GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
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January 29, 2018

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

Re: CHPRC SAF X18-017
Work Order: 441136
SDG: GEL441136

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 10, 2018. 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,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 304546 - 7H
Chain of Custody: X18-017-025 and X18-017-032
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF X18-017
SDG: GEL441136

January 29, 2018

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 10, 2018, 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.

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
441136001	B3FR06
441136002	B3FR04
441136003	B3FR29
441136004	B3FR27

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.

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 and Metals.

We certify that 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.

Heather Shaffer

Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL441136
Work Order #: 441136

Metals

Determination of Metals by ICP

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 441136001 (B3FR06), 441136002 (B3FR04), 441136003 (B3FR29) and 441136004 (B3FR27).

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were negative values in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203949058 (MB)	Potassium	See applicable report

Determination of Metals by ICP-MS

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203949063 (MB)	Antimony	1.47 between (1 - 1.5)
	Uranium	0.073 between (0.067 - 0.1)

General Chemistry

Alkalinity

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

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.

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 471136	C.O.C. # X18-017-025 Page 1 of 2

Collector: Daniel Klug CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: X18-017	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 304546
Project Title: Uranium Sequestration, January	**Logbook No.:** HNF-N-506 -97-38	**Ice Chest No.:** ~~GWS-156~~ GWS-C56 1.8.18
Shipped To (Lab): GEL Laboratories, LLC	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 771162455684
Protocol CERCLA	**Priority:** 30 Days	**Offsite Property No.:** 8916

POSSIBLE SAMPLE HAZARDS/REMARK
** ** 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FR06	Y	W	1-4-18	0919	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3FR04	N	W	1-4-18	0919	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3FR04	N	W	1-4-18	0919	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By / Print First and Last Name	Signature	Date/Time	Received By / Print First and Last Name	Signature	Date/Time
Daniel Klug CHPRC	D. Klug	JAN 04 2018 0923	Christina Aguilar /CHPRC		JAN 04 2018 0923
Christina Aguilar /CHPRC		JAN 04 2018 1100	SSU-1		JAN 04 2018 1100
SSU-1		JAN 08 2018 0850	Jeff Lucas /CHPRC		JAN 08 2018 0850
Jeff Lucas /CHPRC		JAN 08 2018 1400	FEDEX		

Matrix *

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

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST (continued)

441136

C.O.C. No. X18-017-025

Page 2 of 2

Relinquished By (Print)	Sign	Date/Time	Received By (Print)	Sign	Date/Time
		FedEx	STACY BOONE	[signature]	1-10-18 850

A-6003-962 (03/05)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

441136

C.O.C. # X18-017-032
Page 1 of 2

Collector:	Daniel Klug CHPRC	**Contact/Requester:**	Karen Waters-Husted	**Telephone No.:**	509-376-4650
SAF No.:	X18-017	**Sampling Origin:**	Hanford Site	**Purchase Order/Charge Code:**	304546
Project Title:	Uranium Sequestration, January	**Logbook No.:**	HNF-N-506 97-38	**Ice Chest No.:**	GWS-656
Shipped To (Lab):	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.:**	7711 6245 5684
Protocol	CERCLA	**Priority:**	30 Days	**Offsite Property No.:**	8916

POSSIBLE SAMPLE HAZARDS/REMARK
** ** 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FR29	Y	W	1-4-18	0845	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B3FR27	N	W	1-4-18	0845	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B3FR27	N	W	1-4-18	0845	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By (Print First and Last Name)	Signature	Date/Time	Received By (Print First and Last Name)	Signature	Date/Time
Daniel Klug CHPRC	D. Klug	JAN 04 2018 0923	Christina Aguilar /CHPRC	CmA	JAN 04 2018 0923
Christina Aguilar /CHPRC	CmA	JAN 04 2018 1100	SSU-1		JAN 04 2018 1100
SSU-1		JAN 08 2018 0850	Jeff Lucas /CHPRC	J Lucas	JAN 08 2018 0850
Jeff Lucas /CHPRC	J Lucas	JAN 08 2018 1400	FEDEX		

Matrix *
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquid
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:

