GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
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gel.com

June 28, 2016

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

Re: CHPRC SAF S16-005
Work Order: 398479
SDG: GEL398479

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 02, 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,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 300071JDBA 7H
Chain of Custody: S16-005-164, S16-005-165 and S16-005-166
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S16-005
SDG: GEL398479

June 28, 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 June 02, 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:

Laboratory Identification	Sample Description
398479001	B35204
398479002	B35207
398479003	B35213
398479004	B35210
398479005	B35216

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, Metals and Radiochemistry.

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 #: GEL398479
Work Order #: 398479

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.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of potassium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203560469 (MB).

Determination of Metals by ICP-MS

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.

General Chemistry

Alkalinity

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 MB 1203565686 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Radiochemistry

SRISO_SEP_PRECIP_GPC: COMMON

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

QC Information
The sample and duplicate, 1203566156 (Non SDG 398676005DUP), do not meet the client relative error ratio requirement; however, both sample and duplicate results are less than the minimum detectable activity.

Technical Information

Recounts
Sample 1203566157 (LCS) was recounted due to high recovery. The recount is reported. Sample 1203566155 (MB) was recounted due to a suspected blank false positive. The recount is reported.

9310_ALPHABETA_GPC: COMMON

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.

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203566172 (Non SDG 398744003MS) and 1203566173 (Non SDG 398744003MSD), aliquots were reduced to conserve sample volume.

TC99_EIE_LSC: COMMON

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

69165

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 398479	C.O.C. # S16-005-166 Page 1 of 1

Collector	W.M. WISE/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S16-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2016	**Logbook No.**	HNF-N-506 85 / 68	**Ice Chest No.**	GWS-288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7764 2112 9141
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	6680

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** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35216	N	W	JUN 01 2016	1030	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B35216	N	W	↓	↓	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

June 28, 2016

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
W.M. WISE/CHPRC	[signature]	JUN 01 2016 1230	C.M. Aguilar/CHPRC	[signature]	JUN 01 2016 1230
C.M. Aguilar/CHPRC	[signature]	JUN 01 2016 1400	FEDEX		
FedEx			Sara Grinstaff [signature]		6/2/16 0910

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
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

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PRINTED ON 3/21/2016

FSR ID = FSR28042

A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 398479	C.O.C. # S16-005-165 Page 1 of 1

Collector	W.M. WISE/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S16-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2016	**Logbook No.**	HNF-N-506 85 / 68	**Ice Chest No.**	GWS-288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7764 2112 9141
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	6680

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** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35213	Y	W	JUN 01 2016	0920	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B35213	Y	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B35210	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B35210	N	W			2x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B35210	N	W			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B35210	N	W	JUN 01 2016	0920	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
W.M. WISE/CHPRC		JUN 01 2016 1230	C.M. Aguilar/CHPRC		JUN 01 2016 1230
C.M. Aguilar/CHPRC		JUN 01 2016 1400	FEDEX		
FedEx			Sara Grimball / Sara Grimball		6/2/16 0910

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
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

PRINTED ON 3/21/2016 **FSR ID = FSR28041** A-6004-842 (REV 2)

June 28, 2016

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 398479	C.O.C. # S16-005-164 Page 1 of 1

Collector	W.M. WISE/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S16-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2016	**Logbook No.**	HNF-N-506 85 / 108	**Ice Chest No.**	GWS-288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7764 2112 9141
Protocol	SURV	**Priority:**	30 Days PRIORITY	**Offsite Property No.**	6680

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** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35204	N	W	JUN 0 1 2016	0835	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B35204	N	W	↓	↓	2x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B35204	N	W	↓	↓	3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B35207	Y	W	↓	↓	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B35207	Y	W	JUN 0 1 2016	0835	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
W.M. WISE/CHPRC			JUN 0 1 2016 1230	C.M. Aguilar/CHPRC			JUN 0 1 2016 1230
C.M. Aguilar/CHPRC			JUN 0 1 2016 1400	FEDEX			
FedEx				Sara Grindall			6/2/16 0910

Matrix *

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

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

PRINTED ON 3/21/2016 FSR ID = FSR28040 A-6004-842 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

398479

Client: CPRC	SDG/AR/COC/Work Order: 398479/398477/398475
Received By: Sara Shilpoff	Date Received: 6/2/16

Suspected Hazard Information	Yes	No
COC/Samples marked as radioactive?		✓
Classified Radioactive II or III by RSO?		✓
COC/Samples marked containing PCBs?		✓
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓
Shipped as a DOT Hazardous?		✓
Samples identified as Foreign Soil?		✓

*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 cpm

If yes, Were swipes taken of sample containers < action levels?

If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Hazard Class Shipped: UN#:

	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	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: (Ice bags) Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 3°C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): ES102009184
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?			✓	Sample ID's and containers affected:
7	VOA vials contain acid preservation?			✓	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?			✓	Sample ID's and containers affected:
-9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: (FedEx Air) FedEx Ground UPS Field Services Courier Other 7764 2112 9141

Comments (Use Continuation Form if needed):

NS 6/2/16

Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 28−JUN−16

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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	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 28 June 2016

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	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398479
Work Order #: 398479

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1571814

Product: Determination of Metals by ICP
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1571840

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batches: 1571813 and 1571839

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

GEL Sample ID#	Client Sample Identification
398479001	B35204
398479002	B35207
398479003	B35213
398479004	B35210
398479005	B35216
1203560469	Method Blank (MB)**ICP**
1203560470	Laboratory Control Sample (LCS)
1203560473	398479001(B35204L) Serial Dilution (SD)
1203560471	398479001(B35204S) Matrix Spike (MS)
1203560472	398479001(B35204SD) Matrix Spike Duplicate (MSD)
1203560392	Method Blank (MB)**ICP-MS**
1203560393	Laboratory Control Sample (LCS)
1203560396	398479001(B35204L) Serial Dilution (SD)
1203560394	398479001(B35204S) Matrix Spike (MS)
1203560395	398479001(B35204SD) 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.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of potassium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203560469 (MB)-ICP.

