

VIA EMAIL

February 23, 2012
File No. 04.0029307.00



Ms. Nancy Lesieur
Industrial Pretreatment Coordinator
Winnepesaukee River Basin Program Wastewater Treatment Plant
Water Division
New Hampshire Department of Environmental Services
528 River Street
Franklin, New Hampshire 03235

Re: Wastewater Discharge Monitoring Report
Treated Wastewater
Merrimack Station
Public Service of New Hampshire
Bow, New Hampshire

380 Harvey Road
Manchester
New Hampshire
03103-3347
603-623-3600
FAX 603-624-9463
www.gza.com

Dear Ms. Lesieur:

On behalf of Public Service of New Hampshire (PSNH), GZA GeoEnvironmental, Inc. is pleased to submit the attached **Wastewater Discharge Monitoring Report** for sampling conducted on **February 2, 2012**, as requested to supplement the initial sampling requirements as outlined in *Special Agreement – PSNH and WRBP Wastewater Treatment Plant*.

Table I included in the Wastewater Discharge Monitoring Report summarizes the analytical results for all required parameters as outlined in the terms of the Special Agreement. The attached **Analytical Data Report**, however, contains a more comprehensive list of parameters.

ANALYTICAL DISCUSSION

Flue Gas Desulfurization (FGD) wastewater requires specialized analytical techniques to overcome matrix interference for certain analysis of trace metals. To assist you in evaluating this issue further, we offer an excerpt below from the United States Environmental Protection Agency (EPA) web site and a link to their draft Standard Operating Procedure (SOP) for trace metals analysis of FGD wastewater that contains further guidance.

LABORATORY ANALYSIS OF FGD WASTEWATER

Wastewater from FGD systems can contain constituents known to cause matrix interferences. EPA has observed that, during inductively coupled plasma – mass spectrometry (ICP-MS) analysis of FGD wastewater, certain elements commonly present in the wastewater may cause polyatomic interferences that bias the detection and/or quantization of certain elements of interest. These potential interferences may become significant when measuring trace elements at concentrations in the low parts-per-billion range.

As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed an SOP that was used in conjunction with EPA Method 200.8 to conduct ICP-MS analyses of FGD wastewater. The SOP describes critical technical and quality assurance procedures that were implemented to mitigate anticipated interferences and generate reliable data for FGD wastewater.



EPA regulations at 40 CFR 136.6 already allow the analytical community flexibility to modify approved methods to lower the costs of measurements, overcome matrix interferences, or otherwise improve the analysis. The draft SOP developed for FGD wastewater takes a proactive approach toward looking for and taking steps to mitigate matrix interferences, including using specialized interference check solutions (i.e., a synthetic FGD wastewater matrix). EPA's draft SOP is being made available to laboratories contemplating ICP-MS analysis of FGD wastewater, either for adoption as currently written or to serve as a framework for developing their own laboratory-specific SOP. For further information, see:

Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry
for Trace Element Analysis in Flue Gas Desulfurization Wastewaters (30 pp,
174K), http://water.epa.gov/scitech/wastetech/guide/upload/steam_draft_sop.pdf,
EPA May 2011.

Considering that specialized analytical techniques are necessary to overcome matrix interference for certain analysis of trace metals in FGD wastewater, we recommend any analysis on FGD wastewater be conducted in accordance with the EPA draft SOP for trace metals analysis of FGD wastewater.

Should you have any questions concerning this report, please do not hesitate to contact me at (603) 232-8744.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in black ink that reads 'Ronald A. Breton'.

Ronald A. Breton, P.E.
Principal

RAB:tmd

P:\04Jobs\0029300s\04.0029307.00\Work\SAMPLING AND REPORTING\REPORTS\Franklin\REPORT\final 04.0029307 Franklin DATA RPT 022312.docx

Attachments: Wastewater Discharge Monitoring Report
Analytical Data Report

WASTEWATER DISCHARGE MONITORING REPORT

**WASTEWATER DISCHARGE MONITORING REPORT
WINNIPESAUKEE RIVER BASIN PROGRAM
WASTEWATER TREATMENT PLANT**

Public Service of New Hampshire - Merrimack Station
Special Agreement - PSNH and WRBP Wastewater Discharge Request
Dated 9/28/2011

Permitted Flow 25,000 gallons per day

FLOW DATA

Daily Flow Rate (gallons)	8,000	(average)
Monitoring Period Flow (gallons)	16,000	(1/27/2012 - 2/03/2012)

FACILITY INFORMATION

Company Name Public Service Company of New Hampshire - Merrimack Station
Company Owner Public Service Company of New Hampshire
Facility Address 97 River Road
Facility Contact Harold Keyes
Telephone (603) 224-4081

MONITORING REPORT

Submittal Date 2/23/2012
Monitoring Point End of treatment process
Reporting Period First Month

SAMPLE ANALYSIS

Certified Analytical Laboratory Eastern Analytical Inc. (EAI) Certification Number 1012
Authorized Representative Lorraine Olashaw
Analytical Subcontractor Frontier Global Sciences Certification Number E87575

SAMPLE COLLECTION

Sampler Jeff Gagne (EAI)
Sample Type Grab
Sample Date 2/2/2012 Sample Time 9:15 AM
pH 7.4

