

**VIA EMAIL**

February 23, 2012  
File No. 04.0029307.00



Mr. Dana Clement  
Superintendent  
Allentown Wastewater Treatment Facility  
35 Canal Street  
Allentown, New Hampshire 03275

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 Dana:

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 required to satisfy the round three of four initial weekly sampling requirement as outlined in Industrial Discharge Permit (IDP) No. HWIU-PSNH.

Table 1 included in the Wastewater Discharge Monitoring Report summarizes the analytical results for all required parameters as outlined Part 2 Section A of the IDP. 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](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\Allenstown\REPORT\FINAL 04.0029307 Atown 3of4 DATA RPT 022312.docx

Attachments: Wastewater Discharge Monitoring Report  
Analytical Data report

STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES

WASTEWATER DISCHARGE MONITORING REPORT  
FOR THE MONTH OF \_\_\_\_\_  
AT THE \_\_\_\_\_  
PLANT \_\_\_\_\_  
IN THE COUNTY OF \_\_\_\_\_  
ON \_\_\_\_\_

ATTACHMENT

---

**WASTEWATER DISCHARGE MONITORING REPORT**

---

**WASTEWATER DISCHARGE MONITORING REPORT  
ALLENSTOWN WASTEWATER TREATMENT FACILITY**

Public Service of New Hampshire - Merrimack Station  
Industrial Discharge Permit - Class I  
Permit No. HWIU-PSNH  
Issued November 10, 2011  
Expires November 9, 2012

Permitted Flow 100,000 gallons per day

**FLOW DATA**

Daily Flow Rate (gallons)	19,744	(average)
Monitoring Period Flow (gallons)	118,466	(1/27/12 - 2/03/12)

**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 Olshaw  
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

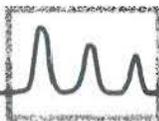
**TABLE 1 - SUMMARY ANALYTICAL DATA**  
**Treated FGD Wastewater**  
**Public Service Company of New Hampshire**  
**Merrimack Station**  
**Bow, New Hampshire**

PARAMETER	RESULTS (mg/L) 2/2/2012 EAI/Frontier
Arsenic	0.0121
Cadmium	< 0.00100
Chromium (T)	< 0.00500
Copper	0.00553
Lead	< 0.00200
Mercury	0.0000360
Molybdenum	0.195
Nickel	< 0.00500
Selenium	0.121
Silver	< 0.00100
Zinc	< 0.0100

**Note:**

The analytical results and the flow data from the monitoring period indicate that the estimated pollutant mass in the discharge is below mass limits outlined in IDP No. HWIU-PSNH.





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](http://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.

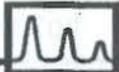
We appreciate this opportunity to be of service and look forward to your continued patronage.

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

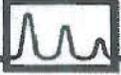
Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
107330.01	Effluent Field Blank	2/2/12	2/2/12	aqueous		Adheres to Sample Acceptance Policy
107330.02	Treat Tank Effluent	2/2/12	2/2/12	aqueous		624, 625 and 608 placed on hold,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

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, 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***

---

<b>Sample ID:</b>	Treat Tank Effluent
<b>Lab Sample ID:</b>	107330.02
<b>Matrix:</b>	aqueous
<b>Date Sampled:</b>	2/2/12
<b>Date Received:</b>	2/2/12
<b>Units:</b>	mg/L
<b>Date of Extraction/Prep:</b>	2/8/12
<b>Date of Analysis:</b>	2/8/12
<b>Analyst:</b>	LAS
<b>Method:</b>	1664A
<b>Dilution Factor:</b>	1
<b>Oil &amp; Grease (HEM)</b>	< 5



# QC REPORT

EAI ID#: 107330

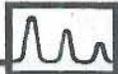
Client: **GZA GeoEnvironmental, Inc. (NH)**

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

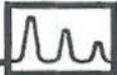
Date Sampled: 2/2/12

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		Method	Analyst
	Date	Time		
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.*

Page 1 of 23  
1202063 Final Report  
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.

