

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
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Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-116936-1
Client Project/Site: JOF_SEW_20210205_1B

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

Attn: Amanda Cover



Authorized for release by:
3/11/2021 11:42:40 PM

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

PA Lab ID: 02-00416



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Definitions/Glossary	4
Certification Summary	5
Sample Summary	6
Method Summary	7
Lab Chronicle	8
Client Sample Results	10
QC Sample Results	13
QC Association Summary	15
Chain of Custody	16
Receipt Checklists	20

Case Narrative

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Job ID: 180-116936-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative 180-116936-1

Receipt

The samples were received on 2/8/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 2.3° C.

Receipt Exceptions

Five out of the nine containers received for rad for sample 1 have orange sediment at the bottom of the container. All containers were preserved. JOF-SEW-03-20210205 (180-116936-1)

RAD

Method 903.0: Radium 226 Batch 498598

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.

JOF-SEW-03-20210205 (180-116936-1), JOF-SEW-03-20210205 (180-116936-1[DU]), JOF-SEW-FB01-20210205 (180-116936-2), JOF-SEW-TUB01-20210205 (180-116936-3), (LCS 160-498598/1-A) and (MB 160-498598/6-A)

Method 904.0: Radium-228 batch 498600

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.

JOF-SEW-03-20210205 (180-116936-1), JOF-SEW-03-20210205 (180-116936-1[DU]), JOF-SEW-FB01-20210205 (180-116936-2), JOF-SEW-TUB01-20210205 (180-116936-3), (LCS 160-498600/1-A) and (MB 160-498600/6-A)

Method PrecSep_0: Radium 228 Prep Batch 160-498600:

During the in-growth process, the following sample needed to be filtered due to sediment present in the sample. This is an indicator of matrix interference.

Method PrecSep STD: Radium 226 Prep Batch 160-498598:

During the in-growth process, the following sample needed to be filtered due to sediment present in the sample. This is an indicator of matrix interference.

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

Definitions/Glossary

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Qualifiers

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: Environmental Standards Inc.
 Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-21
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-21
HI - RadChem Recognition	State	n/a	06-30-21
Illinois	NELAP	004553	11-30-21
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-21
MI - RadChem Recognition	State	9005	06-30-21
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-21
North Dakota	State	R-207	06-30-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193-19-13	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-21
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

Sample Summary

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-116936-1	JOF-SEW-03-20210205	Water	02/05/21 10:54	02/08/21 10:00	
180-116936-2	JOF-SEW-FB01-20210205	Water	02/05/21 08:30	02/08/21 10:00	
180-116936-3	JOF-SEW-TUB01-20210205	Water	02/05/21 09:17	02/08/21 10:00	

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Method Summary

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

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

Lab Chronicle

Client: Environmental Standards Inc.
 Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Client Sample ID: JOF-SEW-03-20210205

Lab Sample ID: 180-116936-1

Date Collected: 02/05/21 10:54

Matrix: Water

Date Received: 02/08/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep STD			999.36 mL	1.0 g	498598	02/12/21 09:09	AVB	TAL SL
Total/NA	Analysis	903.0		1			501414	03/10/21 10:56	ANW	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.36 mL	1.0 g	498600	02/12/21 09:15	AVB	TAL SL
Total/NA	Analysis	904.0		1			499945	02/25/21 08:21	ANW	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228 Pos		1			501580	03/11/21 14:05	SCB	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: JOF-SEW-FB01-20210205

Lab Sample ID: 180-116936-2

Date Collected: 02/05/21 08:30

Matrix: Water

Date Received: 02/08/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep STD			1000.98 mL	1.0 g	498598	02/12/21 09:09	AVB	TAL SL
Total/NA	Analysis	903.0		1			501414	03/10/21 10:56	ANW	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			1000.98 mL	1.0 g	498600	02/12/21 09:15	AVB	TAL SL
Total/NA	Analysis	904.0		1			499945	02/25/21 08:22	ANW	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228 Pos		1			501580	03/11/21 14:05	SCB	TAL SL
Instrument ID: NOEQUIP										