CATEGORICAL PRETREATMENT STANDARDS

40 CFR 423.16: Steam Electric Power Generating Category
NOTE: There are no numerical pretreatment standards for this source

CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Harold Keyes
Printed Name of Authorized Representative
Harold Keyes
Signature of Authorized Representative

Station Manager
Title
2/23/2012
Date

TABLE 1 - SUMMARY ANALYTICAL DATA**Treated FGD Wastewater**

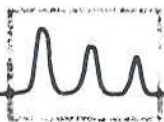
Public Service Company of New Hampshire

Merrimack Station

Bow, New Hampshire

PARAMETER	RESULTS (mg/L) 2/2/2012 EAI/Frontier
Aluminum	0.218
Arsenic	0.0121
Cadmium	< 0.00100
Chloride	9,300
Chromium (T)	< 0.00500
Copper	0.00553
Cyanide (T)	< 0.01
Iron	< 0.500
Lead	< 0.00200
Manganese	0.631
Mercury	0.0000360
Molybdenum	0.195
Nickel	< 0.00500
Selenium	0.121
Silver	< 0.00100
Zinc	< 0.0100

ANALYTICAL DATA REPORT



Paul Pepler
GZA GeoEnvironmental, Inc. (NH)
380 Harvey Road
Manchester, NH 03103



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 107330
Client Identification: Wastewater Analysis - **Weekly**
Date Received: 2/2/2012

Dear Mr. Pepler:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olashaw, Lab Director

2.17.12
Date

30
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 107330

Client: **GZA GeoEnvironmental, Inc. (NH)**Client Designation: Wastewater Analysis - **Weekly**Temperature upon receipt (°C): **5.2**Received on ice or cold packs (Yes/No): **Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date	Date	Sample	% Dry	Exceptions/Comments (other than thermal preservation)
		Received	Sampled	Matrix	Weight	
107330.01	Effluent Field Blank	2/2/12	2/2/12	aqueous		Adheres to Sample Acceptance Policy
107330.02	Treat Tank Effluent	2/2/12	2/2/12	aqueous		624, 625 and 608 placed on hold, then cancelled at customer's

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992



LABORATORY REPORT

EAI ID#: 107330

Client: **GZA GeoEnvironmental, Inc. (NH)**

Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank
Effluent

Lab Sample ID: 107330.02

Matrix: aqueous

Date Sampled: 2/2/12

Date Received: 2/2/12

Units: mg/L

Date of Extraction/Prep: 2/8/12

Date of Analysis: 2/8/12

Analyst: LAS

Method: 1664A

Dilution Factor: 1

Oil & Grease (HEM) < 5



QC REPORT

EAI ID#: 107330

Client: **GZA GeoEnvironmental, Inc. (NH)**

Batch ID: 734541-34922/A020812OG1661

Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Oil & Grease (HEM)	< 5	36 (91 %R)	36 (90 %R) (1 RPD)	2/8/2012	mg/L	78 - 114	18	1664A

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
*! Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

EAI ID#: 107330

Client: **GZA GeoEnvironmental, Inc. (NH)**Client Designation: Wastewater Analysis - *Weekly*

Sample ID: Treat Tank Effluent

Lab Sample ID: 107330.02

Matrix: aqueous

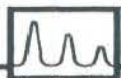
Date Sampled: 2/2/12

Date Received: 2/2/12

Solids Suspended	6
Solids Dissolved	19000
Fluoride	2.9
Sulfate	1200
Chloride	9300
Nitrate-N	65
Cyanide Total	< 0.01
Ammonia-N	1.1
BOD	< 6
COD	140
Total Phenols	< 0.5
pH	7.4

Units	Analysis			
	Date	Time	Method	Analyst
mg/L	2/03/12	10:45	2540D	DLS
mg/L	2/03/12	10:45	2540C	DLS
mg/L	2/08/12	15:01	300.0	KL
mg/L	2/08/12	14:46	300.0	KL
mg/L	2/03/12	10:35	4500CIE	DLS
mg/L	2/03/12	10:32	353.2	DLS
mg/L	2/08/12	9:30	4500CNE	KJR
mg/L	2/09/12	9:00	4500NH3D	SEL
mg/L	2/03/12	11:20	5210B	KJR
mg/L	2/07/12	16:00	H8000	SKC
mg/L	2/08/12	2:00	420.1	JCC
SU	2/02/12	16:30	4500H+B	KJR

Total Phenols: The reporting limit has been elevated due to matrix interference.



QC REPORT

EAI ID#: 107330

Client: **GZA GeoEnvironmental, Inc. (NH)**Client Designation: Wastewater Analysis - *Weekly*