A handwritten signature in cursive script that reads "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.*

Page 2 of 23  
1202063 Final Report  
02/15/2012



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

### CHAIN OF CUSTODY FORMS



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

107330 39  
414 Pon  
Fax: 206-622-6870  
info@FrontierGS.com  
http://www.FrontierGS.com

Page 1 of 1

1202063

Client: Eastern Analytical Inc		Contact: Jeff Guyon		FSS PM: Liz Siska							
Address: 25 Chenell Drive Concord NH 03301		Phone: 603 228 0225 Fax: 603 228 1571		Date: 2/2/2012							
Project Name: Merrimack Station		E-mail: jeffguyon@eai.com		TAT (business days): 20 (std) 15 (if TAT < 10 days, contact PM. Surcharges apply for expedited TAT)							
Report To: Same		Contract/PO:		Saturday delivery? <input type="checkbox"/> Y <input type="checkbox"/> N (If yes, please contact PM)							
Address: same		Invoice To: same		EDD <input type="checkbox"/> Y <input type="checkbox"/> N							
Phone: 603 228 0225 Fax: 603 228 1571		Address: same		QA <input type="checkbox"/> Standard <input type="checkbox"/> High							
E-mail: customer.service@eai.com		E-mail: customer.service@eai.com		Comments							
No.	Engraved Bottle ID	Sample ID	# of Bottles	Matrix	Date & Time	Sampled By	Field Filtered (Y/N)	Field Preserved: HNO <sub>3</sub> , HD, BIC Other (%)	Total Analyte	Analyses Requested	Comments
1	C-3015	Effluent Field Blank	1	Air	2/1/12 08:47	JG/OT	N	-	X		1) Metals Include: Al, Sb, As, Ba, Bi, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Ti, Zn 2) Please use certified containers FGD equipment 3) Project specific methods add'l sample volume provided
2	C-3027 C-3022	Treat Tank Effluent	3	WW	2/1/12 09:15	JG/OT	N	-	X		
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
For Laboratory Use Only		Matrix Codes:		Relinquished By:		Received By:		Received By:			
COC Seal: No		FW: Fresh Water		Name: <i>Jim Blackwell</i>		Name: <i>Chris Johnson</i>		Name: <i>ALEXA RAHM</i>			
Cooler Temp: 10.6 C		WW: Waste Water		Organization: Eastern Analytical		Organization: FGI		Organization: FGS			
Carrier: UPS		SB: Sea and Brackish Water		Date & Time: 2/2/12 13:00		Date & Time: 2/2/12 13:00		Date & Time: 2-3-12			
VTSR: 0930		SS: Soil and Sediment		Tracking number: 1Z X46 519 01 9628 9755							
# of Coolers: 1 (one)		TS: Plant and Animal Tissue		Date: _____							
Sample Disposal:		HC: Hydrocarbons		By signing, you declare that you agree with FGS' terms and conditions, and that you authorize FGS to perform the specified analyses.							
<input type="checkbox"/> Return (shipping fees may apply)		OT: Other		Customer Approval: _____							
<input type="checkbox"/> Standard Disposal - 30 Days after report				Date: _____							
<input type="checkbox"/> Retain for _____ weeks after report (storage fees may apply)											

Frontier Global Sciences, Inc.

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.

*Liz Siska*

Page 3 of 23  
1202063 Final Report  
02/15/2012

Liz Siska, Project Manager

**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: Merrimack Station Received By: Alexa Bahm Logged In By: Alexa Bahm  
 SDG: \_\_\_\_\_ # of Coolers Received: 1 (one) FGS PM: Liz Siska

Samples Arrived By:  Shipping Service \_\_\_\_\_ Courier \_\_\_\_\_ Hand \_\_\_\_\_ Other (specify) \_\_\_\_\_