Client Sample ID: JOF-SEW-TUB01-20210205

Lab Sample ID: 180-116936-3

Date Collected: 02/05/21 09:17

Matrix: Water

Date Received: 02/08/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep STD			999.43 mL	1.0 g	498598	02/12/21 09:09	AVB	TAL SL
Total/NA	Analysis	903.0		1			501414	03/10/21 10:57	ANW	TAL SL
Instrument ID: GFPCPURPLE										
Total/NA	Prep	PrecSep_0			999.43 mL	1.0 g	498600	02/12/21 09:15	AVB	TAL SL
Total/NA	Analysis	904.0		1			499945	02/25/21 08:22	ANW	TAL SL
Instrument ID: GFPCBLUE										
Total/NA	Analysis	Ra226_Ra228 Pos		1			501580	03/11/21 14:05	SCB	TAL SL
Instrument ID: NOEQUIP										

Laboratory References:

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

Lab Chronicle

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Analyst References:

Lab: TAL SL

Batch Type: Prep

AVB = Amber Bleem

Batch Type: Analysis

ANW = Amber Woods

SCB = Sarah Bernsen

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Client Sample Results

Client: Environmental Standards Inc.
 Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Client Sample ID: JOF-SEW-03-20210205

Lab Sample ID: 180-116936-1

Date Collected: 02/05/21 10:54

Matrix: Water

Date Received: 02/08/21 10:00

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.373		0.120	0.125	1.00	0.121	pCi/L	02/12/21 09:09	03/10/21 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.8		40 - 110					02/12/21 09:09	03/10/21 10:56	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.362	U	0.251	0.253	1.00	0.387	pCi/L	02/12/21 09:15	02/25/21 08:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.8		40 - 110					02/12/21 09:15	02/25/21 08:21	1
Y Carrier	86.4		40 - 110					02/12/21 09:15	02/25/21 08:21	1

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.735		0.278	0.282	5.00	0.387	pCi/L		03/11/21 14:05	1

Client Sample Results

Client: Environmental Standards Inc.
 Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Client Sample ID: JOF-SEW-FB01-20210205

Lab Sample ID: 180-116936-2

Date Collected: 02/05/21 08:30

Matrix: Water

Date Received: 02/08/21 10:00

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0107	U	0.0489	0.0489	1.00	0.105	pCi/L	02/12/21 09:09	03/10/21 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110					02/12/21 09:09	03/10/21 10:56	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.175	U	0.241	0.241	1.00	0.401	pCi/L	02/12/21 09:15	02/25/21 08:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110					02/12/21 09:15	02/25/21 08:22	1
Y Carrier	86.4		40 - 110					02/12/21 09:15	02/25/21 08:22	1

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.175	U	0.246	0.246	5.00	0.401	pCi/L		03/11/21 14:05	1

Client Sample Results

Client: Environmental Standards Inc.
 Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Client Sample ID: JOF-SEW-TUB01-20210205

Lab Sample ID: 180-116936-3

Date Collected: 02/05/21 09:17

Matrix: Water

Date Received: 02/08/21 10:00

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00134	U	0.0464	0.0464	1.00	0.0958	pCi/L	02/12/21 09:09	03/10/21 10:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110					02/12/21 09:09	03/10/21 10:57	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.136	U	0.242	0.242	1.00	0.410	pCi/L	02/12/21 09:15	02/25/21 08:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.7		40 - 110					02/12/21 09:15	02/25/21 08:22	1
Y Carrier	86.4		40 - 110					02/12/21 09:15	02/25/21 08:22	1

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.137	U	0.246	0.246	5.00	0.410	pCi/L		03/11/21 14:05	1

QC Sample Results

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-498598/6-A
Matrix: Water
Analysis Batch: 501414

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 498598

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01798	U	0.0539	0.0539	1.00	0.102	pCi/L	02/12/21 09:09	03/10/21 10:57	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	81.1		40 - 110			02/12/21 09:09	03/10/21 10:57	1		

Lab Sample ID: LCS 160-498598/1-A
Matrix: Water
Analysis Batch: 501414

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 498598

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	11.20		1.15	1.00	0.110	pCi/L	99	75 - 125
Carrier	LCS	LCS	Limits			Prepared	Analyzed	Dil Fac	
	%Yield	Qualifier							
Ba Carrier	87.7		40 - 110						