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 2	95 (95 %R)	94 (94 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	2540D
Solids Dissolved	< 5	990 (99 %R)	NA	mg/L	2/3/12	85 - 115	20	2540C
Fluoride	< 0.1	2.0 (99 %R)	2.0 (99 %R) (0 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Sulfate	< 1	20 (100 %R)	20 (101 %R) (1 RPD)	mg/L	2/8/12	90 - 110	20	300.0
Chloride	< 1	24 (96 %R)	24 (97 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	4500CIE
Nitrate-N	< 0.5	4.9 (99 %R)	4.9 (98 %R) (1 RPD)	mg/L	2/3/12	90 - 110	20	353.2
Cyanide Total	< 0.02	0.25 (100 %R)	NA	mg/L	2/8/12	85 - 115	20	4500CNE
Ammonia-N	< 0.05	2.2 (109 %R)	2.2 (110 %R) (1 RPD)	mg/L	2/9/12	90 - 110	20	4500NH3DN
BOD	< 6	420 (104 %R)	420 (104 %R) (0 RPD)	mg/L	2/3/12	84 - 115	20	5210B
COD	< 10	100 (103 %R)	100 (101 %R) (2 RPD)	mg/L	2/7/12	85 - 115	20	H8000
Total Phenols	< 0.05	0.22 (87 %R)	0.22 (89 %R) (2 RPD)	mg/L	2/8/12	85 - 115	20	420.1
pH		6.05 (101 %R)	6.07 (101 %R) (0 RPD)	SU	2/2/12	5.95 - 6.07	10	4500H+B

Samples were analyzed within holding times unless noted on the sample results page.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.

Exceptions to the above statements are flagged or noted above or on the QC Narrative page.

*// Flagged analyte recoveries deviated from the QA/QC limits.



414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

15 February 2012

Jeff Gagne
Eastern Analytical, Inc
25 Chenell Drive
Concord, NH 03301
RE: Merrimack Station

Enclosed are the analytical results for samples received by Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Liz Siska".

Liz Siska
Project Manager



414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

ANALYTICAL REPORT FOR SAMPLES

Laboratory: Frontier Global Sciences, Inc.

SDG:

Client: Eastern Analytical, Inc

Project: Merrimack Station

Sample ID	Lab ID	Matrix	Date Sampled	Date Received
C-3015 Effluent Field Blank	1202063-01	Water	02-Feb-12 08:47	03-Feb-12 09:30
Treat Tank Effluent	1202063-02	Water	02-Feb-12 09:15	03-Feb-12 09:30

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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02/15/2012



414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

CASE NARRATIVE

SAMPLE RECEIPT

Samples were received at Frontier Global Sciences (FGS) on February 3rd, 2012. The samples were received intact, on-ice with temperatures measured at 10.6 degrees Celsius.

SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total metals in accordance with EPA Method 200.8 (modified).

Samples were prepared and analyzed for total mercury in accordance with EPA Method 1631E.

ANALYTICAL ISSUES

Liquid spikes were prepared for every preparation as a measure of accuracy. All liquid spikes and certified reference material were within the control limits.

As an additional measure of the accuracy of the methods utilized for analysis and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries were within the control limits with the exception of any QC flagged and described in the notes and definitions section of the following report.

A reasonable measure of the precision of the analytical methods utilized for analysis is the relative percent difference (RPD) between matrix spike and matrix spike duplicate recoveries and between laboratory control sample and laboratory control sample duplicate recoveries. All of the relative percent differences were within the control limits with the exception of any QC flagged and described in the notes and definitions section of the following report.

Frontier Global Sciences, Inc.

Liz Siska, Project Manager

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Ex: 206-622-6870

CHAIN OF CUSTODY FORMS



Chain of Custody Record & Laboratory Analysis Request:
Air, Water, Sediments, Plant and Animal Tissue,
Hydrocarbon & Other Samples