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: GEL398479 GEL Work Order: 398479

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: Jamie Johnson**

Date: 28 JUN 2016 **Title: Group Leader**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398479 **CONTRACT:** CPRC0S16005 **METHOD TYPE:** SW846

SAMPLE ID: 398479001 **BASIS:** As Received **DATE COLLECTED** 01−JUN−16

CLIENT ID: B35204 **LEVEL:** Low **DATE RECEIVED** 02−JUN−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	15	ug/L	U	15	50	50	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/24/16 16:09	160624−3	1571814
7440−38−2	Arsenic	2.47	ug/L	B	1.7	5	5	1	MS	BAJ	06/24/16 12:37	160624−2	1571814
7440−39−3	Barium	38.2	ug/L		0.6	2	2	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/23/16 00:29	160622−4	1571814
7440−42−8	Boron	29.7	ug/L	B	15	50	50	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−70−2	Calcium	67800	ug/L		50	200	200	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7440−47−3	Chromium	5.12	ug/L	B	2	10	10	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−48−4	Cobalt	0.228	ug/L	B	0.1	1	1	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−50−8	Copper	1.08	ug/L		0.35	1	1	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7439−95−4	Magnesium	14100	ug/L		110	300	300	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7439−96−5	Manganese	3.4	ug/L	B	1	5	5	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7439−98−7	Molybdenum	2	ug/L		0.165	0.5	0.5	1	MS	SKJ	06/23/16 00:29	160622−4	1571814
7440−02−0	Nickel	1.8	ug/L	B	0.5	2	2	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−09−7	Potassium	5560	ug/L		50	150	150	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	06/24/16 12:37	160624−2	1571814
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−23−5	Sodium	23400	ug/L		100	300	300	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7440−24−6	Strontium	364	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−29−1	Thorium	0.504	ug/L	B	0.383	2	2	1	MS	SKJ	06/23/16 13:43	160623−5	1571814
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	06/21/16 17:20	160621−6	1571814
7440−61−1	Uranium	2.02	ug/L		0.067	0.2	0.2	1	MS	SKJ	06/22/16 13:29	160622−7	1571814
7440−62−2	Vanadium	5.03	ug/L		1	5	5	1	P	JWJ	06/06/16 14:17	060616−1	1571840
7440−66−6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	SKJ	06/23/16 00:29	160622−4	1571814

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1571814	1571813	SW846 3005A	50	mL	50	mL	06/02/16	JP1
1571840	1571839	SW846 3005A	50	mL	50	mL	06/02/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398479 **CONTRACT:** CPRC0S16005 **METHOD TYPE:** SW846

SAMPLE ID: 398479002 **BASIS:** As Received **DATE COLLECTED** 01−JUN−16

CLIENT ID: B35207 **LEVEL:** Low **DATE RECEIVED** 02−JUN−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	15	ug/L	U	15	50	50	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/24/16 16:21	160624−3	1571814
7440−38−2	Arsenic	2.38	ug/L	B	1.7	5	5	1	MS	BAJ	06/24/16 12:45	160624−2	1571814
7440−39−3	Barium	38.4	ug/L		0.6	2	2	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/23/16 01:22	160622−4	1571814
7440−42−8	Boron	29.4	ug/L	B	15	50	50	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−70−2	Calcium	66500	ug/L		50	200	200	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7440−47−3	Chromium	5.69	ug/L	B	2	10	10	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−48−4	Cobalt	0.145	ug/L	B	0.1	1	1	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−50−8	Copper	0.837	ug/L	B	0.35	1	1	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7439−95−4	Magnesium	13600	ug/L		110	300	300	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7439−96−5	Manganese	2.54	ug/L	B	1	5	5	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7439−98−7	Molybdenum	1.93	ug/L		0.165	0.5	0.5	1	MS	SKJ	06/23/16 01:22	160622−4	1571814
7440−02−0	Nickel	1.57	ug/L	B	0.5	2	2	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−09−7	Potassium	5550	ug/L		50	150	150	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	06/24/16 12:45	160624−2	1571814
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−23−5	Sodium	23100	ug/L		100	300	300	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7440−24−6	Strontium	362	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−29−1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	SKJ	06/23/16 14:37	160623−5	1571814
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	06/21/16 17:47	160621−6	1571814
7440−61−1	Uranium	1.99	ug/L		0.067	0.2	0.2	1	MS	SKJ	06/22/16 13:40	160622−7	1571814
7440−62−2	Vanadium	3.56	ug/L	B	1	5	5	1	P	JWJ	06/06/16 14:28	060616−1	1571840
7440−66−6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	SKJ	06/23/16 01:22	160622−4	1571814

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1571814	1571813	SW846 3005A	50	mL	50	mL	06/02/16	JP1
1571840	1571839	SW846 3005A	50	mL	50	mL	06/02/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398479 **CONTRACT:** CPRC0S16005 **METHOD TYPE:** SW846

