

January 26, 2016



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

January 22, 2016

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF X16-023
Work Order: 389110
SDG: GEL389110

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 13, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071JDBA
Chain of Custody: X16-023-013, X16-023-015, X16-023-017 and X16-023-019
Enclosures



Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....5

Data Review Qualifier Definitions.....11

Laboratory Certifications.....14

Metals Analysis.....16

 Case Narrative.....17

 Sample Data Summary.....22

 Quality Control Summary.....39

General Chem Analysis.....48

 Case Narrative.....49

 Sample Data Summary.....56

 Quality Control Summary.....61

Radiological Analysis.....64

 Sample Data Summary.....68

 Quality Control Summary.....73

Case Narrative

January 26, 2016

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF X16-023
SDG: GEL389110

January 22, 2016

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on January 13, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
389110001	B33RN0
389110002	B33RN3
389110003	B33RR1
389110004	B33RR4
389110005	B33RT3
389110006	B33RT6
389110007	B33RV5
389110008	B33RV8

Case Narrative

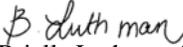
Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

January 26, 2016

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry, Metals and Radiochemistry.

This package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.


Brielle Luthman for
Heather Shaffer
Project Manager

January 26, 2016

Subject: Groundwater packages**From:** "Waters-husted, Karen S" <Karen_S_Waters-husted@rl.gov>**Date:** 11/10/2015 12:25 PM**To:** "Awalt, Jayna" <Jayna.Awalt@testamericainc.com>, "Franks, Mike" <Mike.Franks@testamericainc.com>, "Heather Shaffer (heather.shaffer@gel.com)" <heather.shaffer@gel.com>, Julie Ellingson <Julie.Ellingson@ALSGlobal.com>, Nancy Mattern <Nancy.Mattern@gel.com>, "Ritari, Whitney" <Whitney.Ritari@testamericainc.com>, "Sandra Seger (Sandra.Seger@testamericainc.com)" <Sandra.Seger@testamericainc.com>, "Wagar, Rhonda" <Rhonda.Wagar@testamericainc.com>, "Waters-husted, Karen S" <Karen_S_Waters-husted@rl.gov>**CC:** "Ayres, Doris E" <Doris_E_Ayres@rl.gov>, "Sumner, Laine C" <Laine_C_Sumner@rl.gov>, "Gibson, Gayelyn G" <Gayelyn_G_Gibson@rl.gov>, "Lynch, Sherry A" <Sherry_A_Lynch@rl.gov>, "Medley, Heather A" <Heather_A_Medley@rl.gov>, "Fitzgerald, Scot L" <Scot_L_Fitzgerald@rl.gov>, ^CPP Sample Management <CPP_Sample_Management@rl.gov>

The GW annual report is written for a calendar year. This means that we have requested all the samples collected through December 31 to be reported by January 31. However, this year our sampling work load is higher than normal for November and December. In order to meet the GW reporting needs and the large sampling events, CHPRC needs all GW (SAFs A, I, S, W, and some X) SDGs to be on 15 day TATs starting with samples received on 11-16-15 through 1-31-16. I will be adding the new TAT to the SAFs and re-sending them shortly.

Currently, all the November and December paperwork is out in the field, so we will not be recalling it all and making the changes on the chains due to the volume of paperwork impacted.

Please include this email in the data packages as the direction for the TAT change. A SIR will not be necessary.

Please let me know if you have any questions or any problems arise that will impact these packages.

Thank you,

Karen Waters-Husted

CH2M Plateau Remediation Company
Sample Management and Reporting
Groundwater Project Coordinator
200 East / MO-277 / 108
509-376-4650
Karen_S_Waters-husted@rl.gov

Chain of Custody and Supporting Documentation

January 26, 2016

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
X16-023-013
 C.O.C. # X16-023-013
 Page 1 of 1

Collector Dan Woehle
 CHPRC
Contact/Requester Karen Waters-Husted
Telephone No. 509-376-4650
SAF No. X16-023
Sampling Origin Hanford Site
Purchase Order/Charge Code 300071
Project Title 100-BC-5 RI Sampling, JANUARY 2016
Logbook No. HNF-N-506 81171
Ice Chest No. 6W05-189
Shipped To (Lab) GEL Laboratories, LLC
Method of Shipment Commercial Carrier
Bill of Lading/Air Bill No. 1775401182865
Protocol CERCLA
Priority: 15 Days
PRIORITY
Offsite Property No. 6273

SPECIAL INSTRUCTIONS Hold Time
Hold Time
Total Activity Exemption: Yes No
POSSIBLE SAMPLE HAZARDS/REMARKS
 N/A
 *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33RN0	N	W	1/13/16	0841	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B33RN0	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B33RN0	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B33RN0	N	W			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B33RN3	Y	W	1/13/16	0841	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By Dan Woehle CHPRC	Print D. Woehle	Sign [Signature]	Date JAN 12 2016	Time 1140	Date/Time JAN 12 2016 1140	Received By L.D. Wall CHPRC	Print L.D. Wall	Sign [Signature]	Date/Time JAN 12 2016 1140
Relinquished By L.D. Wall CHPRC	Print L.D. Wall	Sign [Signature]	Date JAN 12 2016	Time 1400	Date/Time JAN 12 2016 1400	Received By [Signature]	Print [Signature]	Sign [Signature]	Date/Time JAN 12 2016 1400
Relinquished By [Signature]	Print Fedex	Sign [Signature]	Date JAN 12 2016	Time 1400	Date/Time JAN 12 2016 1400	Received By [Signature]	Print [Signature]	Sign [Signature]	Date/Time JAN 12 2016 1400
Relinquished By [Signature]	Print Fedex	Sign [Signature]	Date JAN 12 2016	Time 1400	Date/Time JAN 12 2016 1400	Received By [Signature]	Print [Signature]	Sign [Signature]	Date/Time JAN 12 2016 1400