414 Pon 107330 39
Fax: 206-622-6870
http://www.frontiergs.com

Page 1 of 1

Client: Eastern Analytical Inc.		Contact: Jeff George		Phone: 206-622-6960		Fax: 206-622-6870		E-mail: jeff@easternanalytical.com	
Address: 2500 1st Ave		Address: 2500 1st Ave		Address: 2500 1st Ave		Address: 2500 1st Ave		Address: 2500 1st Ave	
Project Name: Alder Creek Station		Contract/PO:		Contract/PO:		Contract/PO:		Contract/PO:	
Report To: same		Invoice To: same		Invoice To: same		Invoice To: same		Invoice To: same	
Address: same		Address: same		Address: same		Address: same		Address: same	
Phone: 206-622-6960		Phone: 206-622-6960		Phone: 206-622-6960		Phone: 206-622-6960		Phone: 206-622-6960	
Fax: 206-622-6870		Fax: 206-622-6870		Fax: 206-622-6870		Fax: 206-622-6870		Fax: 206-622-6870	
E-mail: jeff@easternanalytical.com		E-mail: jeff@easternanalytical.com		E-mail: jeff@easternanalytical.com		E-mail: jeff@easternanalytical.com		E-mail: jeff@easternanalytical.com	
FDD: ☐ Y ☐ N		FDD: ☐ Y ☐ N		FDD: ☐ Y ☐ N		FDD: ☐ Y ☐ N		FDD: ☐ Y ☐ N	
GA: ☐ Standard ☐ High		GA: ☐ Standard ☐ High		GA: ☐ Standard ☐ High		GA: ☐ Standard ☐ High		GA: ☐ Standard ☐ High	
Comments:		Comments:		Comments:		Comments:		Comments:	
1. Metals: Fe, Cu, Pb, Zn, Cd, Cr, Ni, Mn, Hg, Mo, V, Se, Ag, Ti, Zn		1. Metals: Fe, Cu, Pb, Zn, Cd, Cr, Ni, Mn, Hg, Mo, V, Se, Ag, Ti, Zn		1. Metals: Fe, Cu, Pb, Zn, Cd, Cr, Ni, Mn, Hg, Mo, V, Se, Ag, Ti, Zn		1. Metals: Fe, Cu, Pb, Zn, Cd, Cr, Ni, Mn, Hg, Mo, V, Se, Ag, Ti, Zn		1. Metals: Fe, Cu, Pb, Zn, Cd, Cr, Ni, Mn, Hg, Mo, V, Se, Ag, Ti, Zn	
2. Please see lab report for details.		2. Please see lab report for details.		2. Please see lab report for details.		2. Please see lab report for details.		2. Please see lab report for details.	
3. Project specific analysis.		3. Project specific analysis.		3. Project specific analysis.		3. Project specific analysis.		3. Project specific analysis.	
4. Sample is from groundwater.		4. Sample is from groundwater.		4. Sample is from groundwater.		4. Sample is from groundwater.		4. Sample is from groundwater.	
5. Sample is from surface water.		5. Sample is from surface water.		5. Sample is from surface water.		5. Sample is from surface water.		5. Sample is from surface water.	
6. Sample is from sediment.		6. Sample is from sediment.		6. Sample is from sediment.		6. Sample is from sediment.		6. Sample is from sediment.	
7. Sample is from plant tissue.		7. Sample is from plant tissue.		7. Sample is from plant tissue.		7. Sample is from plant tissue.		7. Sample is from plant tissue.	
8. Sample is from animal tissue.		8. Sample is from animal tissue.		8. Sample is from animal tissue.		8. Sample is from animal tissue.		8. Sample is from animal tissue.	
9. Sample is from hydrocarbon.		9. Sample is from hydrocarbon.		9. Sample is from hydrocarbon.		9. Sample is from hydrocarbon.		9. Sample is from hydrocarbon.	
10. Sample is from other.		10. Sample is from other.		10. Sample is from other.		10. Sample is from other.		10. Sample is from other.	
11. Sample is from other.		11. Sample is from other.		11. Sample is from other.		11. Sample is from other.		11. Sample is from other.	
12. Sample is from other.		12. Sample is from other.		12. Sample is from other.		12. Sample is from other.		12. Sample is from other.	
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:	
COC Seal: ☒ No		FW: Fresh Water		Name: Jim Blackwell		Name: Chris Jones		Name: ALEXA BAW	
Cooler Temp: 10.6 °C		WW: Waste Water		Organization: Eastern Analytical		Organization: ERI		Organization: FGS	
Carrier: APS		SB: Sea and Brackish Water		Date & Time: 2/1/12 13:00		Date & Time: 2/1/12 13:00		Date & Time: 2-3-12	
VTSR: 6930		SS: Soil and Sediment		Tracking number: 13 846 579 61 4628 4755		Tracking number: 13 846 579 61 4628 4755		Tracking number: 13 846 579 61 4628 4755	
# of Coolers: 1 (one)		TS: Plant and Animal Tissue		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.		Customer Approval:		Date:	
Sample Disposal:		HC: Hydrocarbons							
☐ Return (shipping fees may apply)		TR: Trip							
☐ Standard Disposal - 30 Days after report		OT: Other							
☐ Retain for _____ weeks after report (storage fees may apply)									

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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02/15/2012

CHAIN OF CUSTODY FORMS

414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

FGS Work Order: 1202063

Sample Receipt Checklist

Client: Eastern Analytical Date & Time Received: 2-3-12 09:30 Date Logged In: 2-3-12 14:31
Project: Mercury Station Received By: Alexa Bahr Logged In By: Alexa Bahr
SDG: _____ # of Coolers Received: 1 (one) FGS PV: Liz Siska

Samples Arrived By: X Shipping Service _____ Courier _____ Hand _____ Other (specify) _____
Tracking/Airbill Number(s): 015 12 X46 549 01 9628 9755

Cooler Information	Yes	No	NA	Comments
The coolers do not appear to be tampered with:		☒		
Custody seals are present and intact:			☒	<u>None used</u>
Custody seals signed by:			☒	

Thermal Preservation: X Loose Ice _____ Gel/Blue Ice _____ None (Ambient) _____ Other (specify) _____

Thermometer ID: 0208 Correction Factor (CF): -1.4° degrees C

Cooler 1:	<u>10.6</u> °C	Cooler 6:	_____ °C	Cooler 11:	_____ °C
Cooler 2:	_____ °C	Cooler 7:	_____ °C	Cooler 12:	_____ °C
Cooler 3:	_____ °C	Cooler 8:	_____ °C	Cooler 13:	_____ °C
Cooler 4:	_____ °C	Cooler 9:	_____ °C	Cooler 14:	_____ °C
Cooler 5:	_____ °C	Cooler 10:	_____ °C	Cooler 15:	_____ °C

Chain of Custody

COC is present and includes the following information for each sample:

	Yes	No	NA	Comments
Sample ID/Sample Description:	☒			
Date and time of Sample Collection:	☒			
Sampled By:	☒			
Preservation Type:			☒	
Requested Analyses:	☒			
Required Signatures:	☒			
Internal chain of custody required:			☒	

Sample Condition/Integrity	Yes	No	NA	Comments
Sample containers were received intact:	☒			
Sample labels are present and legible:	☒			
Sample ID on container matches COC:	☒			
Correct sample container used for requested analyses:	☒			
Samples received within holding time:	☒			
Sample volume sufficient for requested analysis:	☒			
Correct preservative used for requested analyses:			☒	
pH of samples checked and within method requirements:			☒	
If pH adjusted by laboratory, noted in logbook:			☒	

Anomalies/Non-conformances:

N/A

Client Communication Person Contacted: _____ Date/Time: _____ Method: _____

Discussion/Resolution:

Frontier Global Sciences, Inc.