SAMPLE ID: 398479003 **BASIS:** As Received **DATE COLLECTED** 01−JUN−16

CLIENT ID: B35213 **LEVEL:** Low **DATE RECEIVED** 02−JUN−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	15	ug/L	U	15	50	50	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/24/16 16:23	160624−3	1571814
7440−38−2	Arsenic	2.2	ug/L	B	1.7	5	5	1	MS	BAJ	06/24/16 12:46	160624−2	1571814
7440−39−3	Barium	43.5	ug/L		0.6	2	2	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/23/16 01:29	160622−4	1571814
7440−42−8	Boron	21.6	ug/L	B	15	50	50	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−70−2	Calcium	74400	ug/L		50	200	200	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7440−47−3	Chromium	10.8	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−48−4	Cobalt	0.188	ug/L	B	0.1	1	1	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−50−8	Copper	1.15	ug/L		0.35	1	1	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7439−95−4	Magnesium	13700	ug/L		110	300	300	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7439−96−5	Manganese	14.7	ug/L		1	5	5	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7439−98−7	Molybdenum	1.87	ug/L		0.165	0.5	0.5	1	MS	SKJ	06/23/16 01:29	160622−4	1571814
7440−02−0	Nickel	2.15	ug/L		0.5	2	2	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−09−7	Potassium	5680	ug/L		50	150	150	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	06/24/16 12:46	160624−2	1571814
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−23−5	Sodium	23400	ug/L		100	300	300	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7440−24−6	Strontium	362	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−29−1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	SKJ	06/23/16 14:43	160623−5	1571814
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	06/21/16 17:51	160621−6	1571814
7440−61−1	Uranium	7.49	ug/L		0.067	0.2	0.2	1	MS	SKJ	06/22/16 13:41	160622−7	1571814
7440−62−2	Vanadium	4.47	ug/L	B	1	5	5	1	P	JWJ	06/06/16 14:31	060616−1	1571840
7440−66−6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	SKJ	06/23/16 01:29	160622−4	1571814

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1571814	1571813	SW846 3005A	50	mL	50	mL	06/02/16	JP1
1571840	1571839	SW846 3005A	50	mL	50	mL	06/02/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398479 **CONTRACT:** CPRC0S16005 **METHOD TYPE:** SW846

SAMPLE ID: 398479004 **BASIS:** As Received **DATE COLLECTED** 01−JUN−16

CLIENT ID: B35210 **LEVEL:** Low **DATE RECEIVED** 02−JUN−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	45.6	ug/L	B	15	50	50	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	PRB	06/24/16 16:25	160624−3	1571814
7440−38−2	Arsenic	2.77	ug/L	B	1.7	5	5	1	MS	BAJ	06/24/16 12:48	160624−2	1571814
7440−39−3	Barium	44.6	ug/L		0.6	2	2	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	SKJ	06/23/16 01:36	160622−4	1571814
7440−42−8	Boron	21.1	ug/L	B	15	50	50	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−70−2	Calcium	75000	ug/L		50	200	200	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7440−47−3	Chromium	13.2	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−48−4	Cobalt	0.254	ug/L	B	0.1	1	1	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−50−8	Copper	1.87	ug/L		0.35	1	1	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7439−89−6	Iron	70.2	ug/L	B	30	100	100	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7439−95−4	Magnesium	13900	ug/L		110	300	300	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7439−96−5	Manganese	19.2	ug/L		1	5	5	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7439−98−7	Molybdenum	2.1	ug/L		0.165	0.5	0.5	1	MS	SKJ	06/23/16 01:36	160622−4	1571814
7440−02−0	Nickel	3.44	ug/L		0.5	2	2	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−09−7	Potassium	5580	ug/L		50	150	150	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	06/24/16 12:48	160624−2	1571814
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−23−5	Sodium	23600	ug/L		100	300	300	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7440−24−6	Strontium	364	ug/L		2	10	10	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−29−1	Thorium	0.383	ug/L	U	0.383	2	2	1	MS	SKJ	06/23/16 14:50	160623−5	1571814
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	SKJ	06/21/16 17:55	160621−6	1571814
7440−61−1	Uranium	7.55	ug/L		0.067	0.2	0.2	1	MS	SKJ	06/22/16 13:43	160622−7	1571814
7440−62−2	Vanadium	4.78	ug/L	B	1	5	5	1	P	JWJ	06/06/16 14:34	060616−1	1571840
7440−66−6	Zinc	3.58	ug/L	B	3.5	10	10	1	MS	SKJ	06/23/16 01:36	160622−4	1571814

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1571814	1571813	SW846 3005A	50	mL	50	mL	06/02/16	JP1
1571840	1571839	SW846 3005A	50	mL	50	mL	06/02/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

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

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398479 **CONTRACT:** CPRC0S16005 **METHOD TYPE:** SW846

SAMPLE ID: 398479005 **BASIS:** As Received **DATE COLLECTED** 01−JUN−16

CLIENT ID: B35216 **LEVEL:** Low **DATE RECEIVED** 02−JUN−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−61−1	Uranium	2.05	ug/L		0.067	0.2	15	1	MS	SKJ	06/22/16 13:44	160622−7	1571814

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1571814	1571813	SW846 3005A	50	mL	50	mL	06/02/16	JP1