8 of 7

FINAL SAMPLE DISPOSITION
 Disposed By
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Date/Time

PRINTED ON 11/23/2015
 FSR ID = FSR10667
 A-6004-842 (REV 2)

64105

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-023-015**
Page 1 of 1

Collector: Scott King CHPRC
 SAF No.: X16-023
 Project Title: 100-BC-5 RI Sampling, JANUARY 2016
 Shipped To (Lab): GEL Laboratories, LLC
 Protocol: CERCLA

Contact/Requester: Karen Waters-Husted
 Sampling Origin: Hanford Site
 Logbook No.: HNF-N-506 80171
 Method of Shipment: Commercial Carrier
 Priority: **15 Days**

Telephone No.: 509-376-4650
 Purchase Order/Charge Code: 300071
 Ice Chest No.: 605-189
 Bill of Lading/Air Bill No.: 7754 0118 2865
 Offsite Property No.: 6273

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS: N/A
 Hold Time: _____
 Total Activity Exemption: Yes No

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33RR1	N	JAN 17 2016	1110	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B33RR1	N			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B33RR1	N			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B33RR1	N			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B33RR4	Y	JAN 12 2016	1110	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

January 26, 2016

Relinquished By: Scott King CHPRC
 Relinquished By: CHPRC
 Relinquished By: Fled ex
 Relinquished By: _____

Received By: L.D. Wall CHPRC
 Received By: FEDEX
 Received By: Patricia Dent P. Dent
 Received By: _____

Date/Time: JAN 12 2016 1145
 Date/Time: JAN 12 2016 1400
 Date/Time: 1/13/16 09:20
 Date/Time: _____

Matrix *
 S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air
 DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other

FINAL SAMPLE DISPOSITION: _____
 Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____
 Disposed By: _____
 Date/Time: _____

January 26, 2016

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-023-017**
Page 1 of 1

Collector: Dan Woehle CHPRC
 SAF No.: X16-023
 Project Title: 100-BC-5 RI Sampling, JANUARY 2016
 Shipped To (Lab): GEL Laboratories, LLC
 Protocol: CERCLA

Contact/Requester: Karen Waters-Husted
 Sampling Origin: Hanford Site
 Logbook No.: HNF-N-506 81 / 171
 Method of Shipment: Commercial Carrier
 Priority: 15 Days

Telephone No.: 509-376-4650
 Purchase Order/Charge Code: 300071
 Ice Chest No.: 605-189
 Bill of Lading/Air Bill No.: 17754 0118 2865
 Offsite Property No.: 6273

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
 Hold Time: N/A
 Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33RT3	N	W	1-12-16	0949	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B33RT3	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B33RT3	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B33RT3	N	W			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B33RT6	Y	W	1-12-16	0949	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By Dan Woehle CHPRC	Print By L. Wall	Sign L. Wall	Date/Time JAN 12 2016 1140	Received By L.D. Wall CHPRC	Print L. Wall	Sign L. Wall	Date/Time JAN 12 2016 1140	Matrix *
Relinquished By L.D. Wall CHPRC	Print L. Wall	Sign L. Wall	Date/Time JAN 12 2016 1400	Received By FEDEX	Print FEDEX	Sign FEDEX	Date/Time JAN 12 2016 09:00	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By 16 of 17	Print Fedex	Sign Fedex	Date/Time JAN 12 2016 1400	Received By Patricia Dent P. Dent	Print P. Dent	Sign P. Dent	Date/Time JAN 12 2016 09:00	

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: _____ Date/Time: _____

PRINTED ON 11/23/2015 FSR ID = FSR5685 A-6004-842 (REV 2)

