

8/10/2016



August 10, 2016

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

Re: CHPRC SAF F16-042
Work Order: 401514
SDG: GEL401514

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 14, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 304070 - 7H
Chain of Custody: F16-042-063 and F16-042-068
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-042
SDG: GEL401514**

August 10, 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 July 14, 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
401514001	B35XC9
401514002	B35VV0

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.

8/10/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL401514
Work Order #: 401514

Metals

Determination of Metals by ICP

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.

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.

Calibration Information

CRDL/PQL Requirements

The CRDL standard recoveries for SW846 6020A/6020B met the advisory control limits with the exception of molybdenum. Client sample concentrations were greater than two times the PQL; therefore the data were not adversely affected.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of molybdenum, zinc, and arsenic. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203585093 (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

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 401614 **PAGE 1 OF 1**

CH2M Hill Plateau Remediation Company **F16-042-068**

COLLECTOR Juan Aguilar **COMPANY CONTACT** TODAY, D **PROJECT COORDINATOR** TODAY, D **PRICE CODE** 7H **DATA TURNAROUND** 30 Days / 30 Days

SAMPLING LOCATION C9403, I-006 **PROJECT DESIGNATION** 100-NR-2 Drilling - Water **TELEPHONE NO.** 376-6427 **AIR QUALITY** **METHOD OF SHIPMENT** FEDERAL EXPRESS **ORIGINAL**

ICE CHEST NO. GWS-543 **FIELD LOGBOOK NO.** 1NF-N-645-3/95 **ACTUAL SAMPLE DEPTH** 75.14' **COA** 304070

SHIPPED TO GEL Laboratories, LLC **OFFSITE PROPERTY NO.** 6824 **BILL OF LADING/AIR BILL NO.** 7767 3999 3689

MATRIX*	PRESERVATION	HNO3 to pH
A=Air		<2
DL=Drum	HOLDING TIME	6 Months
Liquids		
DS=Drum	TYPE OF CONTAINER	G/P
Solids		
L=Liquid	NO. OF CONTAINER(S)	1
O=Oil	VOLUME	500ml
S=Soil	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SE=Sediment		
T=Tissue		
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		

* Sample was Filtered

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	FILTER	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

LABORATORY SECTION RECEIVED BY _____ **TITLE** _____ **DATE/TIME** _____

FINAL SAMPLE DISPOSITION DISPOSAL METHOD _____ **DISPOSED BY** _____ **DATE/TIME** _____

PRINTED ON 6/2/2016 **FSR ID = FSR33022** **TRVL NUM = TRVL-16-165** **A-6003-618 (REV 2)**

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 401514 **PAGE 1 OF 1**

COLLECTOR Juan Aguilera *CHPRC* **COMPANY CONTACT** TODAY, D **TELEPHONE NO.** 376-6427 **PROJECT COORDINATOR** TODAY, D

SAMPLING LOCATION C9403, I-006 **PROJECT DESIGNATION** 100-NR-2 Drilling - Water **SAF NO.** F16-042 **PRICE CODE** 7H **DATA TURNAROUND** 30 Days / 30 Days

ICE CHEST NO. *GWS-543* **FIELD LOGBOOK NO.** *HNF-N-6453195* **ACTUAL SAMPLE DEPTH** 75.14' **COA** 304070 **AIR QUALITY** **METHOD OF SHIPMENT** ORIGINAL

SHIPPED TO *GEL Laboratories, LLC* **OFFSITE PROPERTY NO.** *6824* **BILL OF LADING/AIR BILL NO.** 7767 3999 3689

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH	Cool <=6C
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA		<2	
		HOLDING TIME	6 Months	14 Days
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	500ml	250ml
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS (Alkalinity);	2320_ALKALINI TY; COMMON (Alkalinity);