Tracking/Airbill Number(s): UPS 1Z X46 549 01 9628 9755

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

Thermal Preservation:  Loose Ice \_\_\_\_\_ Gel/Blue Ice \_\_\_\_\_ None (Ambient) \_\_\_\_\_ Other (specify) \_\_\_\_\_

Thermometer ID: 0268 Correction Factor (CF): +0.4° 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:	<input checked="" type="checkbox"/>			
Date and Time of Sample Collection:	<input checked="" type="checkbox"/>			
Sampled By:	<input checked="" type="checkbox"/>			
Preservation Type:			<input checked="" type="checkbox"/>	
Requested Analyses:	<input checked="" type="checkbox"/>			
Required Signatures:	<input checked="" type="checkbox"/>			
Internal chain of custody required:			<input checked="" type="checkbox"/>	

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

Anomalies/Non-conformances:

N/A

Client Communication Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Method: \_\_\_\_\_

Discussion/Resolution:

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.



## 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

Frontier Global Sciences, Inc.

*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.*

Page 5 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



## 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

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 6 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

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.*

Page 7 of 23  
1202063 Final Report  
02/15/2012



**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	

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 8 of 23  
1202063 Final Report  
02/15/2012

Liz Siska, Project Manager



**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	

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.*

Page 9 of 23  
1202063 Final Report  
02/15/2012



**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

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 10 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 11 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



### 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	

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.*

Page 12 of 23  
1202063 Final Report  
02/15/2012



414 Pontius Ave North  
 Seattle, WA 98109  
 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
Mercury	38.97	102.00	144.0	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	144.5	103	0.394	71 - 125	24	EPA 1631E	

Frontier Global Sciences, Inc.

*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.*

Page 13 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



**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

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 14 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY AND RPD**

**SOURCE: 1202063-02RE2**

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

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 15 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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	

Frontier Global Sciences, Inc.

*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.*

Page 16 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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/BSDI

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	

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.*

Page 17 of 23  
 1202063 Final Report  
 02/15/2012



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: 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	

Frontier Global Sciences, Inc.

*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.*

*Liz Siska*

Page 18 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



**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

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.*

Page 19 of 23  
 1202063 Final Report  
 02/15/2012



### 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

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.*

Page 20 of 23  
1202063 Final Report  
02/15/2012



### 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

Frontier Global Sciences, Inc.

*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.*

Page 21 of 23  
 1202063 Final Report  
 02/15/2012

Liz Siska, Project Manager



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

### 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

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.*

Page 22 of 23  
1202063 Final Report  
02/15/2012

## 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

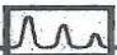
Frontier Global Sciences, Inc.



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.*

Page 23 of 23  
1202063 Final Report  
02/15/2012



eastern analytical, inc.

professional laboratory services

# CHAIN-OF-CUSTODY RECORD

107330

GZANH

30

Date/Time

Composites need start and stop dates/times

Sample IDs	Date/Time	Matrix	Parameters and Sample Notes	# of containers
Effluent Field Blank	2/2/2012 8:47	aqueous <u>Grab</u> or Comp	AqTot/SWLLMetalsSub	1
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: HCL HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH MEOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <u>ICE</u>	Dissolved Sample Field Filtered <input type="checkbox"/>
Treat Tank Effluent	2/2/2012 9:15	aqueous <u>Grab</u> or Comp	AqTot/SWLLMetalsSub/BOD/COD/CyanT/F/NO3/OG1664/SO4/TDS/TSS/V624/AE625/TPhenols/E608/PGB/NH3/Cl/pH	18
<input checked="" type="checkbox"/> Sampler confirms ID and parameters are accurate			Circle preservative/s: <u>HCL</u> HNO <sub>3</sub> <u>H<sub>2</sub>SO<sub>4</sub></u> <u>NaOH</u> MEOH Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> <u>ICE</u>	Dissolved Sample Field Filtered <input type="checkbox"/>

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

02259252  
PONumber: verbal

Quote No: 1009476

Temperature 5.2°C

Ice present Yes  No

Samples Collected by: JB GT

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

Relinquished by	Date/Time	Received by