January 26, 2016

CH2M Hill Plateau Remediation Company		C.O.C. # X16-023-019	
Dan Woehle CHPRC		Page 1 of 1	
Collector	X16-023	Contact/Requester	Karen Waters-Husted
SAF No.	100-BC-5 RI Sampling, JANUARY 2016	Telephone No.	509-376-4650
Project Title	GEL Laboratories, LLC	Purchase Order/Charge Code	300071
Shipped To (Lab)	CERCLA	Ice Chest No.	6005-189
Protocol		Bill of Lading/Air Bill No.	7754 0182865
		Offsite Property No.	6273
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS N/A	Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample No.	Filter	Date	Time
B33RV5	N	1-12-16	1057
B33RV5	N		
B33RV5	N		
B33RV8	Y	1-12-16	1057
No/Type Container	Sample Analysis	Holding Time	Preservative
1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By Dan Woehle CHPRC	Print <i>D. Woehle</i>	Sign <i>D. Woehle</i>	Date/Time JAN 12 2016 1140	Received By L.D. Wall CHPRC	Print <i>L.D. Wall</i>	Sign <i>L.D. Wall</i>	Date/Time JAN 12 2016 1140
Relinquished By L.D. Wall CHPRC	Print <i>L.D. Wall</i>	Sign <i>L.D. Wall</i>	Date/Time JAN 12 2016 1400	Received By CHPRC	Print <i>CHPRC</i>	Sign <i>CHPRC</i>	Date/Time JAN 12 2016 1400
Relinquished By <i>Fedex</i>	Print <i>Fedex</i>	Sign <i>Fedex</i>	Date/Time JAN 12 2016 09:00	Received By <i>Patricia Dent</i>	Print <i>Patricia Dent</i>	Sign <i>Patricia Dent</i>	Date/Time 1/13/16 09:00
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By			
FINAL SAMPLE DISPOSITION				Date/Time			

FRS ID = FSR10675

PRINTED ON 11/23/2015

January 26, 2016



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>389110</u>
Received By: <u>P. Alant</u>		Date Received: <u>1/13/16</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0/cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1c</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>201404436</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?			<input checked="" type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?			<input checked="" type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?			<input checked="" type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
14 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
16 Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7754 0118 2865</u>

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
UX	Manual	Gamma Spectroscopy--Uncertain identification	Y	Radiological		

Laboratory Certifications

List of current GEL Certifications as of 22 January 2016

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122015-19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

January 26, 2016

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL389110

Work Order #: 389110

Sample ID	Client ID
389110001	B33RN0
389110002	B33RN3
389110003	B33RR1
389110004	B33RR4
389110005	B33RT3
389110006	B33RT6
389110007	B33RV5
389110008	B33RV8
1203467650	Method Blank (MB)ICP
1203467651	Laboratory Control Sample (LCS)
1203467654	389110001(B33RN0L) Serial Dilution (SD)
1203467652	389110001(B33RN0S) Matrix Spike (MS)
1203467653	389110001(B33RN0SD) Matrix Spike Duplicate (MSD)
1203467729	Method Blank (MB)ICP-MS
1203467730	Laboratory Control Sample (LCS)
1203467733	389110001(B33RN0L) Serial Dilution (SD)
1203467731	389110001(B33RN0S) Matrix Spike (MS)
1203467732	389110001(B33RN0SD) Matrix Spike Duplicate (MSD)

Sample Analysis

Samples 389110 001, 002, 003, 004, 005, 006, 007 and 008 in this SDG were analyzed for metals on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1536948 and 1536975
Prep Batch :	1536947 and 1536974
Standard Operating Procedures:	GL-MA-E-013 REV# 24, GL-MA-E-006 REV# 13 and GL-MA-E-014 REV# 26
Analytical Method:	6010_METALS_ICP and 6020_METALS_ICPMS
Prep Method :	SW846 3005A

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information

Instrument Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

CRDL/PQL Requirements

The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, thallium was greater than the MDL. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203467729 (MB)-ICP-MS.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 389110001 (B33RN0)-ICP and ICP-MS.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD values between qualifying analyte results in the MS and MSD were within the acceptance limits.

Serial Dilution % Difference Statement

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were not diluted and prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

January 26, 2016

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL389110 GEL Work Order: 389110

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Nik-Cole Elmore

Date: 26 JAN 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110001

CLIENT ID: B33RN0

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.77	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	11.6	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	37600	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	11.9	ug/L			MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.472	ug/L	B		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	8590	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	4.05	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5120	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	12300	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	148	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.765	ug/L	B		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.49	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
 -1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110001

CLIENT ID: B33RN0

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.86	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110002

CLIENT ID: B33RN3

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.4	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	11.9	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	37800	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	11.9	ug/L			MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.379	ug/L	B		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	8670	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	3.71	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5130	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	12700	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	150	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.766	ug/L	CB		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.48	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110002

CLIENT ID: B33RN3

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.78	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110003

CLIENT ID: B33RR1

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	2.77	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	15.7	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	41700	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	8.48	ug/L	B		MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	10400	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	2.35	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5180	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	11600	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	173	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.69	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
 -1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110003

CLIENT ID: B33RR1

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	7.6	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

***Analytical Methods:**

- P** SW846 3005A/6010C
- MS** SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110004

CLIENT ID: B33RR4

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	2.62	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	15.8	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	41200	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	8.36	ug/L	B		MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	10400	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	2.35	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5110	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	11800	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	173	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.66	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110004

CLIENT ID: B33RR4

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	7.68	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110005

CLIENT ID: B33RT3

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.84	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	14.5	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	41600	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	27.9	ug/L			MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	9360	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	3.87	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5470	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	11800	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	169	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.7	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110005

CLIENT ID: B33RT3

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	8.74	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110006

CLIENT ID: B33RT6

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.85	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	15.4	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	42000	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	28.8	ug/L			MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	9360	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	3.93	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5500	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	11900	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	173	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.73	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110006

CLIENT ID: B33RT6

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	8.41	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110007