Printed On 11/21/2017 FSR ID = FSR54021 A-6004-842 (REV 3)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST (continued)

441136

C.O.C. No. X18-017-032

Page 2 of 2

Relinquished By Print	Sign	Date/Time	Received By Print	Sign	Date/Time
		FedEx	STACY BOONE	[signature]	1-10-18 850

A-6003-962 (03/05)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 441136
Received By: Stacy Boone	Date Received: 10-JAN-18
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7711 6245 5684-

Suspected Hazard Information	Yes	No	
Shipped as a DOT Hazardous?		✓	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?	✓		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 1 °C
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR3-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	✓	SB		Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			✓	If Yes, Are Encores or Soil Kits present? Yes___ No___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes No___ N/A (If unknown, select No) VOA vials free of headspace? Yes No___ N/A Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials MEH Date 1/10/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 26−JAN−18

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	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	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol−condensation product	Organics	Semi−Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
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).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (0rganics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank >/= MDC or >5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
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).	General Chemistry	
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.	Inorganics	Metals
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.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 29 January 2018

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
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	LA180011
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122018−1
New Hampshire NELAP	205415
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
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−17−12
Utah NELAP	SC000122017−25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL441136
Work Order #: 441136

Product: **Determination of Metals by ICP**
Analytical Method: SW846 3005A/6010D
Analytical Procedure: GL-MA-E-013 REV# 30
Analytical Batch: 1730338

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 32
Analytical Batch: 1730340

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 14
Preparation Batches: 1730337 and 1730339

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
441136001	B3FR06
441136002	B3FR04
441136003	B3FR29
441136004	B3FR27
1203949058	Method Blank (MB)**ICP**
1203949059	Laboratory Control Sample (LCS)
1203949062	441136001(B3FR06L) Serial Dilution (SD)
1203949060	441136001(B3FR06S) Matrix Spike (MS)
1203949061	441136001(B3FR06SD) Matrix Spike Duplicate (MSD)
1203949063	Method Blank (MB)**ICP-MS**
1203949064	Laboratory Control Sample (LCS)
1203949067	441136004(B3FR27L) Serial Dilution (SD)
1203949065	441136004(B3FR27S) Matrix Spike (MS)
1203949066	441136004(B3FR27SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CRDL/PQL Requirements
The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 441136001 (B3FR06), 441136002 (B3FR04), 441136003 (B3FR29) and

441136004 (B3FR27)-ICP.

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were negative values in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203949058 (MB)	Potassium	See applicable report

The method blanks (MB) analyzed with this SDG met the acceptance criteria. However, where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203949063 (MB)	Antimony	1.47 between (1 - 1.5)
	Uranium	0.073 between (0.067 - 0.1)

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.

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: GEL441136 GEL Work Order: 441136

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).

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: 29 JAN 2018 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441136 **CONTRACT:** CPRC0X18017 **METHOD TYPE:** SW846

SAMPLE ID: 441136001 **BASIS:** As Received **DATE COLLECTED** 04−JAN−18

CLIENT ID: B3FR06 **LEVEL:** Low **DATE RECEIVED** 10−JAN−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−38−2	Arsenic	2.89	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−39−3	Barium	38.2	ug/L		0.67	2	2	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−42−8	Boron	153	ug/L		15	50	50	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−70−2	Calcium	50000	ug/L		50	200	200	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7440−47−3	Chromium	3.01	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−50−8	Copper	0.507	ug/L	B	0.3	1	1	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7439−95−4	Magnesium	12700	ug/L		110	300	300	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7439−98−7	Molybdenum	4.51	ug/L		0.2	0.5	0.5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−02−0	Nickel	0.998	ug/L	B	0.6	2	2	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−09−7	Potassium	7740	ug/L		50	150	150	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7782−49−2	Selenium	2.63	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−23−5	Sodium	31000	ug/L		100	300	300	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7440−24−6	Strontium	292	ug/L		2	10	10	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	01/22/18 13:07	180122−3	1730340
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−61−1	Uranium	58.5	ug/L		0.067	0.2	0.2	1	MS	PRB	01/17/18 22:28	180117−2	1730340
7440−62−2	Vanadium	5.97	ug/L		1	5	5	1	P	JWJ	01/12/18 16:25	011218−1	1730338
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	01/17/18 22:28	180117−2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730338	1730337	SW846 3005A	50	mL	50	mL	01/10/18	JXM8
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010D**
MS	**SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441136 **CONTRACT:** CPRC0X18017 **METHOD TYPE:** SW846