* Samples were Filtered

SAMPLE NO.	MATRIX*	WATER	SAMPLE DATE	SAMPLE TIME
B35VVO			JUL 11 2016	1101

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Juan Aguilera	JUL 11 2016 1414		SSU-1	JUL 11 2016 1414
Janelle Zunker	JUL 13 2016 1215		CHPRC	JUL 13 2016 1215
Janelle Zunker	JUL 13 2016 1400		FEDEX	JUL 13 2016 1400
Juan Aguilera	JUL 13 2016 1400		RECEIVED BY/STORED IN	DATE/TIME
		<i>A. Kriston</i>	RECEIVED BY/STORED IN	DATE/TIME
			RECEIVED BY/STORED IN	DATE/TIME
			RECEIVED BY/STORED IN	DATE/TIME
			RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
 (1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium};
 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc};
 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};

LABORATORY SECTION RECEIVED BY

FINAL SAMPLE DISPOSITION DISPOSAL METHOD

PRINTED ON 6/2/2016 **FSR ID = FSR33022** **TRVL NUM = TRVL-16-165** **A-6003-618 (REV 2)**

SAMPLE RECEIPT & REVIEW FORM

Client: <u>OPRC</u>	SDG/AR/COC/Work Order: <u>401514</u>
Received By: <u>MK</u>	Date Received: <u>7-14-16</u>
Suspected Hazard Information	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>CPND</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1c 2c</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130462942</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air <u>7767 3999</u> FedEx Ground UPS 3840 2c Field Services 3689 2c Courier 3932 1c Other

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

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 (Organics 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 $\geq 2X$ the MDA and, after corrections, result is \geq 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 \geq 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 \geq 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 10 August 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 #: GEL401514
Work Order #: 401514

Product: Determination of Metals by ICP**Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1581757**Product: Determination of Metals by ICP-MS****Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batches:** 1581828 and 1588107**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batches:** 1581756, 1581826 and 1588106

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
401514001	B35XC9
401514002	B35VV0
1203584935	Method Blank (MB) ICP
1203584936	Laboratory Control Sample (LCS)
1203584939	401514001(B35XC9L) Serial Dilution (SD)
1203584937	401514001(B35XC9S) Matrix Spike (MS)
1203584938	401514001(B35XC9SD) Matrix Spike Duplicate (MSD)
1203585093	Method Blank (MB) ICP-MS
1203600511	Method Blank (MB) ICP-MS
1203585094	Laboratory Control Sample (LCS)
1203600512	Laboratory Control Sample (LCS)
1203585097	401514001(B35XC9L) Serial Dilution (SD)
1203600515	401514002(B35VV0L) Serial Dilution (SD)
1203585095	401514001(B35XC9S) Matrix Spike (MS)
1203600513	401514002(B35VV0S) Matrix Spike (MS)
1203585096	401514001(B35XC9SD) Matrix Spike Duplicate (MSD)
1203600514	401514002(B35VV0SD) 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 CRDL standard recoveries for SW846 6020A/6020B met the advisory control limits with the exception of molybdenum. Client sample concentrations were greater than two times the PQL; therefore the data were not adversely affected. ICP-MS.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of molybdenum, zinc, and arsenic. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203585093 (MB)-ICP-MS.

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: GEL401514 GEL Work Order: 401514

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

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

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

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

Review/Validation

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

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

Signature:



Name: Nik-Cole Elmore

Date: 10 AUG 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL401514

CONTRACT: CPRC0F16042

METHOD TYPE: SW846

SAMPLE ID: 401514001

BASIS: As Received

DATE COLLECTED 11-JUL-16

CLIENT ID: B35XC9

LEVEL: Low

DATE RECEIVED 14-JUL-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	192	ug/L		15	50	50	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-36-0	Antimony	1.42	ug/L	B	1	3	3	1	MS	PRB	08/05/16 16:21	160805-2	1581828
7440-38-2	Arsenic	3.12	ug/L	CB	1.7	5	5	1	MS	PRB	08/05/16 19:43	160805-5	1581828
7440-39-3	Barium	47.3	ug/L		0.6	2	2	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-70-2	Calcium	20800	ug/L		50	200	200	1	P	HSC	07/21/16 14:04	072116-1	1581757
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-48-4	Cobalt	1.2	ug/L		0.1	1	1	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-50-8	Copper	1.73	ug/L		0.35	1	1	1	MS	SKJ	08/10/16 10:42	160810-7	1588107
7439-89-6	Iron	177	ug/L		30	100	100	1	P	HSC	07/21/16 14:04	072116-1	1581757
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7439-95-4	Magnesium	5620	ug/L		110	300	300	1	P	HSC	07/21/16 14:04	072116-1	1581757
7439-96-5	Manganese	399	ug/L		1	5	5	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7439-98-7	Molybdenum	73.2	ug/L		0.165	0.5	0.5	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-02-0	Nickel	2.15	ug/L		0.5	2	2	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	HSC	07/21/16 14:04	072116-1	1581757
7440-09-7	Potassium	9800	ug/L		50	150	150	1	P	HSC	07/21/16 14:04	072116-1	1581757
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	08/05/16 19:43	160805-5	1581828
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	08/04/16 18:24	160804-6	1581828
7440-23-5	Sodium	99400	ug/L		100	300	300	1	P	HSC	07/21/16 14:04	072116-1	1581757
7440-24-6	Strontium	171	ug/L		2	10	10	1	MS	PRB	08/05/16 19:43	160805-5	1581828
7440-62-2	Vanadium	4.5	ug/L	U	4.5	10	10	1	MS	PRB	08/05/16 19:43	160805-5	1581828
7440-66-6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	SKJ	08/04/16 18:24	160804-6	1581828

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1581757	1581756	SW846 3005A	50	mL	50	mL	07/15/16	SXW1
1581828	1581826	SW846 3005A	50	mL	50	mL	07/15/16	SXW1
1588107	1588106	SW846 3005A	50	mL	50	mL	08/08/16	SXW1

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL401514

CONTRACT: CPRC0F16042

METHOD TYPE: SW846

SAMPLE ID: 401514002

BASIS: As Received

DATE COLLECTED 11-JUL-16

CLIENT ID: B35VV0

LEVEL: Low

DATE RECEIVED 14-JUL-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	606	ug/L		15	50	50	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-36-0	Antimony	1.08	ug/L	B	1	3	3	1	MS	PRB	08/05/16 16:28	160805-2	1581828
7440-38-2	Arsenic	2.95	ug/L	CB	1.7	5	5	1	MS	PRB	08/05/16 19:51	160805-5	1581828
7440-39-3	Barium	51.2	ug/L		0.6	2	2	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-70-2	Calcium	20400	ug/L		50	200	200	1	P	HSC	07/21/16 14:24	072116-1	1581757
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-48-4	Cobalt	0.864	ug/L	B	0.1	1	1	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-50-8	Copper	2.55	ug/L		0.35	1	1	1	MS	SKJ	08/10/16 10:44	160810-7	1588107
7439-89-6	Iron	648	ug/L		30	100	100	1	P	HSC	07/21/16 14:24	072116-1	1581757
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7439-95-4	Magnesium	5560	ug/L		110	300	300	1	P	HSC	07/21/16 14:24	072116-1	1581757
7439-96-5	Manganese	396	ug/L		1	5	5	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7439-98-7	Molybdenum	85.5	ug/L		0.165	0.5	0.5	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-02-0	Nickel	2.77	ug/L		0.5	2	2	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	HSC	07/21/16 14:24	072116-1	1581757
7440-09-7	Potassium	9400	ug/L		50	150	150	1	P	HSC	07/21/16 14:24	072116-1	1581757
7782-49-2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	PRB	08/05/16 19:51	160805-5	1581828
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	SKJ	08/04/16 18:43	160804-6	1581828
7440-23-5	Sodium	103000	ug/L		100	300	300	1	P	HSC	07/21/16 14:24	072116-1	1581757
7440-24-6	Strontium	171	ug/L		2	10	10	1	MS	PRB	08/05/16 19:51	160805-5	1581828
7440-62-2	Vanadium	4.5	ug/L	U	4.5	10	10	1	MS	PRB	08/05/16 19:51	160805-5	1581828
7440-66-6	Zinc	4.25	ug/L	CB	3.5	10	10	1	MS	SKJ	08/04/16 18:43	160804-6	1581828