CLIENT ID: B33RV5

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.05	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	16.2	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	37400	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	2.53	ug/L	B		MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	9570	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	2.27	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	4990	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	12000	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	157	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.41	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110007

CLIENT ID: B33RV5

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.59	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110008

CLIENT ID: B33RV8

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	160119-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	160121-10
7440-38-2	Arsenic	3.29	ug/L	B		MS	1.7	1	ICPMS12	160119-2
7440-39-3	Barium	15.7	ug/L			MS	0.6	1	ICPMS12	160119-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	160120-9
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	011416-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	160119-2
7440-70-2	Calcium	37700	ug/L			P	50	1	OPTIMA3	011416-1
7440-47-3	Chromium	2.35	ug/L	B		MS	2	1	ICPMS12	160119-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	160119-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	011416-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7439-95-4	Magnesium	9640	ug/L			P	110	1	OPTIMA3	011416-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7439-98-7	Molybdenum	2.26	ug/L			MS	0.165	1	ICPMS12	160120-6
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	160119-2
7440-09-7	Potassium	5080	ug/L			P	50	1	OPTIMA3	011416-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	160119-2
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	160119-2
7440-23-5	Sodium	11700	ug/L			P	100	1	OPTIMA3	011416-1
7440-24-6	Strontium	158	ug/L			MS	2	1	ICPMS12	160119-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	160120-3
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	160120-3
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	160119-2
7440-61-1	Uranium	1.36	ug/L			MS	0.067	1	ICPMS12	160119-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL389110

METHOD TYPE: SW846

SAMPLE ID: 389110008

CLIENT ID: B33RV8

CONTRACT: CPRC0X16023

MATRIX: WATER

DATE RECEIVED 13-JAN-16

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.6	ug/L			P	1	1	OPTIMA3	011416-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	160119-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

Quality Control Summary

January 26, 2016
GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: January 26, 2016

Page 1 of 8

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 389110

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1536975										
QC1203467730	LCS										
Aluminum	2000			2130	ug/L		107	(80%-120%)	BAJ	01/19/16	17:30
Antimony	50.0			48.3	ug/L		96.7	(80%-120%)		01/21/16	13:40
Arsenic	50.0			53.4	ug/L		107	(80%-120%)		01/19/16	17:30
Barium	50.0			50.3	ug/L		101	(80%-120%)			
Beryllium	50.0			59.1	ug/L		118	(80%-120%)		01/21/16	10:42
Cadmium	50.0			52.0	ug/L		104	(80%-120%)		01/19/16	17:30
Chromium	50.0			53.0	ug/L		106	(80%-120%)			
Cobalt	50.0			52.2	ug/L		104	(80%-120%)			
Copper	50.0			52.2	ug/L		104	(80%-120%)			
Lead	50.0			51.8	ug/L		104	(80%-120%)			
Manganese	50.0			51.6	ug/L		103	(80%-120%)			
Molybdenum	50.0			48.1	ug/L		96.2	(80%-120%)		01/21/16	09:15
Nickel	50.0			53.7	ug/L		107	(80%-120%)		01/19/16	17:30
Selenium	50.0			52.2	ug/L		104	(80%-120%)			
Silver	50.0			51.9	ug/L		104	(80%-120%)			
Strontium	50.0			52.2	ug/L		104	(80%-120%)			
Thallium	50.0			54.2	ug/L		108	(80%-120%)		01/20/16	17:28
Thorium	50.0			51.7	ug/L		103	(80%-120%)			
Tin	50.0			54.5	ug/L		109	(80%-120%)		01/19/16	17:30
Uranium	50.0			52.1	ug/L		104	(80%-120%)			

January 26, 2016

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 389110

Page 2 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1536975										
Zinc	50.0			54.3	ug/L		109	(80%-120%)	BAJ	01/19/16	17:30
QC1203467729	MB										
Aluminum			U	ND	ug/L					01/19/16	17:27
Antimony			U	ND	ug/L					01/21/16	13:39
Arsenic			U	ND	ug/L					01/19/16	17:27
Barium			U	ND	ug/L						
Beryllium			U	ND	ug/L					01/21/16	10:40
Cadmium			U	ND	ug/L					01/19/16	17:27
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Lead			U	ND	ug/L						
Manganese			U	ND	ug/L						
Molybdenum			U	ND	ug/L					01/21/16	09:13
Nickel			U	ND	ug/L					01/19/16	17:27
Selenium			U	ND	ug/L						
Silver			U	ND	ug/L						
Strontium			U	ND	ug/L						
Thallium			B	0.453	ug/L					01/20/16	17:26
Thorium			U	ND	ug/L						
Tin			U	ND	ug/L					01/19/16	17:27
Uranium			U	ND	ug/L						