***Analytical Methods:**

MS **SW846 3005A/6020A**

Quality Control Summary

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

QC Summary

Report Date: June 28, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **398479**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1571814										
QC1203560393 LCS										
Aluminum	2000			2010	ug/L		100	(80%-120%)	SKJ	06/21/16 17:16
Antimony	50.0			50.7	ug/L		101	(80%-120%)	PRB	06/24/16 16:07
Arsenic	50.0			54.7	ug/L		109	(80%-120%)	BAJ	06/24/16 12:36
Barium	50.0			50.9	ug/L		102	(80%-120%)	SKJ	06/21/16 17:16
Beryllium	50.0			54.0	ug/L		108	(80%-120%)		06/23/16 00:09
Cadmium	50.0			51.6	ug/L		103	(80%-120%)		06/21/16 17:16
Chromium	50.0			50.1	ug/L		100	(80%-120%)		
Cobalt	50.0			46.1	ug/L		92.1	(80%-120%)		
Copper	50.0			46.8	ug/L		93.6	(80%-120%)		
Lead	50.0			54.2	ug/L		108	(80%-120%)		
Manganese	50.0			48.0	ug/L		96.1	(80%-120%)		
Molybdenum	50.0			48.2	ug/L		96.3	(80%-120%)		06/23/16 00:09
Nickel	50.0			46.0	ug/L		91.9	(80%-120%)		06/21/16 17:16
Selenium	50.0			54.9	ug/L		110	(80%-120%)	BAJ	06/24/16 12:36
Silver	50.0			51.1	ug/L		102	(80%-120%)	SKJ	06/21/16 17:16
Strontium	50.0			50.9	ug/L		102	(80%-120%)		
Thallium	50.0			50.8	ug/L		102	(80%-120%)		
Thorium	50.0			52.9	ug/L		106	(80%-120%)		06/23/16 13:37
Tin	50.0			53.0	ug/L		106	(80%-120%)		06/21/16 17:16
Uranium	50.0			51.8	ug/L		104	(80%-120%)		06/22/16 13:24

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

QC Summary

Workorder: 398479

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1571814										
Zinc	50.0			48.6	ug/L		97.2	(80%-120%)	SKJ	06/23/16 00:09
QC1203560392 MB										
Aluminum			U	15.0	ug/L					06/21/16 17:12
Antimony			U	1.00	ug/L				PRB	06/24/16 16:05
Arsenic			U	1.70	ug/L				BAJ	06/24/16 12:34
Barium			U	0.600	ug/L				SKJ	06/21/16 17:12
Beryllium			U	0.200	ug/L					06/23/16 00:03
Cadmium			U	0.110	ug/L					06/21/16 17:12
Chromium			U	2.00	ug/L					
Cobalt			U	0.100	ug/L					
Copper			U	0.350	ug/L					
Lead			U	0.500	ug/L					
Manganese			U	1.00	ug/L					
Molybdenum			U	0.165	ug/L					06/23/16 00:03
Nickel			U	0.500	ug/L					06/21/16 17:12
Selenium			U	1.50	ug/L				BAJ	06/24/16 12:34
Silver			U	0.200	ug/L				SKJ	06/21/16 17:12
Strontium			U	2.00	ug/L					
Thallium			U	0.450	ug/L					
Thorium			U	0.383	ug/L					06/23/16 13:30
Tin			U	1.00	ug/L					06/21/16 17:12
Uranium			U	0.067	ug/L					06/22/16 13:23

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QC Summary

Workorder: 398479

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1571814											
Zinc				U	3.50	ug/L				SKJ	06/23/16 00:03
QC1203560394 398479001 MS											
Aluminum	2000	U	15.0		1950	ug/L		96.6	(75%-125%)		06/21/16 17:24
Antimony	50.0	U	1.00		50.8	ug/L		101	(75%-125%)	PRB	06/24/16 16:11
Arsenic	50.0	B	2.47		56.7	ug/L		108	(75%-125%)	BAJ	06/24/16 12:39
Barium	50.0		38.2		86.4	ug/L		96.4	(75%-125%)	SKJ	06/21/16 17:24
Beryllium	50.0	U	0.200		53.3	ug/L		107	(75%-125%)		06/23/16 00:36
Cadmium	50.0	U	0.110		50.9	ug/L		102	(75%-125%)		06/21/16 17:24
Chromium	50.0	B	5.12		55.1	ug/L		100	(75%-125%)		
Cobalt	50.0	B	0.228		47.5	ug/L		94.6	(75%-125%)		
Copper	50.0		1.08		49.3	ug/L		96.4	(75%-125%)		
Lead	50.0	U	0.500		50.0	ug/L		99.6	(75%-125%)		
Manganese	50.0	B	3.40		52.6	ug/L		98.5	(75%-125%)		
Molybdenum	50.0		2.00		51.6	ug/L		99.2	(75%-125%)		06/23/16 00:36
Nickel	50.0	B	1.80		49.6	ug/L		95.6	(75%-125%)		06/21/16 17:24
Selenium	50.0	U	1.50		55.2	ug/L		108	(75%-125%)	BAJ	06/24/16 12:39
Silver	50.0	U	0.200		50.9	ug/L		102	(75%-125%)	SKJ	06/21/16 17:24
Strontium	50.0		364		419	ug/L		N/A	(75%-125%)		
Thallium	50.0	U	0.450		49.2	ug/L		98.3	(75%-125%)		
Thorium	50.0	B	0.504		51.6	ug/L		102	(75%-125%)		06/23/16 13:50
Tin	50.0	U	1.00		52.1	ug/L		103	(75%-125%)		06/21/16 17:24
Uranium	50.0		2.02		56.3	ug/L		109	(75%-125%)		06/22/16 13:30