Liz Siska

Liz Siska, Project Manager

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

ANALYTICAL RESULTS

C-3015 Effluent Field Blank

Matrix: Water

Laboratory ID: 1202063-01

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	ND	0.4	4.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Antimony	ND	0.005	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Arsenic	ND	0.05	0.15	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Barium	ND	0.03	0.20	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Beryllium	ND	0.023	0.060	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.004	0.020	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.009	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	ND	0.01	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Iron	ND	1.3	10.0	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.004	0.040	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	0.12	0.007	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	ND	0.08	0.50	ng/L	1	F202057	2B06014	02/06/12	EPA 1631E	U
Molybdenum	ND	0.006	0.06	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Nickel	ND	0.008	0.10	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	ND	0.19	0.60	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Silver	ND	0.006	0.020	µg/L	1	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	ND	0.001	0.005	µg/L	1	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-02, U
Zinc	ND	0.02	0.20	µg/L	1	F202053	2B15001	02/14/12	EPA 200.8 Mod	U

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

ANALYTICAL RESULTS

Treat Tank Effluent

Matrix: Water

Laboratory ID: 1202063-02

Analyte	Result	MDL	MRL	Units	Dilution	Batch	Sequence	Analyzed	Method	Notes
Aluminum	218	22.2	200	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Antimony	1.55	0.230	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Arsenic	12.1	2.55	7.50	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Barium	243	1.35	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Beryllium	ND	1.14	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Cadmium	ND	0.208	1.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Chromium	ND	0.45	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Copper	5.53	0.50	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Iron	ND	65.0	500	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Lead	ND	0.195	2.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Manganese	631	0.37	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Mercury	36.0	0.84	5.05	ng/L	10	F202057	2B06014	02/06/12	EPA 1631E	
Molybdenum	195	0.30	3.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Nickel	ND	0.40	5.00	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U
Selenium	121	9.69	30.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	
Silver	ND	0.300	1.00	µg/L	50	F202159	2B15016	02/15/12	EPA 200.8 Mod	QM-12, U
Thallium	6.85	0.056	0.250	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	QB-01
Zinc	ND	0.82	10.0	µg/L	50	F202053	2B13005	02/12/12	EPA 200.8 Mod	U

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Fx: 206-622-6870

MATRIX DUPLICATES/TRIPPLICATES

SOURCE: 1202063-02

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-DUP1

Analyte	Sample Concentration ng/L	Duplicate Concentration ng/L	MRL	% RPD	RPD Limit	Method	Notes
Mercury	36.03	36.21	5.05	0.482	24	EPA 1631E	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	2.0200	2.062	102	70 - 130	EPA 200.8 Mod	
Aluminum	217.7	151.50	355.1	90.7	70 - 130	EPA 200.8 Mod	
Chromium	2.05	7.0700	9.47	105	70 - 130	EPA 200.8 Mod	
Manganese	631.1	6.0600	611.0	-331	70 - 130	EPA 200.8 Mod	QM-02
Iron	ND	505.00	474.3	93.9	70 - 130	EPA 200.8 Mod	
Nickel	3.25	4.0400	7.58	107	70 - 130	EPA 200.8 Mod	
Copper	5.53	4.0400	9.39	95.7	70 - 130	EPA 200.8 Mod	
Zinc	0.99	10.100	12.68	116	70 - 130	EPA 200.8 Mod	
Arsenic	12.06	15.150	24.53	82.3	70 - 130	EPA 200.8 Mod	
Selenium	121.3	30.300	145.2	79.1	70 - 130	EPA 200.8 Mod	
Molybdenum	195.2	2.0200	192.5	-135	70 - 130	EPA 200.8 Mod	QM-02
Cadmium	0.623	0.80800	1.437	101	70 - 130	EPA 200.8 Mod	
Antimony	1.549	0.80800	2.358	100	70 - 130	EPA 200.8 Mod	
Barium	243.3	10.100	251.4	79.3	70 - 130	EPA 200.8 Mod	
Thallium	6.848	0.40400	7.126	68.9	70 - 130	EPA 200.8 Mod	QB-01
Lead	ND	1.5150	1.334	88.0	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0200	2.025	100	1.80	70 - 130	20	EPA 200.8 Mod	
Aluminum	151.50	338.6	79.8	4.77	70 - 130	20	EPA 200.8 Mod	
Chromium	7.0700	9.09	99.6	4.12	70 - 130	20	EPA 200.8 Mod	
Manganese	6.0600	612.2	-311	0.200	70 - 130	20	EPA 200.8 Mod	QM-02
Iron	505.00	464.8	92.0	2.03	70 - 130	20	EPA 200.8 Mod	
Nickel	4.0400	8.13	121	7.06	70 - 130	20	EPA 200.8 Mod	
Copper	4.0400	9.35	94.8	0.415	70 - 130	20	EPA 200.8 Mod	
Zinc	10.100	10.13	90.4	22.4	70 - 130	20	EPA 200.8 Mod	QR-08
Arsenic	15.150	25.77	90.5	4.92	70 - 130	20	EPA 200.8 Mod	
Selenium	30.300	139.9	61.4	3.76	70 - 130	20	EPA 200.8 Mod	QM-02
Molybdenum	2.0200	190.9	-213	0.823	70 - 130	20	EPA 200.8 Mod	QM-02
Cadmium	0.80800	1.230	75.2	15.5	70 - 130	20	EPA 200.8 Mod	
Antimony	0.80800	2.316	95.0	1.77	70 - 130	20	EPA 200.8 Mod	