January 26, 2016

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 389110

Page 3 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch 1536975											
Zinc			U	ND	ug/L				BAJ	01/19/16	17:27
QC1203467731 389110001 MS											
Aluminum	2000	U	ND	2020	ug/L		100	(75%-125%)		01/19/16	17:37
Antimony	50.0	U	ND	54.0	ug/L		108	(75%-125%)		01/21/16	13:43
Arsenic	50.0	B	3.77	54.3	ug/L		101	(75%-125%)		01/19/16	17:37
Barium	50.0		11.6	61.6	ug/L		99.9	(75%-125%)			
Beryllium	50.0	U	ND	62.0	ug/L		124	(75%-125%)		01/21/16	10:44
Cadmium	50.0	U	ND	50.8	ug/L		102	(75%-125%)		01/19/16	17:37
Chromium	50.0		11.9	61.2	ug/L		98.5	(75%-125%)			
Cobalt	50.0	U	ND	47.8	ug/L		95.6	(75%-125%)			
Copper	50.0	B	0.472	48.2	ug/L		95.4	(75%-125%)			
Lead	50.0	U	ND	50.3	ug/L		101	(75%-125%)			
Manganese	50.0	U	ND	48.9	ug/L		97.6	(75%-125%)			
Molybdenum	50.0		4.05	57.3	ug/L		106	(75%-125%)		01/21/16	09:17
Nickel	50.0	U	ND	49.8	ug/L		98.9	(75%-125%)		01/19/16	17:37
Selenium	50.0	U	ND	50.8	ug/L		99	(75%-125%)			
Silver	50.0	U	ND	50.7	ug/L		101	(75%-125%)			
Strontium	50.0		148	201	ug/L		107	(75%-125%)			
Thallium	50.0	U	ND	51.6	ug/L		103	(75%-125%)		01/20/16	17:32
Thorium	50.0	B	0.765	52.1	ug/L		103	(75%-125%)			
Tin	50.0	U	ND	51.4	ug/L		102	(75%-125%)		01/19/16	17:37
Uranium	50.0		1.49	52.6	ug/L		102	(75%-125%)			

January 26, 2016

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 389110

Page 4 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1536975										
Zinc	50.0	U	ND	51.3	ug/L		101	(75%-125%)	BAJ	01/19/16	17:37
QC1203467732 389110001 MSD											
Aluminum	2000	U	ND	2070	ug/L	2.75	103	(0%-20%)		01/19/16	17:40
Antimony	50.0	U	ND	54.2	ug/L	0.3	108	(0%-20%)		01/21/16	13:45
Arsenic	50.0	B	3.77	54.7	ug/L	0.742	102	(0%-20%)		01/19/16	17:40
Barium	50.0		11.6	61.4	ug/L	0.304	99.5	(0%-20%)			
Beryllium	50.0	U	ND	58.6	ug/L	5.74	117	(0%-20%)		01/21/16	10:45
Cadmium	50.0	U	ND	50.7	ug/L	0.256	101	(0%-20%)		01/19/16	17:40
Chromium	50.0		11.9	61.9	ug/L	1.26	100	(0%-20%)			
Cobalt	50.0	U	ND	48.2	ug/L	0.742	96.3	(0%-20%)			
Copper	50.0	B	0.472	49.2	ug/L	2.06	97.4	(0%-20%)			
Lead	50.0	U	ND	50.1	ug/L	0.389	100	(0%-20%)			
Manganese	50.0	U	ND	49.9	ug/L	2.17	99.7	(0%-20%)			
Molybdenum	50.0		4.05	56.7	ug/L	0.997	105	(0%-20%)		01/21/16	09:18
Nickel	50.0	U	ND	50.6	ug/L	1.7	101	(0%-20%)		01/19/16	17:40
Selenium	50.0	U	ND	52.4	ug/L	3.12	102	(0%-20%)			
Silver	50.0	U	ND	51.5	ug/L	1.61	103	(0%-20%)			
Strontium	50.0		148	197	ug/L	2.02	99.3	(0%-20%)			
Thallium	50.0	U	ND	52.5	ug/L	1.74	104	(0%-20%)		01/20/16	17:34
Thorium	50.0	B	0.765	52.5	ug/L	0.8	103	(0%-20%)			
Tin	50.0	U	ND	51.8	ug/L	0.803	103	(0%-20%)		01/19/16	17:40
Uranium	50.0		1.49	52.4	ug/L	0.339	102	(0%-20%)			

January 26, 2016

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QC Summary

Workorder: 389110

Page 5 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1536975										
Zinc	50.0	U	ND		52.0	ug/L	1.42	102	(0%-20%)	BAJ	01/19/16 17:40
QC1203467733 389110001 SDILT											
Aluminum		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/19/16 17:46
Antimony		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/21/16 13:46
Arsenic		B	3.77 DU		ND	ug/L	N/A		(0%-10%)		01/19/16 17:46
Barium			11.6 D		2.34	ug/L	.688		(0%-10%)		
Beryllium		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/21/16 10:46
Cadmium		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/19/16 17:46
Chromium			11.9 D		2.31	ug/L	2.98		(0%-10%)		
Cobalt		U	ND DU		ND	ug/L	N/A		(0%-10%)		
Copper		B	0.472 DU		ND	ug/L	N/A		(0%-10%)		
Lead		U	ND DU		ND	ug/L	N/A		(0%-10%)		
Manganese		U	ND DU		ND	ug/L	N/A		(0%-10%)		
Molybdenum			4.05 D		0.774	ug/L	4.54		(0%-10%)		01/21/16 09:20
Nickel		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/19/16 17:46
Selenium		U	ND DU		ND	ug/L	N/A		(0%-10%)		
Silver		U	ND DU		ND	ug/L	N/A		(0%-10%)		
Strontium			148 D		28.2	ug/L	4.37		(0%-10%)		
Thallium		U	ND D		0.953	ug/L	N/A		(0%-10%)		01/20/16 17:37
Thorium		B	0.765 D		0.514	ug/L	236		(0%-10%)		
Tin		U	ND DU		ND	ug/L	N/A		(0%-10%)		01/19/16 17:46
Uranium			1.49 D		0.292	ug/L	1.88		(0%-10%)		