SAMPLE ID: 441136002 **BASIS:** As Received **DATE COLLECTED** 04−JAN−18

CLIENT ID: B3FR04 **LEVEL:** Low **DATE RECEIVED** 10−JAN−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−38−2	Arsenic	2.86	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−39−3	Barium	38.7	ug/L		0.67	2	2	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−42−8	Boron	148	ug/L		15	50	50	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−70−2	Calcium	49600	ug/L		50	200	200	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7440−47−3	Chromium	3.87	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−48−4	Cobalt	0.481	ug/L	B	0.3	1	1	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−50−8	Copper	0.635	ug/L	B	0.3	1	1	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7439−95−4	Magnesium	12400	ug/L		110	300	300	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7439−98−7	Molybdenum	4.78	ug/L		0.2	0.5	0.5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−02−0	Nickel	1.41	ug/L	B	0.6	2	2	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−09−7	Potassium	7650	ug/L		50	150	150	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7782−49−2	Selenium	2.24	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−23−5	Sodium	29800	ug/L		100	300	300	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7440−24−6	Strontium	299	ug/L		2	10	10	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	01/22/18 13:09	180122−3	1730340
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−61−1	Uranium	59.7	ug/L		0.067	0.2	0.2	1	MS	PRB	01/17/18 22:31	180117−2	1730340
7440−62−2	Vanadium	6.09	ug/L		1	5	5	1	P	JWJ	01/12/18 16:35	011218−1	1730338
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	01/17/18 22:31	180117−2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730338	1730337	SW846 3005A	50	mL	50	mL	01/10/18	JXM8
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010D**
MS	**SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441136 **CONTRACT:** CPRC0X18017 **METHOD TYPE:** SW846

SAMPLE ID: 441136003 **BASIS:** As Received **DATE COLLECTED** 04−JAN−18

CLIENT ID: B3FR29 **LEVEL:** Low **DATE RECEIVED** 10−JAN−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−38−2	Arsenic	4.98	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−39−3	Barium	53.8	ug/L		0.67	2	2	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−42−8	Boron	21.2	ug/L	B	15	50	50	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−70−2	Calcium	50900	ug/L		50	200	200	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7440−47−3	Chromium	3.12	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−48−4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−50−8	Copper	0.655	ug/L	B	0.3	1	1	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7439−95−4	Magnesium	12300	ug/L		110	300	300	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7439−98−7	Molybdenum	5.33	ug/L		0.2	0.5	0.5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−02−0	Nickel	1.02	ug/L	B	0.6	2	2	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−09−7	Potassium	5330	ug/L		50	150	150	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7782−49−2	Selenium	2.88	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−23−5	Sodium	23500	ug/L		100	300	300	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7440−24−6	Strontium	240	ug/L		2	10	10	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	01/22/18 13:11	180122−3	1730340
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−61−1	Uranium	24	ug/L		0.067	0.2	0.2	1	MS	PRB	01/17/18 22:34	180117−2	1730340
7440−62−2	Vanadium	10.4	ug/L		1	5	5	1	P	JWJ	01/12/18 16:38	011218−1	1730338
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	01/17/18 22:34	180117−2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730338	1730337	SW846 3005A	50	mL	50	mL	01/10/18	JXM8
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010D**
MS	**SW846 3005A/6020B**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441136 **CONTRACT:** CPRC0X18017 **METHOD TYPE:** SW846