Lab Sample ID: 180-116936-1 DU
Matrix: Water
Analysis Batch: 501414

Client Sample ID: JOF-SEW-03-20210205
Prep Type: Total/NA
Prep Batch: 498598

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.373		0.2776		0.101	1.00	0.0977	pCi/L	0.42	1
Carrier	DU	DU	Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	88.0		40 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-498600/6-A
Matrix: Water
Analysis Batch: 499945

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 498600

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1100	U	0.245	0.245	1.00	0.421	pCi/L	02/12/21 09:15	02/25/21 08:22	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	81.1		40 - 110			02/12/21 09:15	02/25/21 08:22	1		
Y Carrier	86.4		40 - 110			02/12/21 09:15	02/25/21 08:22	1		

QC Sample Results

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-498600/1-A
Matrix: Water
Analysis Batch: 499945

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 498600

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
									75	125
Radium-228	7.40	9.184		1.07	1.00	0.360	pCi/L	124	75	125
LCS LCS										
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	87.7		40 - 110							
Y Carrier	87.9		40 - 110							

Lab Sample ID: 180-116936-1 DU
Matrix: Water
Analysis Batch: 499945

Client Sample ID: JOF-SEW-03-20210205
Prep Type: Total/NA
Prep Batch: 498600

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
										1
Radium-228	0.362	U	0.5210		0.267	1.00	0.387	pCi/L	0.31	1
DU DU										
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	88.0		40 - 110							
Y Carrier	87.5		40 - 110							

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Lab Sample ID: 180-116936-1 DU
Matrix: Water
Analysis Batch: 501580

Client Sample ID: JOF-SEW-03-20210205
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
									0.11	1
Radium 226 and 228	0.735		0.7986		0.285	5.00	0.387	pCi/L	0.11	1

QC Association Summary

Client: Environmental Standards Inc.
Project/Site: JOF_SEW_20210205_1B

Job ID: 180-116936-1

Rad

Prep Batch: 498598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-116936-1	JOF-SEW-03-20210205	Total/NA	Water	PrecSep STD	
180-116936-2	JOF-SEW-FB01-20210205	Total/NA	Water	PrecSep STD	
180-116936-3	JOF-SEW-TUB01-20210205	Total/NA	Water	PrecSep STD	
MB 160-498598/6-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-498598/1-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
180-116936-1 DU	JOF-SEW-03-20210205	Total/NA	Water	PrecSep STD	

Prep Batch: 498600

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-116936-1	JOF-SEW-03-20210205	Total/NA	Water	PrecSep_0	
180-116936-2	JOF-SEW-FB01-20210205	Total/NA	Water	PrecSep_0	
180-116936-3	JOF-SEW-TUB01-20210205	Total/NA	Water	PrecSep_0	
MB 160-498600/6-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-498600/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
180-116936-1 DU	JOF-SEW-03-20210205	Total/NA	Water	PrecSep_0	



Tennessee Valley Authority

TVA Environmental Investigations

Chain-of-Custody / Analytical Request Document

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

COOLER No.: 1 of 2
 COC No.: JOF_SEW_20210205_1B
 Task Desc: JOF_SEW

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

Required Project Information:
 Site ID #: Johnsonville Fossil Plant
 Project #: 175568296
 Site Address: 535 Steam Plant Road, New State, Zip: TN 37134
 City: Roy Quinn

Required Sampler Information:
 Sampler: Chris Krabel, Eric Hicks, Stantec
 Sampling Company: 601 Grassmere Park Rd, Ste. 22, Nashville TN 37134
 Address: 601 Grassmere Park Rd, Ste. 22, Nashville TN 37134
 City/State: Nashville TN 37134
 Phone: 615-885-1144

Lab Manager Contact Information:
 Lab PM: Gail Lage
 Phone/Fax: 615-301-5741
 Lab Email: Gail.Lage@euroinsat.com

Sampling Team Number: 1
 Send EDD/Hard Copy to: tva.deliverables@envsld.com

Analysis Turnaround Time:
 CALENDAR DAYS
 WORKING DAYS
 TAT, if different from Below _____
 24 Hours
 3 Business Days
 5 Business Days
 10 Business Days