January 26, 2016

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QC Summary

Workorder: 389110

Page 6 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1536975										
Zinc		U	ND DU	ND	ug/L	N/A		(0%-10%)	BAJ	01/19/16	17:46
Metals Analysis-ICP											
Batch	1536948										
QC1203467651	LCS										
Boron	500			518	ug/L		104	(80%-120%)	HSC	01/14/16	15:40
Calcium	5000			5100	ug/L		102	(80%-120%)			
Iron	5000			5080	ug/L		102	(80%-120%)			
Magnesium	5000			5200	ug/L		104	(80%-120%)			
Potassium	5000			5120	ug/L		102	(80%-120%)			
Sodium	5000			5010	ug/L		100	(80%-120%)			
Vanadium	500			516	ug/L		103	(80%-120%)			
QC1203467650	MB										
Boron			U	ND	ug/L					01/14/16	15:37
Calcium			U	ND	ug/L						
Iron			U	ND	ug/L						
Magnesium			U	ND	ug/L						
Potassium			U	ND	ug/L						
Sodium			U	ND	ug/L						
Vanadium			U	ND	ug/L						
QC1203467652	389110001 MS										
Boron	500	U	ND	541	ug/L		105	(75%-125%)		01/14/16	15:47
Calcium	5000		37600	42100	ug/L		N/A	(75%-125%)			
Iron	5000	U	ND	5090	ug/L		102	(75%-125%)			
Magnesium	5000		8590	13600	ug/L		101	(75%-125%)			

January 26, 2016

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QC Summary

Workorder: 389110

Page 7 of 8

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1536948										
Potassium	5000	5120		10100	ug/L		99	(75%-125%)			
Sodium	5000	12300		17800	ug/L		109	(75%-125%)	HSC	01/14/16	15:47
Vanadium	500	9.86		523	ug/L		103	(75%-125%)			
QC1203467653	389110001	MSD									
Boron	500	U	ND	543	ug/L	0.474	106	(0%-20%)		01/14/16	15:50
Calcium	5000		37600	42000	ug/L	0.176	N/A	(0%-20%)			
Iron	5000	U	ND	5060	ug/L	0.581	101	(0%-20%)			
Magnesium	5000		8590	13600	ug/L	0.449	99.4	(0%-20%)			
Potassium	5000		5120	10100	ug/L	0.535	100	(0%-20%)			
Sodium	5000		12300	17400	ug/L	2.11	102	(0%-20%)			
Vanadium	500		9.86	524	ug/L	0.245	103	(0%-20%)			
QC1203467654	389110001	SDILT									
Boron		U	ND DU	ND	ug/L	N/A		(0%-10%)		01/14/16	15:53
Calcium			37600 D	7640	ug/L	1.63		(0%-10%)			
Iron		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Magnesium			8590 D	1730	ug/L	.679		(0%-10%)			
Potassium			5120 D	986	ug/L	3.68		(0%-10%)			
Sodium			12300 D	2670	ug/L	8.26		(0%-10%)			
Vanadium			9.86 D	2.03	ug/L	2.66		(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL389110
Work Order #: 389110**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1536635

Method: 9060_TOC: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060A:

Sample ID	Client ID
389110001	B33RN0
389110003	B33RR1
389110005	B33RT3
1203466876	Method Blank (MB)
1203466877	Laboratory Control Sample (LCS)
1203466878	389527022(B33TC0) Sample Duplicate (DUP)
1203466879	389025001(B33T66) Sample Duplicate (DUP)
1203467497	389110001(B33RN0) Sample Duplicate (DUP)
1203466880	389527022(B33TC0) Post Spike (PS)
1203466881	389025001(B33T66) Post Spike (PS)
1203467498	389110001(B33RN0) Post Spike (PS)

Samples 389110 001, 003 and 005 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 13.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation

Samples 389025001 (B33T66), 389110001 (B33RN0) and 389527022 (B33TC0) were selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Samples 1203466876 (MB), 1203466877 (LCS), 1203466879 (Non SDG 389025001DUP) and 1203466881 (Non SDG 389025001PS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Alkalinity
Analytical Batch: 1536984 **Method:** 2320_ALKALINITY: COMMON (Alkalinity only)

Sample Analysis

The following samples were analyzed using the analytical protocol as established in 2320_ALKALINITY:

Sample ID	Client ID
389110001	B33RN0
389110003	B33RR1
389110005	B33RT3
389110007	B33RV5
1203467753	Method Blank (MB)
1203467754	Laboratory Control Sample (LCS)
1203467759	389110001(B33RN0) Sample Duplicate (DUP)

Samples 389110 001, 003, 005 and 007 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 12.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The alkalinity method blank concentration exceeded the reporting limit. If applicable, the data is flagged accordingly. 1203467753 (MB).