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QC Summary

Workorder: 398479

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1571814											
Zinc	50.0	U	3.50		47.9	ug/L		92.9	(75%-125%)	SKJ	06/23/16 00:36
QC1203560395 398479001 MSD											
Aluminum	2000	U	15.0		2000	ug/L	2.91	99.5	(0%-20%)		06/21/16 17:27
Antimony	50.0	U	1.00		51.8	ug/L	2.03	103	(0%-20%)	PRB	06/24/16 16:12
Arsenic	50.0	B	2.47		56.3	ug/L	0.714	108	(0%-20%)	BAJ	06/24/16 12:41
Barium	50.0		38.2		84.4	ug/L	2.33	92.4	(0%-20%)	SKJ	06/21/16 17:27
Beryllium	50.0	U	0.200		53.9	ug/L	1.28	108	(0%-20%)		06/23/16 00:42
Cadmium	50.0	U	0.110		49.2	ug/L	3.46	98.2	(0%-20%)		06/21/16 17:27
Chromium	50.0	B	5.12		55.7	ug/L	1.01	101	(0%-20%)		
Cobalt	50.0	B	0.228		47.0	ug/L	1.09	93.6	(0%-20%)		
Copper	50.0		1.08		48.1	ug/L	2.51	94	(0%-20%)		
Lead	50.0	U	0.500		48.8	ug/L	2.36	97.2	(0%-20%)		
Manganese	50.0	B	3.40		53.0	ug/L	0.6	99.1	(0%-20%)		
Molybdenum	50.0		2.00		51.7	ug/L	0.254	99.5	(0%-20%)		06/23/16 00:42
Nickel	50.0	B	1.80		48.6	ug/L	2.07	93.6	(0%-20%)		06/21/16 17:27
Selenium	50.0	U	1.50		54.4	ug/L	1.46	107	(0%-20%)	BAJ	06/24/16 12:41
Silver	50.0	U	0.200		49.6	ug/L	2.69	99	(0%-20%)	SKJ	06/21/16 17:27
Strontium	50.0		364		418	ug/L	0.0881	N/A	(0%-20%)		
Thallium	50.0	U	0.450		47.5	ug/L	3.62	94.8	(0%-20%)		
Thorium	50.0	B	0.504		50.6	ug/L	1.94	100	(0%-20%)		06/23/16 13:57
Tin	50.0	U	1.00		50.6	ug/L	2.93	100	(0%-20%)		06/21/16 17:27
Uranium	50.0		2.02		53.7	ug/L	4.71	103	(0%-20%)		06/22/16 13:32

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QC Summary

Workorder: 398479

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1571814											
Zinc	50.0	U	3.50		48.0	ug/L	0.282	93.2	(0%-20%)	SKJ	06/23/16 00:42
QC1203560396 398479001 SDILT											
Aluminum		U	13.7	DU	75.0	ug/L	N/A		(0%-10%)		06/21/16 17:35
Antimony		U	0.345	DU	5.00	ug/L	N/A		(0%-10%)	PRB	06/24/16 16:14
Arsenic		B	2.47	DU	8.50	ug/L	N/A		(0%-10%)	BAJ	06/24/16 12:43
Barium			38.2	D	8.17	ug/L	7.03		(0%-10%)	SKJ	06/21/16 17:35
Beryllium		U	-0.002	DU	1.00	ug/L	N/A		(0%-10%)		06/23/16 00:56
Cadmium		U	0.036	DU	0.550	ug/L	N/A		(0%-10%)		06/21/16 17:35
Chromium		B	5.12	DU	10.0	ug/L	N/A		(0%-10%)		
Cobalt		B	0.228	DU	0.500	ug/L	N/A		(0%-10%)		
Copper			1.08	DU	1.75	ug/L	N/A		(0%-10%)		
Lead		U	0.221	DU	2.50	ug/L	N/A		(0%-10%)		
Manganese		B	3.40	DU	5.00	ug/L	N/A		(0%-10%)		
Molybdenum			2.00	BD	0.435	ug/L	8.97		(0%-10%)		06/23/16 00:56
Nickel		B	1.80	DU	2.50	ug/L	N/A		(0%-10%)		06/21/16 17:35
Selenium		U	1.16	DU	7.50	ug/L	N/A		(0%-10%)	BAJ	06/24/16 12:43
Silver		U	0.039	DU	1.00	ug/L	N/A		(0%-10%)	SKJ	06/21/16 17:35
Strontium			364	D	72.2	ug/L	.924		(0%-10%)		
Thallium		U	0.040	DU	2.25	ug/L	N/A		(0%-10%)		
Thorium		B	0.504	DU	1.92	ug/L	N/A		(0%-10%)		06/23/16 14:10
Tin		U	0.449	DU	5.00	ug/L	N/A		(0%-10%)		06/21/16 17:35
Uranium			2.02	D	0.421	ug/L	4		(0%-10%)		06/22/16 13:35