SAMPLE ID: 441136004 **BASIS:** As Received **DATE COLLECTED** 04−JAN−18

CLIENT ID: B3FR27 **LEVEL:** Low **DATE RECEIVED** 10−JAN−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	120	ug/L		19.3	50	50	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−38−2	Arsenic	5.05	ug/L		2	5	5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−39−3	Barium	57.2	ug/L		0.67	2	2	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−42−8	Boron	19.6	ug/L	B	15	50	50	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7440−43−9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−70−2	Calcium	50800	ug/L		50	200	200	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7440−47−3	Chromium	4.69	ug/L	B	3	10	10	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−48−4	Cobalt	0.356	ug/L	B	0.3	1	1	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−50−8	Copper	1.18	ug/L		0.3	1	1	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7439−89−6	Iron	197	ug/L		30	100	100	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7439−95−4	Magnesium	12600	ug/L		110	300	300	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7439−96−5	Manganese	5.3	ug/L		1	5	5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7439−98−7	Molybdenum	5.6	ug/L		0.2	0.5	0.5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−02−0	Nickel	3.53	ug/L		0.6	2	2	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−09−7	Potassium	5290	ug/L		50	150	150	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7782−49−2	Selenium	3.36	ug/L	B	2	5	5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−22−4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−23−5	Sodium	23700	ug/L		100	300	300	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7440−24−6	Strontium	243	ug/L		2	10	10	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−28−0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−29−1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	PRB	01/22/18 13:12	180122−3	1730340
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−61−1	Uranium	24.7	ug/L		0.067	0.2	0.2	1	MS	PRB	01/17/18 22:37	180117−2	1730340
7440−62−2	Vanadium	10.4	ug/L		1	5	5	1	P	JWJ	01/12/18 16:41	011218−1	1730338
7440−66−6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	01/17/18 22:37	180117−2	1730340

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1730338	1730337	SW846 3005A	50	mL	50	mL	01/10/18	JXM8
1730340	1730339	SW846 3005A	50	mL	50	mL	01/11/18	SXW1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010D**
MS	**SW846 3005A/6020B**

Quality Control Summary

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

QC Summary

Report Date: January 29, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1730340										
QC1203949064 LCS										
Aluminum	2000			2100	ug/L		105	(80%-120%)	PRB	01/17/18 21:59
Antimony	50.0			51.6	ug/L		103	(80%-120%)		
Arsenic	50.0			51.0	ug/L		102	(80%-120%)		
Barium	50.0			56.3	ug/L		113	(80%-120%)		
Beryllium	50.0			57.7	ug/L		115	(80%-120%)		
Cadmium	50.0			49.0	ug/L		98.1	(80%-120%)		
Chromium	50.0			48.8	ug/L		97.7	(80%-120%)		
Cobalt	50.0			46.9	ug/L		93.7	(80%-120%)		
Copper	50.0			47.0	ug/L		93.9	(80%-120%)		
Lead	50.0			46.7	ug/L		93.4	(80%-120%)		
Manganese	50.0			46.3	ug/L		92.6	(80%-120%)		
Molybdenum	50.0			48.4	ug/L		96.7	(80%-120%)		
Nickel	50.0			47.5	ug/L		95.1	(80%-120%)		

GEL LABORATORIES LLC
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QC Summary

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1730340										
Selenium	50.0			52.4	ug/L		105	(80%-120%)	PRB	01/17/18 21:59
Silver	50.0			49.2	ug/L		98.4	(80%-120%)		
Strontium	50.0			50.5	ug/L		101	(80%-120%)		
Thallium	50.0			43.9	ug/L		87.7	(80%-120%)		
Thorium	50.0			47.5	ug/L		95.1	(80%-120%)		01/22/18 13:06
Tin	50.0			51.3	ug/L		103	(80%-120%)		01/17/18 21:59
Uranium	50.0			47.9	ug/L		95.8	(80%-120%)		
Zinc	50.0			49.0	ug/L		98	(80%-120%)		
QC1203949063 MB										
Aluminum			U	19.3	ug/L					01/17/18 21:56
Antimony			B	1.47	ug/L					
Arsenic			U	2.00	ug/L					
Barium			U	0.670	ug/L					
Beryllium			U	0.200	ug/L					
Cadmium			U	0.300	ug/L					
Chromium			U	3.00	ug/L					