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 389110001 (B33RN0) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

January 26, 2016

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL389110 GEL Work Order: 389110

The Qualifiers in this report are defined as follows:

- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Thomas Lewis

Date: 25 JAN 2016

Title: Data Validator

Sample Data Summary

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X16-023**

Report Date: January 25, 2016

Client Sample ID:	B33RN0	Project:	CPRC0X16023
Sample ID:	389110001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	12-JAN-16 08:41		
Receive Date:	13-JAN-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
<i>9060_TOC: COMMON "As Received"</i>											
Total Organic Carbon #1	B	706	330	1000	ug/L	1	TSM	01/19/16	2204	1536635	1
Total Organic Carbon #2	B	712	330	1000	ug/L	1					
Total Organic Carbon #3	B	712	330	1000	ug/L	1					
Total Organic Carbon #4	B	704	330	1000	ug/L	1					
Total Organic Carbon Average	B	709	330	1000	ug/L	1					

Titration and Ion Analysis

2320_ALKALINITY: COMMON (Alkalinity only) "As Received"

Alkalinity, Total as CaCO3 ALKALINITY	C	119000	725	1000	ug/L	AMB	01/14/16	1140	1536984	2
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The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	2320_ALKALINITY	

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X16-023**

Report Date: January 25, 2016

Client Sample ID:	B33RR1	Project:	CPRC0X16023
Sample ID:	389110003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	12-JAN-16 11:10		
Receive Date:	13-JAN-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
<i>9060_TOC: COMMON "As Received"</i>											
Total Organic Carbon #1	U	302	330	1000	ug/L	1	TSM	01/20/16	0012	1536635	1
Total Organic Carbon #2	U	312	330	1000	ug/L	1					
Total Organic Carbon #3	U	324	330	1000	ug/L	1					
Total Organic Carbon #4	U	309	330	1000	ug/L	1					
Total Organic Carbon Average	U	312	330	1000	ug/L	1					

Titration and Ion Analysis

2320_ALKALINITY: COMMON (Alkalinity only) "As Received"

Alkalinity, Total as CaCO3 ALKALINITY	C	127000	725	1000	ug/L	AMB	01/14/16	1152	1536984	2
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The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	2320_ALKALINITY	

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X16-023**

Report Date: January 25, 2016

Client Sample ID:	B33RT3	Project:	CPRC0X16023
Sample ID:	389110005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	12-JAN-16 09:49		
Receive Date:	13-JAN-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Carbon Analysis										
<i>9060_TOC: COMMON "As Received"</i>										
Total Organic Carbon #1	B	397	330	1000	ug/L	1	TSM	01/20/16	0054	1536635 1
Total Organic Carbon #2	B	392	330	1000	ug/L	1				
Total Organic Carbon #3	B	379	330	1000	ug/L	1				
Total Organic Carbon #4	B	392	330	1000	ug/L	1				
Total Organic Carbon Average	B	390	330	1000	ug/L	1				

Titration and Ion Analysis

2320_ALKALINITY: COMMON (Alkalinity only) "As Received"

Alkalinity, Total as CaCO3 ALKALINITY	C	117000	725	1000	ug/L	AMB	01/14/16	1154	1536984	2
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The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9060A	
2	2320_ALKALINITY	

Certificate of Analysis

Company : CH2MHill Plateau Remediation
 Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: **CHPRC SAF X16-023**

Report Date: January 25, 2016

Client Sample ID:	B33RV5	Project:	CPRC0X16023
Sample ID:	389110007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	12-JAN-16 10:57		
Receive Date:	13-JAN-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Titration and Ion Analysis										
<i>2320_ALKALINITY: COMMON (Alkalinity only) "As Received"</i>										
Alkalinity, Total as CaCO3	C	121000	725	1000	ug/L		AMB 01/14/16	1156	1536984	1
ALKALINITY										

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Quality Control Summary

January 26, 2016
GEL LABORATORIES LLC

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QC Summary

Report Date: January 25, 2016

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 389110

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1536635										
QC1203466878	389527022	DUP									
Total Organic Carbon Average		U	330	U	330	ug/L	N/A		TSM	01/20/16	05:36
QC1203466879	389025001	DUP									
Total Organic Carbon Average		B	634	B	627	ug/L	1.11 ^	(+/-1000)		01/19/16	12:02
QC1203467497	389110001	DUP									
Total Organic Carbon Average		B	709	B	716	ug/L	0.982 ^	(+/-1000)		01/19/16	22:46
QC1203466877	LCS										
Total Organic Carbon Average	10000				10700	ug/L		107 (80%-120%)		01/19/16	11:06
QC1203466876	MB										
Total Organic Carbon Average			U		330	ug/L				01/19/16	10:53
QC1203466880	389527022	PS									
Total Organic Carbon Average	10.0	U	0.148		10.8	mg/L		106 (75%-125%)		01/20/16	06:19
QC1203466881	389025001	PS									
Total Organic Carbon Average	10.0	B	0.634		11.5	mg/L		109 (75%-125%)		01/19/16	12:44
QC1203467498	389110001	PS									
Total Organic Carbon Average	10.0	B	0.709		12.5	mg/L		118 (75%-125%)		01/19/16	23:29
Titration and Ion Analysis											
Batch	1536984										
QC1203467759	389110001	DUP									
Alkalinity, Total as CaCO3		C	119000		119000	ug/L	0	(0%-20%)	AMB	01/14/16	11:47
QC1203467754	LCS										
Alkalinity, Total as CaCO3	50000				54600	ug/L		109 (80%-120%)		01/14/16	11:39
QC1203467753	MB										
Alkalinity, Total as CaCO3					1040	ug/L				01/14/16	11:36