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QC Summary

Workorder: 398479

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch 1571814												
Zinc		U	1.45	DU	17.5	ug/L	N/A		(0%-10%)	SKJ	06/23/16	00:56
Metals Analysis-ICP												
Batch 1571840												
QC1203560470 LCS												
Boron	500				504	ug/L		101	(80%-120%)	JWJ	06/06/16	14:14
Calcium	5000				5340	ug/L		107	(80%-120%)			
Iron	5000				5290	ug/L		106	(80%-120%)			
Magnesium	5000				5420	ug/L		108	(80%-120%)			
Potassium	5000				5090	ug/L		102	(80%-120%)			
Sodium	5000				5240	ug/L		105	(80%-120%)			
Vanadium	500				523	ug/L		105	(80%-120%)			
QC1203560469 MB												
Boron				U	15.0	ug/L					06/06/16	14:11
Calcium				U	50.0	ug/L						
Iron				U	30.0	ug/L						
Magnesium				U	110	ug/L						
Potassium				B	99.5	ug/L						
Sodium				U	100	ug/L						
Vanadium				U	1.00	ug/L						
QC1203560471 398479001 MS												
Boron	500	B	29.7		561	ug/L		106	(75%-125%)		06/06/16	14:20
Calcium	5000		67800		74000	ug/L		N/A	(75%-125%)			
Iron	5000	U	30.0		5140	ug/L		102	(75%-125%)			
Magnesium	5000		14100		19200	ug/L		101	(75%-125%)			

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QC Summary

Workorder: 398479

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1571840											
Potassium	5000		5560		10700	ug/L		102	(75%-125%)		
Sodium	5000		23400		28800	ug/L		N/A	(75%-125%)	JWJ	06/06/16 14:20
Vanadium	500		5.03		533	ug/L		106	(75%-125%)		
QC1203560472 398479001 MSD											
Boron	500	B	29.7		535	ug/L	4.59	101	(0%-20%)		06/06/16 14:22
Calcium	5000		67800		73200	ug/L	1.08	N/A	(0%-20%)		
Iron	5000	U	30.0		5160	ug/L	0.417	103	(0%-20%)		
Magnesium	5000		14100		19400	ug/L	0.809	105	(0%-20%)		
Potassium	5000		5560		10600	ug/L	0.893	101	(0%-20%)		
Sodium	5000		23400		28500	ug/L	1.22	N/A	(0%-20%)		
Vanadium	500		5.03		513	ug/L	3.82	102	(0%-20%)		
QC1203560473 398479001 SDILT											
Boron		B	29.7	DU	75.0	ug/L	N/A		(0%-10%)		06/06/16 14:25
Calcium			67800	D	14500	ug/L	6.61		(0%-10%)		
Iron		U	17.4	DU	150	ug/L	N/A		(0%-10%)		
Magnesium			14100	D	2990	ug/L	5.78		(0%-10%)		
Potassium			5560	D	1160	ug/L	4.23		(0%-10%)		
Sodium			23400	D	4960	ug/L	5.89		(0%-10%)		
Vanadium			5.03	D	1.19	ug/L	17.8		(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

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QC Summary

Workorder: 398479

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

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

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 #: GEL398479
Work Order #: 398479

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 12
Analytical Batch: 1573904

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

GEL Sample ID#	Client Sample Identification
398479002	B35207
398479003	B35213
1203565686	Method Blank (MB)
1203565687	Laboratory Control Sample (LCS)
1203565688	398479002(B35207) Sample Duplicate (DUP)

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.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB 1203565686 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

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: GEL398479 GEL Work Order: 398479

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).

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: 23 JUN 2016 **Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: June 23, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S16-005

Client Sample ID: B35207
Sample ID: 398479002
Matrix: WATER
Collect Date: 01-JUN-16 08:35
Receive Date: 02-JUN-16
Collector: Client

Project: CPRC0S16005
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3		132000	330	1000	ug/L	1	RXB5	06/14/16	2112	1573904	1
Bicarbonate alkalinity (CaCO3)		132000	330	1000	ug/L	1					
Carbonate alkalinity (CaCO3)	U	330	330	1000	ug/L	1					
Hydroxide alkalinity as CaCO3	U	330	330	1000	ug/L	1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: June 23, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF S16-005

Client Sample ID: B35213
Sample ID: 398479003
Matrix: WATER
Collect Date: 01-JUN-16 09:20
Receive Date: 02-JUN-16
Collector: Client

Project: CPRC0S16005
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3		158000	330	1000	ug/L	1	RXB5	06/14/16	2125	1573904	1
Bicarbonate alkalinity (CaCO3)		158000	330	1000	ug/L	1					
Carbonate alkalinity (CaCO3)	U	330	330	1000	ug/L	1					
Hydroxide alkalinity as CaCO3	U	330	330	1000	ug/L	1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

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

QC Summary

Report Date: June 23, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **398479**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis												
Batch 1573904												
QC1203565688 398479002 DUP												
Alkalinity, Total as CaCO3			132000		126000	ug/L	5.12		(0%-20%)	RXB5	06/14/16	21:19
Bicarbonate alkalinity (CaCO3)			132000		126000	ug/L	5.12		(0%-20%)			
Carbonate alkalinity (CaCO3)		U	330	U	330	ug/L	N/A					
Hydroxide alkalinity as CaCO3		U	330	U	330	ug/L	N/A					
QC1203565687 LCS												
Alkalinity, Total as CaCO3	50000				51500	ug/L		103	(80%-120%)		06/14/16	21:06
QC1203565686 MB												
Alkalinity, Total as CaCO3				B	464	ug/L					06/14/16	21:00
Bicarbonate alkalinity (CaCO3)				B	464	ug/L						
Carbonate alkalinity (CaCO3)				U	330	ug/L						
Hydroxide alkalinity as CaCO3				U	330	ug/L						

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.
- 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

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QC Summary

Workorder: 398479

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

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

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398479
Work Order #: 398479

Product: **SRISO_SEP_PRECIP_GPC: COMMON**
Analytical Method: SRISO_SEP_PRECIP_GPC
Analytical Procedure: GL-RAD-A-004 REV# 17
Analytical Batch: 1574054

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

GEL Sample ID#	Client Sample Identification
398479001	B35204
398479004	B35210
1203566155	Method Blank (MB)
1203566156	398676005(NonSDG) Sample Duplicate (DUP)
1203566157	Laboratory Control Sample (LCS)

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.