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Seattle, WA 98109
Ph: 206-622-6960
Ex: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD1

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	10.100	250.6	71.7	0.305	70 - 130	20	EPA 200.8 Mod	
Thallium	0.40400	6.963	28.6	2.31	70 - 130	20	EPA 200.8 Mod	QM-02, QB-01
Lead	1.5150	1.403	92.6	5.09	70 - 130	20	EPA 200.8 Mod	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Beryllium	ND	50.500	42.91	85.0	70 - 130	EPA 200.8 Mod	AS
Aluminum	217.7	10100	9206	89.0	70 - 130	EPA 200.8 Mod	AS
Chromium	2.05	1010.0	1006	99.4	70 - 130	EPA 200.8 Mod	AS
Manganese	631.1	1010.0	1582	94.2	70 - 130	EPA 200.8 Mod	AS
Iron	ND	5050.0	4849	96.0	70 - 130	EPA 200.8 Mod	AS
Nickel	3.25	1262.5	1190	94.0	70 - 130	EPA 200.8 Mod	AS
Copper	5.53	1262.5	1149	90.6	70 - 130	EPA 200.8 Mod	AS
Zinc	0.99	2525.0	2401	95.0	70 - 130	EPA 200.8 Mod	AS
Arsenic	12.06	1010.0	1050	103	70 - 130	EPA 200.8 Mod	AS
Selenium	121.3	1010.0	1168	104	70 - 130	EPA 200.8 Mod	AS
Molybdenum	195.2	505.00	685.1	97.0	70 - 130	EPA 200.8 Mod	AS
Cadmium	0.623	101.00	96.95	95.4	70 - 130	EPA 200.8 Mod	AS
Antimony	1.549	50.500	50.84	97.6	70 - 130	EPA 200.8 Mod	AS
Barium	243.3	2020.0	2379	106	70 - 130	EPA 200.8 Mod	AS
Thallium	6.848	50.500	53.06	91.5	70 - 130	EPA 200.8 Mod	AS, QB-01
Lead	ND	252.50	220.5	87.3	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	50.500	43.37	85.9	1.08	70 - 130	20	EPA 200.8 Mod	AS
Aluminum	10100	9221	89.1	0.164	70 - 130	20	EPA 200.8 Mod	AS
Chromium	1010.0	990.2	97.8	1.59	70 - 130	20	EPA 200.8 Mod	AS
Manganese	1010.0	1562	92.2	1.27	70 - 130	20	EPA 200.8 Mod	AS
Iron	5050.0	4775	94.6	1.53	70 - 130	20	EPA 200.8 Mod	AS
Nickel	1262.5	1197	94.6	0.613	70 - 130	20	EPA 200.8 Mod	AS
Copper	1262.5	1129	89.0	1.79	70 - 130	20	EPA 200.8 Mod	AS
Zinc	2525.0	2399	95.0	0.0456	70 - 130	20	EPA 200.8 Mod	AS
Arsenic	1010.0	1013	99.2	3.57	70 - 130	20	EPA 200.8 Mod	AS
Selenium	1010.0	1151	102	1.49	70 - 130	20	EPA 200.8 Mod	AS
Molybdenum	505.00	684.8	97.0	0.0426	70 - 130	20	EPA 200.8 Mod	AS
Cadmium	101.00	100.4	98.7	3.45	70 - 130	20	EPA 200.8 Mod	AS
Antimony	50.500	51.11	98.1	0.531	70 - 130	20	EPA 200.8 Mod	AS

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-MS/MSD3

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Barium	2020.0	2377	106	0.106	70 - 130	20	EPA 200.8 Mod	AS
Thallium	50.500	53.45	92.3	0.720	70 - 130	20	EPA 200.8 Mod	AS, QB-01
Lead	252.50	219.8	87.0	0.315	70 - 130	20	EPA 200.8 Mod	AS

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Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD1

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
Mercury	36.03	102.00	140.9	103	71 - 125	EPA 1631E	

Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	102.00	141.0	103	0.0816	71 - 125	24	EPA 1631E	

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Ph: 206-622-6960
Fx: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202035-02RE1

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-MS/MSD2

Analyte	Sample Concentration (ng/L)	Spike Added (ng/L)	MS Concentration (ng/L)	MS % Recovery	Recovery Limits	Method	Notes
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Mercury	38.97	102.00	144.0	103	71 - 125	EPA 1631E	
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Analyte	Spike Added (ng/L)	MSD Concentration (ng/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
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Mercury	102.00	144.5	103	0.394	71 - 125	24	EPA 1631E	
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Seattle, WA 98109
Ph: 206-622-6960
Ex: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02RE2