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

January 26, 2016

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QC Summary

Workorder: 389110

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
N	Spike Sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

January 26, 2016
Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL389110
Work Order #: 389110

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON
Analytical Method: TRITIUM_DIST_LSC
Analytical Batch Number: 1537120

Sample ID	Client ID
389110001	B33RN0
389110003	B33RR1
389110005	B33RT3
389110007	B33RV5
1203468112	Method Blank (MB)
1203468115	Laboratory Control Sample (LCS)
1203468113	389110001(B33RN0) Sample Duplicate (DUP)
1203468114	389110001(B33RN0) Matrix Spike (MS)

Samples 389110 001, 003, 005 and 007 in this SDG were analyzed on an "as received" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

QC Information

All of the QC samples met the required acceptance limits.

Designated QC

The following sample was used for QC: 389110001 (B33RN0).

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples 389110003 (B33RR1), 389110005 (B33RT3) and 389110007 (B33RV5) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

January 26, 2016

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL389110 GEL Work Order: 389110

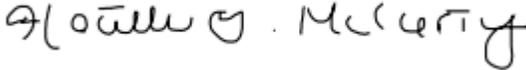
The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: Heather McCarty

Date: 22 JAN 2016

Title: Analyst II

Sample Data Summary

January 26, 2016

**Certificate of Analysis
Sample Summary**

SDG Number: GEL389110	Client: CPRC001	Project: CPRC0X16023
Lab Sample ID: 389110001	Date Collected: 01/12/2016 08:41	Matrix: WATER
	Date Received: 01/13/2016 09:00	
Client ID: B33RN0	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1537120	Analyst: TXJ1	SOP Ref: GL-RAD-A-002
Run Date: 01/16/2016 01:05	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1537120.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.0297 min
Prep Batch: 1537120		
Prep Date: 01/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		2650	pCi/L	+/-133	530	79.2	100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

January 26, 2016

**Certificate of Analysis
Sample Summary**

SDG Number: GEL389110	Client: CPRC001	Project: CPRC0X16023
Lab Sample ID: 389110003	Date Collected: 01/12/2016 11:10	Matrix: WATER
	Date Received: 01/13/2016 09:00	
Client ID: B33RR1	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1537120	Analyst: TXJ1	SOP Ref: GL-RAD-A-002
Run Date: 01/16/2016 04:23	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1537120.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.0297 min
Prep Batch: 1537120		
Prep Date: 01/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		4150	pCi/L	+/-164	819	79.9	100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

January 26, 2016

**Certificate of Analysis
Sample Summary**

SDG Number: GEL389110	Client: CPRC001	Project: CPRC0X16023
Lab Sample ID: 389110005	Date Collected: 01/12/2016 09:49	Matrix: WATER
	Date Received: 01/13/2016 09:00	
Client ID: B33RT3	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1537120	Analyst: TXJ1	SOP Ref: GL-RAD-A-002
Run Date: 01/16/2016 06:25	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1537120.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.0297 min
Prep Batch: 1537120		
Prep Date: 01/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		10700	pCi/L	+/-260	2080	80.7	100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

January 26, 2016

**Certificate of Analysis
Sample Summary**

SDG Number: GEL389110	Client: CPRC001	Project: CPRC0X16023
Lab Sample ID: 389110007	Date Collected: 01/12/2016 10:57	Matrix: WATER
	Date Received: 01/13/2016 09:00	
Client ID: B33RV5	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1537120	Analyst: TXJ1	SOP Ref: GL-RAD-A-002
Run Date: 01/16/2016 08:28	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T1537120.xls	Prep Method: EPA 906.0 Modified	Count Time: 120.0297 min
Prep Batch: 1537120		
Prep Date: 01/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		121	pCi/L	+/-51.2	56.3	78.1	100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: January 19, 2016
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 389110

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1537120								
QC1203468112	MB								
Tritium			U	-9.7	pCi/L			TXJ1	01/16/1610:30
				Uncert: +/-43.3					
				TPU: +/-43.3					
QC1203468113	389110001	DUP							
Tritium		2650		2990	pCi/L				01/16/1612:33
				Uncert: +/-133		RPD: 12 (0% - 20%)			
				TPU: +/-530		RER: 0.836 (0-2)			
QC1203468114	389110001	MS							
Tritium		2390	2650	4850	pCi/L	REC: 92 (60%-140%)			01/16/1614:35
				Uncert: +/-133					
				TPU: +/-530					
QC1203468115	LCS								
Tritium		2390		2250	pCi/L	REC: 95 (70%-130%)			01/16/1614:53
				Uncert: +/-335					
				TPU: +/-550					

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

QC Summary

Workorder: 389110

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.