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QC Summary

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1730340										
Cobalt			U	0.300	ug/L				PRB	01/17/18 21:56
Copper			U	0.300	ug/L					
Lead			U	0.500	ug/L					
Manganese			U	1.00	ug/L					
Molybdenum			U	0.200	ug/L					
Nickel			U	0.600	ug/L					
Selenium			U	2.00	ug/L					
Silver			U	0.300	ug/L					
Strontium			U	2.00	ug/L					
Thallium			U	0.600	ug/L					
Thorium			U	0.700	ug/L					01/22/18 13:04
Tin			U	1.00	ug/L					01/17/18 21:56
Uranium			B	0.073	ug/L					
Zinc			U	3.30	ug/L					
QC1203949065 441136004 MS										
Aluminum	2000	120		2140	ug/L		101	(75%-125%)		01/17/18 22:41

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch 1730340												
Antimony	50.0	U	1.00		50.0	ug/L		99.5	(75%-125%)	PRB	01/17/18	22:41
Arsenic	50.0		5.05		54.2	ug/L		98.4	(75%-125%)			
Barium	50.0		57.2		111	ug/L		107	(75%-125%)			
Beryllium	50.0	U	0.200		53.3	ug/L		107	(75%-125%)			
Cadmium	50.0	U	0.300		49.2	ug/L		98.3	(75%-125%)			
Chromium	50.0	B	4.69		52.0	ug/L		94.6	(75%-125%)			
Cobalt	50.0	B	0.356		46.9	ug/L		93.2	(75%-125%)			
Copper	50.0		1.18		46.5	ug/L		90.7	(75%-125%)			
Lead	50.0	U	0.500		45.7	ug/L		91.1	(75%-125%)			
Manganese	50.0		5.30		51.9	ug/L		93.2	(75%-125%)			
Molybdenum	50.0		5.60		55.4	ug/L		99.6	(75%-125%)			
Nickel	50.0		3.53		49.5	ug/L		91.9	(75%-125%)			
Selenium	50.0	B	3.36		50.6	ug/L		94.6	(75%-125%)			
Silver	50.0	U	0.300		48.7	ug/L		97.2	(75%-125%)			
Strontium	50.0		243		292	ug/L		N/A	(75%-125%)			

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1730340											
Thallium	50.0	U	0.600		44.1	ug/L		88.1	(75%-125%)	PRB	01/17/18 22:41
Thorium	50.0	U	0.700		52.6	ug/L		105	(75%-125%)		01/22/18 13:14
Tin	50.0	U	1.00		50.4	ug/L		100	(75%-125%)		01/17/18 22:41
Uranium	50.0		24.7		70.9	ug/L		92.4	(75%-125%)		
Zinc	50.0	U	3.30		47.5	ug/L		90.9	(75%-125%)		
QC1203949066 441136004 MSD											
Aluminum	2000		120		2150	ug/L	0.841	102	(0%-20%)		01/17/18 22:44
Antimony	50.0	U	1.00		50.3	ug/L	0.578	100	(0%-20%)		
Arsenic	50.0		5.05		54.6	ug/L	0.618	99.1	(0%-20%)		
Barium	50.0		57.2		108	ug/L	2.45	102	(0%-20%)		
Beryllium	50.0	U	0.200		53.6	ug/L	0.565	107	(0%-20%)		
Cadmium	50.0	U	0.300		49.0	ug/L	0.277	98	(0%-20%)		
Chromium	50.0	B	4.69		51.7	ug/L	0.569	94	(0%-20%)		
Cobalt	50.0	B	0.356		46.9	ug/L	0.0447	93.1	(0%-20%)		
Copper	50.0		1.18		46.8	ug/L	0.568	91.2	(0%-20%)		
Lead	50.0	U	0.500		45.1	ug/L	1.31	89.9	(0%-20%)		