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD1

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	1.5150	1.891	125	70 - 130	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5150	2.021	133	6.64	70 - 130	20	EPA 200.8 Mod	QM-07

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Fx: 206-622-6870

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD

SOURCE: 1202063-02RE2

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-MS/MSD2

Analyte	Sample Concentration (µg/L)	Spike Added (µg/L)	MS Concentration (µg/L)	MS % Recovery	Recovery Limits	Method	Notes
Silver	ND	50.500	45.54	90.2	70 - 130	EPA 200.8 Mod	AS

Analyte	Spike Added (µg/L)	MSD Concentration (µg/L)	MSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	50.500	46.21	91.5	1.46	70 - 130	20	EPA 200.8 Mod	AS

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LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Beryllium	2.0000	1.891	94.5	85 - 115	EPA 200.8 Mod	
Aluminum	150.00	143.0	95.3	85 - 115	EPA 200.8 Mod	
Chromium	7.0000	6.44	92.0	85 - 115	EPA 200.8 Mod	
Manganese	6.0000	5.77	96.2	85 - 115	EPA 200.8 Mod	
Iron	500.00	454.7	90.9	85 - 115	EPA 200.8 Mod	
Nickel	4.0000	4.02	100	85 - 115	EPA 200.8 Mod	
Copper	4.0000	4.18	105	85 - 115	EPA 200.8 Mod	
Zinc	10.000	10.25	103	85 - 115	EPA 200.8 Mod	
Arsenic	15.000	14.25	95.0	85 - 115	EPA 200.8 Mod	
Selenium	30.000	29.36	97.9	85 - 115	EPA 200.8 Mod	
Molybdenum	2.0000	1.82	91.0	85 - 115	EPA 200.8 Mod	
Cadmium	0.80000	0.828	103	85 - 115	EPA 200.8 Mod	
Antimony	0.80000	0.800	100	85 - 115	EPA 200.8 Mod	
Barium	10.000	9.99	99.9	85 - 115	EPA 200.8 Mod	
Thallium	0.40000	0.420	105	85 - 115	EPA 200.8 Mod	
Lead	1.5000	1.552	103	85 - 115	EPA 200.8 Mod	

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Beryllium	2.0000	1.863	93.1	1.50	85 - 115	20	EPA 200.8 Mod	
Aluminum	150.00	137.5	91.7	3.91	85 - 115	20	EPA 200.8 Mod	
Chromium	7.0000	6.29	89.9	2.39	85 - 115	20	EPA 200.8 Mod	
Manganese	6.0000	5.58	93.0	3.37	85 - 115	20	EPA 200.8 Mod	
Iron	500.00	435.9	87.2	4.22	85 - 115	20	EPA 200.8 Mod	
Nickel	4.0000	3.71	92.9	7.79	85 - 115	20	EPA 200.8 Mod	
Copper	4.0000	4.03	101	3.75	85 - 115	20	EPA 200.8 Mod	
Zinc	10.000	9.89	98.9	3.59	85 - 115	20	EPA 200.8 Mod	
Arsenic	15.000	13.45	89.7	5.77	85 - 115	20	EPA 200.8 Mod	
Selenium	30.000	29.20	97.3	0.548	85 - 115	20	EPA 200.8 Mod	

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202053

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202053-BS/BSD1

LCS Source: Blank Spike Dup

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Molybdenum	2.0000	1.77	88.3	3.03	85 - 115	20	EPA 200.8 Mod	
Cadmium	0.80000	0.794	99.2	4.16	85 - 115	20	EPA 200.8 Mod	
Antimony	0.80000	0.784	98.0	2.05	85 - 115	20	EPA 200.8 Mod	
Barium	10.000	9.82	98.2	1.77	85 - 115	20	EPA 200.8 Mod	
Thallium	0.40000	0.407	102	2.98	85 - 115	20	EPA 200.8 Mod	
Lead	1.5000	1.535	102	1.06	85 - 115	20	EPA 200.8 Mod	

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Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202057

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Number: F202057-BS/BSD1

LCS Source: LCS

Analyte	Spike Added (ng/L)	LCS Concentration (ng/L)	LCS % Recovery	Recovery Limits	Method	Notes
Mercury	15.679	15.77	101	80 - 120	EPA 1631E	

Analyte	Spike Added (ng/L)	LCSD Concentration (ng/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Mercury	15.679	16.05	102	1.76	80 - 120	24	EPA 1631E	

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Liz Siska, Project Manager

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414 Pontius Ave North
Seattle, WA 98109
Ph: 206-622-6960
Fx: 206-622-6870

LABORATORY CONTROL SAMPLE/ LABORATORY CONTROL SAMPLE DUPLICATE

RECOVERY AND RPD

Batch: F202159

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Number: F202159-BS/BSD1

LCS Source: Blank Spike

Analyte	Spike Added (µg/L)	LCS Concentration (µg/L)	LCS % Recovery	Recovery Limits	Method	Notes
Silver	1.5000	2.156	144	85 - 115	EPA 200.8 Mod	QM-12

