No.:	1	of	4
COC No:	CUF_SED_20181008_1B		
5 of 5 Pages			
Task Desc:	CUF_SED		

Rev_1 KH 12/1/2020
Rev 2 TFB 9-27-2021

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 Nashville	Site ID #:	CUMBERLAND FOSSIL PLANT	Sampler: Tyler Baker	
Lab Address:	2960 Foster Creighton Dr	Project #:		Sampling Company: TVA	
	Nashville, TN 37204	Site Address	815 Cumberland City Road	Address: TVA Chickamauga Power Service Center, 4801 N. Access Road	
		City	Cumberland City State, Zip: TN, 37763	City/State: Chattanooga, TN	Phone: 423-876-6733
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-ei@enviro.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 (Standard)

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 CUF_SEDIMENT_DAD	Analysis CUF_SEDIMENT_BLANKS_DAD
1	CUF-SED-WC10-CORCC-0.5/2.9-20181011 (1.9 +tb 9-27-21)	WC10			SED	G	N	10/11/2018	1320	1	Hold	☐	X	
2	CUF-SED-WC10-CORRB-0.0/0.5-20181011	WC10			SED	G	N	10/11/2018	1350	1		☐	X	
3	CUF-SED-WC09-CORCC-0.0/0.5-20181011	WC09			SED	G	N	10/11/2018	1440	1		☐	X	
4	CUF-SED-WC09-CORRB-0.0/0.5-20181011	WC09			SED	G	N	10/11/2018	1505	1		☐	X	
5	CUF-SED-WC08-CORCC-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1540	1		☐	X	
6	CUF-SED-WC08-CORRB-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1535	1		☐	X	
7	CUF-SED-WC08-CORLB-0.0/0.5-20181011	WC08			SED	G	N	10/11/2018	1545	1		☐	X	
8	CUF-SED-WC07-CORLB-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1610	1		☐	X	
9	CUF-SED-WC07-CORCC-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1620	1		☐	X	
10	CUF-SED-WC07-CORRB-0.0/0.5-20181011	WC07			SED	G	N	10/11/2018	1630	1		☐	X	
11	CUF-SED-CuR01-CORRB-0.5/1.4-20181011	CuR01			SED	G	N	10/11/2018	1020	1	Hold	☐	X	
12	CUF-SED-CuR04-CORRB-0.0/0.5-20181010	CuR04			SED	G	N	10/10/2018	1115	1		☐	X	
13											TFB 10/12/18	☐		

Filtered: N, N
Preserve: None, 1HCl
TFB 10/12/18
TFB 10/9/18

Additional Comments/Special Instructions:
Hold: samples designated hold should be placed in storage; do not analyze

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tyler Baker / TVA	10-12-18	1215			
	10/12/18	1600	TA-NAS		

Sample Receipt Conditions: Temperature in °C; Sample on Ice?; Sample intact?; Trip Blank?

SHIPPING METHOD:

SAMPLER NAME AND SIGNATURE: Tyler Baker Tyler Baker / TVA

Form TVA 30087A