# ITEMS	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Sample Depth		MATRIX CODE	G= GRAB C-COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	M/MS/SD	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		DATE	TIME	Sample Receipt Conditions				
			Start Depth	End Depth									Depth Unit	Select Unit	Chris Krabel / Stantec /				Eric Hicks /		Temp in °C	Sample on Ice?	Sample Intact?
1	JOF-SeW-03-20210205	AO103	NA	NA	SEW	G	N	2/5/2021	1054	9	MS/MSD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Chris Krabel / Stantec /	Eric Hicks /	2/6/21	12:00	<input type="checkbox"/> Yes <input type="checkbox"/> No					
2	JOF-SeW-FB01-20210205	AO103	NA	NA	AQ	G	FB	2/5/2021	830	3	None	<input type="checkbox"/>	<input type="checkbox"/>	Chris Krabel / Stantec /	Eric Hicks /	2/6/21	12:00	<input type="checkbox"/> Yes <input type="checkbox"/> No					
3	JOF-SeW-TUB01-20210205	AO103	NA	NA	AQ	G	TUB	2/5/2021	917	3	None	<input type="checkbox"/>	<input type="checkbox"/>	Chris Krabel / Stantec /	Eric Hicks /	2/6/21	12:00	<input type="checkbox"/> Yes <input type="checkbox"/> No					
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							





Tennessee Valley Authority

TVA Environmental Investigations

COOLER No.: 2 of 2
 COC No.: **JOF_SEW_20210205_1B**
 Task Desc: **JOF_SEW**

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

Required Ship to Lab:		Required Project Information:		Required Sampler Information	
Lab Name:	TestAmerica Pittsburgh	Site ID #:	Johnsontown Fossil Plant	Sampler:	Chris Krabel, Eric Hicks
Lab Address:	301 Alpha Drive Pittsburgh, PA 15238	Project #:	175568286	Sampling Company:	Stantec
Lab Manager Contact Information		Site Address:	535 Steam Plant Road	Address:	601 Grassmere Park Rd, Ste. 22
Lab PM:	Gail Lage	City:	New	City/State:	Nashville TN 3
Phone/Fax:	615-301-5741	State, Zip:	TN 37134	Phone:	615-885-1144
Lab Email:	Gail.Lage@euroinsat.com	Site PM Name:	Roy Quinn	Sampling Team Number:	1
		Phone/Fax:	423-751-3753	Send EDD/Hard Copy to:	via_deliveryables@envsrd.com
		Site PM Email:	royquinn@tva.gov		

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT, if different from Below _____
 24 Hours
 3 Business Days
 5 Business Days
 10 Business Days

ITEMS #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	Start Depth	End Depth	Matrix Code	G- GRAB C-COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	# OF CONTAINERS	Comments/ Lab Sample I.D.	MS/MSD	RELINISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		DATE	TIME	Sample Receipt Conditions			Temperature in °C	Sample on Ice?	Sample Intact?	Trip Blank?	
													RELINISHED BY	AFFILIATION	ACCEPTED BY	AFFILIATION			DATE	TIME	Yes					No
1	JOF-SeW-03-20210205	AOI03	NA	NA	SEW	G	N	2/5/2021	1054	9	MS/MSD	<input checked="" type="checkbox"/>	Chris Krabel / Stantec	7/6/21	1200	Falcox	7/6/21	1200	<input type="checkbox"/> Yes	<input type="checkbox"/> No						
2	JOF-SeW-FB01-20210205	AOI03	NA	NA	AQ	G	FB	2/5/2021	830	3	None	<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
3	JOF-SeW-TUB01-20210205	AOI03	NA	NA	AQ	G	TUB	2/5/2021	917	3	None	<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
4												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
5												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
6												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
7												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
8												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
9												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
10												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
11												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
12												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						
13												<input type="checkbox"/>							<input type="checkbox"/> Yes	<input type="checkbox"/> No						

Additional Comments/Special Instructions:
 Additional volume collected should be used for laboratory duplicate analysis.