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1730340											
Manganese	50.0		5.30		52.0	ug/L	0.323	93.5	(0%-20%)	PRB	01/17/18 22:44
Molybdenum	50.0		5.60		55.9	ug/L	0.841	101	(0%-20%)		
Nickel	50.0		3.53		49.8	ug/L	0.633	92.5	(0%-20%)		
Selenium	50.0	B	3.36		51.6	ug/L	1.83	96.4	(0%-20%)		
Silver	50.0	U	0.300		48.2	ug/L	0.964	96.3	(0%-20%)		
Strontium	50.0		243		294	ug/L	0.925	N/A	(0%-20%)		
Thallium	50.0	U	0.600		43.4	ug/L	1.61	86.7	(0%-20%)		
Thorium	50.0	U	0.700		55.2	ug/L	4.81	110	(0%-20%)		01/22/18 13:16
Tin	50.0	U	1.00		51.1	ug/L	1.38	101	(0%-20%)		01/17/18 22:44
Uranium	50.0		24.7		69.5	ug/L	1.92	89.7	(0%-20%)		
Zinc	50.0	U	3.30		47.7	ug/L	0.256	91.1	(0%-20%)		
QC1203949067 441136004 SDILT											
Aluminum			120	BD	24.6	ug/L	2.24		(0%-20%)		01/17/18 22:50
Antimony		U	0.269	DU	5.00	ug/L	N/A		(0%-20%)		
Arsenic			5.05	DU	10.0	ug/L	N/A		(0%-20%)		
Barium			57.2	D	11.5	ug/L	.337		(0%-20%)		

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QC Summary

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1730340										
Beryllium	U	-0.002	DU	1.00	ug/L	N/A		(0%-20%)	PRB	01/17/18 22:50
Cadmium	U	0.014	DU	1.50	ug/L	N/A		(0%-20%)		
Chromium	B	4.69	DU	15.0	ug/L	N/A		(0%-20%)		
Cobalt	B	0.356	DU	1.50	ug/L	N/A		(0%-20%)		
Copper		1.18	DU	1.50	ug/L	N/A		(0%-20%)		
Lead	U	0.181	DU	2.50	ug/L	N/A		(0%-20%)		
Manganese		5.30	BD	1.05	ug/L	1.17		(0%-20%)		
Molybdenum		5.60	D	1.12	ug/L	.214		(0%-20%)		
Nickel		3.53	BD	0.741	ug/L	5.02		(0%-20%)		
Selenium	B	3.36	DU	10.0	ug/L	N/A		(0%-20%)		
Silver	U	0.066	DU	1.50	ug/L	N/A		(0%-20%)		
Strontium		243	D	46.8	ug/L	3.72		(0%-20%)		
Thallium	U	0.006	DU	3.00	ug/L	N/A		(0%-20%)		
Thorium	U	0.019	DU	3.50	ug/L	N/A		(0%-20%)		01/22/18 13:17
Tin	U	0.373	DU	5.00	ug/L	N/A		(0%-20%)		01/17/18 22:50

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch 1730340												
Uranium			24.7	D	4.98	ug/L	.798		(0%-20%)	PRB	01/17/18	22:50
Zinc		U	2.11	BD	7.47	ug/L	N/A		(0%-20%)			
Metals Analysis-ICP												
Batch 1730338												
QC1203949059 LCS												
Boron	500				478	ug/L		95.7	(80%-120%)	JWJ	01/12/18	16:23
Calcium	5000				5130	ug/L		103	(80%-120%)			
Iron	5000				5010	ug/L		100	(80%-120%)			
Magnesium	5000				5200	ug/L		104	(80%-120%)			
Potassium	5000				4880	ug/L		97.6	(80%-120%)			
Sodium	5000				4920	ug/L		98.4	(80%-120%)			
Vanadium	500				490	ug/L		97.9	(80%-120%)			
QC1203949058 MB												
Boron				U	15.0	ug/L					01/12/18	16:20
Calcium				U	50.0	ug/L						
Iron				U	30.0	ug/L						
Magnesium				U	110	ug/L						
Potassium				B	-54.6	ug/L						