Analyte	Spike Added (µg/L)	LCSD Concentration (µg/L)	LCSD % Recovery	% RPD	Recovery Limits	RPD Limit	Method	Notes
Silver	1.5000	2.141	143	0.706	85 - 115	20	EPA 200.8 Mod	QM-12

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PREPARATION BLANKS

Instrument: Hg-16

Sequence: 2B06014

Preparation: BrCl Oxidation

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202057-BLK1	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK2	Mercury	0.04	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK3	Mercury	0.05	0.50	ng/L	F202057	EPA 1631E	U
F202057-BLK4	Mercury	0.10	0.50	ng/L	F202057	EPA 1631E	QB-04, U

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PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B13005

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202053-BLK1	Beryllium	0.005	0.060	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Aluminum	-0.04	4.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Chromium	-0.02	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Manganese	-0.002	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Iron	-0.3	10.0	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Nickel	-0.03	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Copper	0.008	0.10	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Zinc	0.10	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Arsenic	-0.07	0.15	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Selenium	-0.02	0.60	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Molybdenum	0.01	0.06	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Cadmium	0.005	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Antimony	0.019	0.020	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Barium	0.005	0.20	µg/L	F202053	EPA 200.8 Moc	U
F202053-BLK1	Thallium	0.028	0.005	µg/L	F202053	EPA 200.8 Moc	QB-10
F202053-BLK1	Lead	0.004	0.040	µg/L	F202053	EPA 200.8 Moc	U

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PREPARATION BLANKS

Instrument: ICPMS-6

Sequence: 2B15016

Preparation: Closed Vessel Nitric Oven Digestion

Lab Sample ID	Analyte	Found	MRL	Units	Batch	Method	Notes
F202159-BLK1	Silver	0.0006	0.020	µg/L	F202159	EPA 200.8 Moc	U

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A handwritten signature in cursive script that reads "Liz Siska".

Liz Siska, Project Manager

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Notes and Definitions

U	Analyte included in the analysis, but not detected
QR-08	The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
QM-12	Initial or continuing calibration verification and/or blank spike/blank spike duplicate recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
QM-07	The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
QM-02	The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
QB-10	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. Only report sample results greater than 10 times the contamination value (QB-01), or samples less than the MRL (QB-02).
QB-04	The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
QB-02	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. However, the sample concentrations are less than the MRL.
QB-01	The method blank and/or initial/continuing calibration blank contains analyte at a concentration above the MRL. However, the blank concentration(s) are less than 10% of the sample result.
AS	This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
DET	Analyte Detected
MDL	Minimum Detection Limit
MRL	Minimum Reporting Limit
ND	Analyte Not Detected at or above the reporting limit
wet	Sample results reported on a wet weight basis
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
RSD	Relative Standard Deviation

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Liz Siska, Project Manager

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professional laboratory services

CHAIN-OF-CUSTODY RECORD

107330

GZANH

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Sample IDs	Date/Time <i>Composites need start and stop dates/times</i>	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	2/2/2012 8:47	aqueous <u>Grab</u> or Comp	AqTot/SWLLMetalsSub	1
☒ Sampler confirms ID and parameters are accurate			Circle preservative/s: HCL HNO ₃ H ₂ SO ₄ NaOH MeOH Na ₂ S ₂ O ₃ <u>ICE</u>	Dissolved Sample Field Filtered ☐
Treat Tank Effluent	2/2/2012 9:15	aqueous <u>Grab</u> or Comp	AqTot/SWLLMetalsSub/BOD/COD/CyanT/F/NO ₃ /OG1664/SO ₄ /TDS/TSS/V624A/E625/TPhenols/E600PGB/NH ₃ /Cl/pH	18
☒ Sampler confirms ID and parameters are accurate			Circle preservative/s: <u>HCL</u> HNO ₃ <u>H₂SO₄</u> <u>NaOH</u> MeOH Na ₂ S ₂ O ₃ <u>ICE</u>	Dissolved Sample Field Filtered ☐

Please ensure this auto COC is accurate, adheres to permit or sampling requirements for this sampling event, and modify as necessary.

EAI Project ID 3902

Project Name Wastewater Analysis - Weekly

State NH

Client (Pro Mgr) Paul Pepler

Customer GZA GeoEnvironmental, Inc. (NH)

Address 380 Harvey Road

City Manchester NH 03103

Phone 623-3600

Fax 624-9463 (37)

EmailAddress: paul.pepler@gza.com

Results Needed by: Preferred date _____

Notes about project: (i.e. Special Limits, Billing info if different...)

Subcontract ALL metals to Frontier Global Sciences.

Metals include Total

Al, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Ti, Zn. Metals analyses require project-specific MS/MSD.

Please hold 624/625/608 analyses per GZA.

QC deliverables

☒ A ☐ A+ ☒ B ☐ B+ ☐ C ☐ PC

Reporting Options

- ☒ HC
- ☒ EDD PDF
- ☒ EDD email
- ☒ PDF prelim, NO FAX
- ☐ e-mail Login Confirmation
- ☐ NO FAX

PONumber: 02259252 verbal

Quote No: 1009476

Temperature 5.2 °C

Ice present Yes ☒ No ☐

Samples Collected by: JB GT

Relinquished by Date/Time 2/2/12 13:00 Received by

Relinquished by _____ Date/Time _____ Received by _____