Quality Control (QC) Information

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The sample and duplicate, 1203566156 (Non SDG 398676005DUP), do not meet the client relative error ratio requirement; however, both sample and duplicate results are less than the minimum detectable activity.

Technical Information

Recounts
Sample 1203566157 (LCS) was recounted due to high recovery. The recount is reported. Sample 1203566155 (MB) was recounted due to a suspected blank false positive. The recount is reported.

Product: **9310_ALPHABETA_GPC: COMMON**
Analytical Method: 9310_ALPHABETA_GPC
Analytical Procedure: GL-RAD-A-001 REV# 18
Analytical Batch: 1574059

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

GEL Sample ID#	Client Sample Identification
398479001	B35204
398479004	B35210
1203566170	Method Blank (MB)
1203566171	398744003(NonSDG) Sample Duplicate (DUP)
1203566172	398744003(NonSDG) Matrix Spike (MS)
1203566173	398744003(NonSDG) Matrix Spike Duplicate (MSD)
1203566174	Laboratory Control Sample (LCS)

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.

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203566172 (Non SDG 398744003MS) and 1203566173 (Non SDG 398744003MSD), aliquots were reduced to conserve sample volume.

Product: **TC99_EIE_LSC: COMMON**
Analytical Method: TC99_EIE_LSC
Analytical Procedure: GL-RAD-A-059 REV# 4
Analytical Batch: 1571786

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

GEL Sample ID#	Client Sample Identification
398479004	B35210
398479005	B35216
1203560316	Method Blank (MB)
1203560317	398180005(NonSDG) Sample Duplicate (DUP)
1203560318	Laboratory Control Sample (LCS)

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: GEL398479 GEL Work Order: 398479

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: Theresa Austin**

Date: 27 JUN 2016 **Title: Group Leader**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479001**	**Date Collected:**	**06/01/2016 08:35**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35204**			**Prep Basis:**	**"As Received"**
Batch ID:	**1574054**	**Method:**	**SRISO_SEP_PRECIP_GPC**	**SOP Ref:**	**GL-RAD-A-004**
Run Date:	**06/22/2016 14:32**	**Analyst:**	**KSD1**	**Instrument:**	**PIC4B**
Data File:	**S1574054r3.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**90 min**
Prep Batch:	**1574054**	**Prep Method:**	**EPA 905.0 Modified/DOE RP5**		
Prep Date:	**06/21/2016 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	-0.159	pCi/L	+/-1.09	1.09	1.97	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.40	7.37	mg	86.9	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479001**	**Date Collected:**	**06/01/2016 08:35**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35204**			**Prep Basis:**	**"As Received"**
Batch ID:	**1574059**	**Method:**	**9310_ALPHABETA_GPC**	**SOP Ref:**	**GL-RAD-A-001**
Run Date:	**06/20/2016 15:49**	**Analyst:**	**JXC9**	**Instrument:**	**LB4100C2**
Data File:	**AB1574059.xls**	**Aliquot:**	**150 mL**	**Count Time:**	**190 min**
Prep Batch:	**1574059**	**Prep Method:**	**EPA 900.0/SW846 9310**		
Prep Date:	**06/17/2016 12:47**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha *ALPHA*	U	-0.563	pCi/L	+/-1.49	1.50	2.97	3.00
12587-47-2	Beta *BETA*		4.09	pCi/L	+/-1.42	1.60	2.11	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479004**	**Date Collected:**	**06/01/2016 09:20**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35210**			**Prep Basis:**	**"As Received"**
Batch ID:	**1574054**	**Method:**	**SRISO_SEP_PRECIP_GPC**	**SOP Ref:**	**GL-RAD-A-004**
Run Date:	**06/22/2016 14:32**	**Analyst:**	**KSD1**	**Instrument:**	**PIC3B**
Data File:	**S1574054r3.xls**	**Aliquot:**	**300 mL**	**Count Time:**	**100 min**
Prep Batch:	**1574054**	**Prep Method:**	**EPA 905.0 Modified/DOE RP5**		
Prep Date:	**06/21/2016 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	-0.468	pCi/L	+/-1.03	1.03	1.91	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.40	7.37	mg	86.9	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479004**	**Date Collected:**	**06/01/2016 09:20**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35210**			**Prep Basis:**	**"As Received"**
Batch ID:	**1574059**	**Method:**	**9310_ALPHABETA_GPC**	**SOP Ref:**	**GL-RAD-A-001**
Run Date:	**06/20/2016 15:44**	**Analyst:**	**JXC9**	**Instrument:**	**LB4100I4**
Data File:	**AB1574059.xls**	**Aliquot:**	**150 mL**	**Count Time:**	**170 min**
Prep Batch:	**1574059**	**Prep Method:**	**EPA 900.0/SW846 9310**		
Prep Date:	**06/17/2016 12:47**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha *ALPHA*		7.89	pCi/L	+/-2.36	2.69	2.13	3.00
12587-47-2	Beta *BETA*		23.4	pCi/L	+/-2.30	4.46	2.08	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479004**	**Date Collected:**	**06/01/2016 09:20**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35210**			**Prep Basis:**	**"As Received"**
Batch ID:	**1571786**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**06/12/2016 11:01**	**Analyst:**	**GXR1**	**Instrument:**	**LSCSILVER**
Data File:	**E1571786.xls**	**Aliquot:**	**100 mL**	**Count Time:**	**20 min**
Prep Batch:	**1571786**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**06/07/2016 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	3.09	pCi/L	+/-21.2	21.2	36.7	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	28000	30300	CPM	92.5	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL398479**	**Client:**	**CPRC001**	**Project:**	**CPRC0S16005**
Lab Sample ID:	**398479005**	**Date Collected:**	**06/01/2016 10:30**	**Matrix:**	**WATER**
		Date Received:	**06/02/2016 09:30**		
Client ID:	**B35216**			**Prep Basis:**	**"As Received"**
Batch ID:	**1571786**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**06/12/2016 11:23**	**Analyst:**	**GXR1**	**Instrument:**	**LSCSILVER**
Data File:	**E1571786.xls**	**Aliquot:**	**100 mL**	**Count Time:**	**20 min**
Prep Batch:	**1571786**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**06/07/2016 00:00**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	6.26	pCi/L	+/-21.1	21.1	36.4	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	28200	30300	CPM	93.2	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 398479