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1581757	1581756	SW846 3005A	50	mL	50	mL	07/15/16	SXW1
1581828	1581826	SW846 3005A	50	mL	50	mL	07/15/16	SXW1
1588107	1588106	SW846 3005A	50	mL	50	mL	08/08/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C
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: August 10, 2016

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 401514

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1581828										
QC1203585094	LCS										
Aluminum	2000			2130	ug/L		106	(80%-120%)	SKJ	08/04/16	18:00
Antimony	50.0			51.8	ug/L		104	(80%-120%)	PRB	08/05/16	16:20
Arsenic	50.0			54.1	ug/L		108	(80%-120%)		08/05/16	19:41
Barium	50.0			50.8	ug/L		102	(80%-120%)	SKJ	08/04/16	18:00
Cadmium	50.0			51.2	ug/L		102	(80%-120%)			
Chromium	50.0			53.5	ug/L		107	(80%-120%)			
Cobalt	50.0			54.8	ug/L		110	(80%-120%)			
Lead	50.0			52.1	ug/L		104	(80%-120%)			
Manganese	50.0			55.3	ug/L		111	(80%-120%)			
Molybdenum	50.0			52.5	ug/L		105	(80%-120%)			
Nickel	50.0			55.8	ug/L		112	(80%-120%)			
Selenium	50.0			52.0	ug/L		104	(80%-120%)	PRB	08/05/16	19:41
Silver	50.0			52.4	ug/L		105	(80%-120%)	SKJ	08/04/16	18:00
Strontium	50.0			53.6	ug/L		107	(80%-120%)	PRB	08/05/16	19:41
Vanadium	50.0			52.9	ug/L		106	(80%-120%)			
Zinc	50.0			56.3	ug/L		113	(80%-120%)	SKJ	08/04/16	18:00
QC1203585093	MB										
Aluminum			U	15.0	ug/L					08/04/16	17:56
Antimony			U	1.00	ug/L				PRB	08/05/16	16:18
Arsenic			B	3.28	ug/L					08/05/16	19:38

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QC Summary

Workorder: 401514

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1581828										
Barium			U	0.600	ug/L				SKJ	08/04/16	17:56
Cadmium			U	0.110	ug/L						
Chromium			U	2.00	ug/L						
Cobalt			U	0.100	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			B	0.218	ug/L						
Nickel			U	0.500	ug/L						
Selenium			U	1.50	ug/L				PRB	08/05/16	19:38
Silver			U	0.200	ug/L				SKJ	08/04/16	17:56
Strontium			U	2.00	ug/L				PRB	08/05/16	19:38
Vanadium			U	4.50	ug/L						
Zinc			B	4.89	ug/L				SKJ	08/04/16	17:56
QC1203585095	401514001 MS										
Aluminum	2000		192	2370	ug/L		109	(75%-125%)		08/04/16	18:28
Antimony	50.0	B	1.42	53.4	ug/L		104	(75%-125%)	PRB	08/05/16	16:23
Arsenic	50.0	BC	3.12	55.2	ug/L		104	(75%-125%)		08/05/16	19:45
Barium	50.0		47.3	96.5	ug/L		98.4	(75%-125%)	SKJ	08/04/16	18:28
Cadmium	50.0	U	0.110	50.0	ug/L		100	(75%-125%)			
Chromium	50.0	U	2.00	54.2	ug/L		108	(75%-125%)			
Cobalt	50.0		1.20	53.5	ug/L		105	(75%-125%)			
Lead	50.0	U	0.500	51.3	ug/L		102	(75%-125%)			
Manganese	50.0		399	433	ug/L		N/A	(75%-125%)			