SHIPPING METHOD:

SAMPLER NAME AND SIGNATURE





Environment Test
TestAmerica

DRIZIN ID: PHDA (330) 966-9677
CHRIS KNABEL
STEAM PLANT ROAD
535 STEAM PLANT ROAD
NEW JOHNSONVILLE, TN 37134
UNITED STATES US

SHIP DATE: 01 FEB 22
ACT WT: 10.00 LB
CAD: 05620657/CAFE

EUROFINS TESTAMERICA PITTSBURGH
301 ALPHA DRIVE
RUDC PARK
PITTSBURGH PA 152382907



180-116936 Waybill

FedEx

9495 6597 5628

MON - 08 FEB
PRIORITY OVERNIGHT

XH AGCA

PA-US

Uncorrected temp
Thermometer ID

CF 0 Initials AVS

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

05620657/CAFE

Custody Seal

DATE

SIGNATURE

Handwritten signature and date: 2/12/22



Environment Test
TestAmerica



Environment Test
TestAmerica



Environment Test
TestAmerica

Custody Seal

SIGNATURE

DATE

Handwritten signature and date: 2/12/22

eurofins

Environment Testing
TestAmerica

ID: PHDA (330) 966-9677
CHRIS KNABEL
STEAM PLANT ROAD
NEW JOHNSONVILLE, TN 37134
UNITED STATES US

SHIP DATE: 01 FEB 22
ACT WT: 10.00 LB
CAD: 05620657/CAFE

EUROFINS TESTAMERICA PITTSBURGH
1 ALPHA DRIVE
DC PARK
PITTSBURGH PA 152382907

FedEx
Express



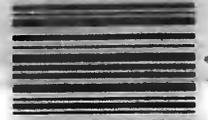
MON - 08 FEB 10:30A
PRIORITY OVERNIGHT

9495 6597 5617

XH AGCA

15238

PA US PIT



Uncorrected temp
Thermometer ID

CF 0 Initials AVS

21.3 °C

14

Custody Seal

DATE

SIGNATURE

Handwritten signature and date: 2/12/22



Environment Testing
TestAmerica



Environment Test
TestAmerica

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Rumble, Jennifer L		Carrier Tracking No(s): 180-425953-1	
Client Contact: Shipping/Receiving		E-Mail: Jennifer.Rumble@Eurofinset.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 180-116936-1	
Address: 13715 Rider Trail North,		Due Date Requested: 2/19/2021		Preservation Codes:	
City: Earth City		TAT Requested (days):		A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2SO3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
PO #: 314-298-8566(Tel) 314-298-8757(Fax)		Matrix (W=Water, S=Solid, O=Wastewater, BT=Tissue, A=Air)		Other:	
WO #: 18020000		Sample Date		Total Number of Containers	
Project #: JOF_SEW_20210205_1B		Sample Time		Special Instructions/Note:	
Site: S20W#		Sample Type (C=Comp, G=grab)		TVA - Batch alone	
Sample Identification - Client ID (Lab ID)		Preservation Code:		TVA - Batch alone	
JOF-SEW-03-20210205 (180-116936-1)	2/5/21	10:54 Central	Water	X	X
JOF-SEW-03-20210205 (180-116936-1DU)	2/5/21	10:54 Central	Water	X	X
JOF-SEW-FB01-20210205 (180-116936-2)	2/5/21	08:30 Central	Water	X	X
JOF-SEW-TUB01-20210205 (180-116936-3)	2/5/21	08:17 Central	Water	X	X
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		904.0/PrecSep_0 Ra-228	
Radium-226		Radium-226		903.0/PrecSep_STD Ra-226	
Radium-228		Radium-228		Ra226_2280FP_C/ Combined Radium-226/228	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon 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 analysts/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Jenny Jones* Date/Time: 2/9/21 17:00 Company: ETA Pitt
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Received by: _____ Date/Time: _____ Company: _____
 Received by: *Melany Osa* Date/Time: 2/10/21 09:45 Company: ETA-STL
 Received by: _____ Date/Time: _____ Company: _____
 Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-116936-1

Login Number: 116936

List Source: Eurofins TestAmerica, Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Environmental Standards Inc.

Job Number: 180-116936-1

Login Number: 116936

List Number: 2

Creator: Worthington, Sierra M

List Source: Eurofins TestAmerica, St. Louis

List Creation: 02/10/21 11:21 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.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