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP												
Batch 1730338												
Sodium				U	100	ug/L				JWJ	01/12/18	16:20
Vanadium				U	1.00	ug/L						
QC1203949060 441136001 MS												
Boron	500		153		621	ug/L		93.6	(75%-125%)		01/12/18	16:28
Calcium	5000		50000		54800	ug/L		N/A	(75%-125%)			
Iron	5000	U	30.0		4710	ug/L		94	(75%-125%)			
Magnesium	5000		12700		17500	ug/L		94.9	(75%-125%)			
Potassium	5000		7740		12500	ug/L		94.7	(75%-125%)			
Sodium	5000		31000		35000	ug/L		N/A	(75%-125%)			
Vanadium	500		5.97		472	ug/L		93.3	(75%-125%)			
QC1203949061 441136001 MSD												
Boron	500		153		697	ug/L	11.5	109	(0%-20%)		01/12/18	16:30
Calcium	5000		50000		55800	ug/L	1.65	N/A	(0%-20%)			
Iron	5000	U	30.0		5470	ug/L	15	109	(0%-20%)			
Magnesium	5000		12700		18400	ug/L	4.88	112	(0%-20%)			
Potassium	5000		7740		13200	ug/L	5.62	109	(0%-20%)			
Sodium	5000		31000		36200	ug/L	3.53	N/A	(0%-20%)			

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QC Summary

Workorder: **441136**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1730338											
Vanadium	500		5.97		485	ug/L	2.73	95.9	(0%-20%)	JWJ	01/12/18 16:30
QC1203949062 441136001 SDILT											
Boron			153	BD	27.6	ug/L	9.63		(0%-20%)		01/12/18 16:32
Calcium			50000	D	10900	ug/L	9.19		(0%-20%)		
Iron		U	7.14	DU	150	ug/L	N/A		(0%-20%)		
Magnesium			12700	D	2850	ug/L	12		(0%-20%)		
Potassium			7740	D	1650	ug/L	6.89		(0%-20%)		
Sodium			31000	D	6760	ug/L	8.89		(0%-20%)		
Vanadium			5.97	BD	1.48	ug/L	24.2		(0%-20%)		

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 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.
- 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

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QC Summary

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time

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.

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL441136
Work Order #: 441136

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 13
Analytical Batch: 1730703

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
441136002	B3FR04
441136004	B3FR27
1203949961	Laboratory Control Sample (LCS)
1203949962	440997003(B3FY55) Sample Duplicate (DUP)
1203949963	441136002(B3FR04) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

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.

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL441136 GEL Work Order: 441136

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: Aubrey Kingsbury**

Date: 17 JAN 2018 **Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 17, 2018

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF X18-017

Client Sample ID:	B3FR04	Project:	CPRC0X18017
Sample ID:	441136002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	04-JAN-18 09:19		
Receive Date:	10-JAN-18		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		164000	1450	4000	ug/L			RXB5	01/11/18	1544	1730703	1
Bicarbonate alkalinity (CaCO3)		164000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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

Certificate of Analysis

Report Date: January 17, 2018

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF X18-017

Client Sample ID:	B3FR27	Project:	CPRC0X18017
Sample ID:	441136004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	04-JAN-18 08:45		
Receive Date:	10-JAN-18		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		127000	1450	4000	ug/L			RXB5	01/11/18	1549	1730703	1
Bicarbonate alkalinity (CaCO3)		127000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Quality Control Summary

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

QC Summary

Report Date: January 17, 2018

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration and Ion Analysis										
Batch 1730703										
QC1203949962 440997003 DUP										
Alkalinity, Total as CaCO3		130000		130000	ug/L	0.154		(0%-20%)	RXB5	01/11/18 15:18
Bicarbonate alkalinity (CaCO3)		130000		130000	ug/L	0.154		(0%-20%)		
Carbonate alkalinity (CaCO3)	U	1450	U	1450	ug/L	N/A				
Hydroxide alkalinity as CaCO3	U	1450	U	1450	ug/L	N/A				
QC1203949963 441136002 DUP										
Alkalinity, Total as CaCO3		164000		162000	ug/L	1.23		(0%-20%)		01/11/18 15:46
Bicarbonate alkalinity (CaCO3)		164000		162000	ug/L	1.23		(0%-20%)		
Carbonate alkalinity (CaCO3)	U	1450	U	1450	ug/L	N/A				
Hydroxide alkalinity as CaCO3	U	1450	U	1450	ug/L	N/A				
QC1203949961 LCS										
Alkalinity, Total as CaCO3	100000			107000	ug/L		107	(80%-120%)		01/11/18 15:14

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).
- 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.
- N Spike Sample recovery is outside control limits.

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QC Summary

Workorder: **441136**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

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.