Report Date: June 27, 2016

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1574054									
QC1203566155 MB									
Strontium-90			U	-1.33	pCi/L			KSD1	06/22/1616:30
Uncert:				+/-0.649					
TPU:				+/-0.649					
**Strontium Carrier	7.37			6.40	mg	REC: 87	(40%-110%)		
QC1203566156 398676005 DUP									
Strontium-90	U	-0.749	U	0.723	pCi/L				06/22/1614:32
Uncert:		+/-0.670		+/-1.02		RPD: 0	N/A		
TPU:		+/-0.670		+/-1.03		RER: 2.35	(0-2)		
**Strontium Carrier	7.37	5.70		5.80	mg	REC: 79	(40%-110%)		
QC1203566157 LCS									
Strontium-90	73.0			84.5	pCi/L	REC: 116	(80%-120%)		06/24/1610:55
Uncert:				+/-4.07					
TPU:				+/-13.9					
**Strontium Carrier	7.37			5.70	mg	REC: 77	(40%-110%)		
Batch 1574059									
QC1203566170 MB									
Alpha			U	-1.31	pCi/L			JXC9	06/20/1616:26
Uncert:				+/-0.321					
TPU:				+/-0.322					
Beta			U	-0.21	pCi/L				
Uncert:				+/-1.05					
TPU:				+/-1.05					
QC1203566171 398744003 DUP									
Alpha	U	0.0146	U	-0.651	pCi/L				06/20/1616:30
Uncert:		+/-1.41		+/-0.981		RPD: 0	N/A		
TPU:		+/-1.41		+/-0.982		RER: 0.759	(0-2)		
Beta		517		463	pCi/L				
Uncert:		+/-15.6		+/-14.3		RPD: 11	(0% - 20%)		
TPU:		+/-86.2		+/-76.6		RER: 0.919	(0-2)		
QC1203566172 398744003 MS									
Alpha	240 U	0.0146		252	pCi/L	REC: 105	(75%-125%)		06/20/1611:31
Uncert:		+/-1.41		+/-24.8					
TPU:		+/-1.41		+/-48.9					
Beta	876	517		1590	pCi/L	REC: 122	(75%-125%)		
Uncert:		+/-15.6		+/-45.9					
TPU:		+/-86.2		+/-269					
QC1203566173 398744003 MSD									
Alpha	240 U	0.0146		238	pCi/L	REC: 99	(75%-125%)		06/20/1611:31
Uncert:		+/-1.41		+/-26.8		RPD: 6	(0%-20%)		
TPU:		+/-1.41		+/-49.2		RER: 0.41	(0-2)		
Beta	876	517		1530	pCi/L	REC: 115	(75%-125%)		
Uncert:		+/-15.6		+/-45.0		RPD: 4	(0%-20%)		
TPU:		+/-86.2		+/-257		RER: 0.311	(0-2)		
QC1203566174 LCS									

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QC Summary

Workorder: 398479

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1574059									
Alpha	79.9			70.0	pCi/L	REC: 88	(80%-120%)		
	Uncert:			+/-7.20					
	TPU:			+/-13.5					
Beta	292			340	pCi/L	REC: 116	(80%-120%)		
	Uncert:			+/-12.3					
	TPU:			+/-57.9					
Rad Liquid Scintillation									
Batch 1571786									
QC1203560316 MB									
Technetium-99			U	-3.28	pCi/L			GXR1	06/12/1611:45
	Uncert:			+/-19.9					
	TPU:			+/-19.9					
**Technetium-99m Tracer	30300			29500	CPM	REC: 97	(30%-105%)		
QC1203560317 398180005 DUP									
Technetium-99	U	-11.8	U	1.48	pCi/L				06/12/1612:06
	Uncert:	+/-19.9		+/-20.9		RPD: 0	N/A		
	TPU:	+/-19.9		+/-20.9		RER: 0.902	(0-2)		
**Technetium-99m Tracer	30300	28500		28600	CPM	REC: 94	(30%-105%)		
QC1203560318 LCS									
Technetium-99	861			731	pCi/L	REC: 85	(80%-120%)		06/12/1612:28
	Uncert:			+/-39.0					
	TPU:			+/-90.0					
**Technetium-99m Tracer	30300			30100	CPM	REC: 100	(30%-105%)		

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

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QC Summary

Workorder: **398479**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time

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.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence 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.