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QC Summary

Workorder: 401514

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1581828										
Molybdenum	50.0	73.2		125	ug/L		104	(75%-125%)	SKJ	08/04/16	18:28
Nickel	50.0	2.15		54.5	ug/L		105	(75%-125%)			
Selenium	50.0	U	1.50	50.7	ug/L		99.3	(75%-125%)	PRB	08/05/16	19:45
Silver	50.0	U	0.200	49.2	ug/L		98.3	(75%-125%)	SKJ	08/04/16	18:28
Strontium	50.0		171	223	ug/L		103	(75%-125%)	PRB	08/05/16	19:45
Vanadium	50.0	U	4.50	55.8	ug/L		108	(75%-125%)			
Zinc	50.0	U	3.50	53.8	ug/L		101	(75%-125%)	SKJ	08/04/16	18:28
QC1203585096	401514001	MSD									
Aluminum	2000	192		2390	ug/L	0.778	110	(0%-20%)		08/04/16	18:32
Antimony	50.0	B	1.42	52.8	ug/L	1.16	103	(0%-20%)	PRB	08/05/16	16:24
Arsenic	50.0	BC	3.12	54.1	ug/L	2.17	102	(0%-20%)		08/05/16	19:47
Barium	50.0		47.3	96.9	ug/L	0.496	99.4	(0%-20%)	SKJ	08/04/16	18:32
Cadmium	50.0	U	0.110	49.7	ug/L	0.493	99.5	(0%-20%)			
Chromium	50.0	U	2.00	54.1	ug/L	0.277	108	(0%-20%)			
Cobalt	50.0		1.20	55.8	ug/L	4.31	109	(0%-20%)			
Lead	50.0	U	0.500	50.9	ug/L	0.722	101	(0%-20%)			
Manganese	50.0		399	457	ug/L	5.37	N/A	(0%-20%)			
Molybdenum	50.0	73.2		126	ug/L	0.692	105	(0%-20%)			
Nickel	50.0	2.15		56.6	ug/L	3.78	109	(0%-20%)			
Selenium	50.0	U	1.50	49.4	ug/L	2.58	96.7	(0%-20%)	PRB	08/05/16	19:47
Silver	50.0	U	0.200	48.2	ug/L	1.93	96.4	(0%-20%)	SKJ	08/04/16	18:32
Strontium	50.0		171	231	ug/L	3.67	119	(0%-20%)	PRB	08/05/16	19:47

GEL LABORATORIES LLC

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QC Summary

Workorder: 401514

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1581828										
Vanadium	50.0	U	4.50	55.5	ug/L	0.492	107	(0%-20%)	PRB	08/05/16	19:47
Zinc	50.0	U	3.50	55.9	ug/L	3.9	105	(0%-20%)	SKJ	08/04/16	18:32
QC1203585097	401514001	SDILT									
Aluminum		192	BD	38.1	ug/L	.836		(0%-10%)		08/04/16	18:39
Antimony		B	1.42	DU	5.00	ug/L	N/A	(0%-10%)	PRB	08/05/16	16:26
Arsenic		BC	3.12	DU	8.50	ug/L	N/A	(0%-10%)		08/05/16	19:49
Barium			47.3	D	9.84	ug/L	4.1	(0%-10%)	SKJ	08/04/16	18:39
Cadmium		U	-0.013	DU	0.550	ug/L	N/A	(0%-10%)			
Chromium		U	-0.063	DU	10.0	ug/L	N/A	(0%-10%)			
Cobalt			1.20	BD	0.248	ug/L	3.77	(0%-10%)			
Lead		U	0.166	DU	2.50	ug/L	N/A	(0%-10%)			
Manganese			399	D	81.8	ug/L	2.47	(0%-10%)			
Molybdenum			73.2	D	14.8	ug/L	1.17	(0%-10%)			
Nickel			2.15	DU	2.50	ug/L	N/A	(0%-10%)			
Selenium		U	1.09	DU	7.50	ug/L	N/A	(0%-10%)	PRB	08/05/16	19:49
Silver		U	0.010	DU	1.00	ug/L	N/A	(0%-10%)	SKJ	08/04/16	18:39
Strontium			171	D	34.9	ug/L	1.81	(0%-10%)	PRB	08/05/16	19:49
Vanadium		U	2.02	DU	22.5	ug/L	N/A	(0%-10%)			
Zinc		U	3.30	DU	17.5	ug/L	N/A	(0%-10%)	SKJ	08/04/16	18:39
Batch	1588107										
QC1203600512	LCS										
Copper	50.0			52.3	ug/L		105	(80%-120%)	SKJ	08/10/16	10:41
QC1203600511	MB										
Copper		U		0.350	ug/L					08/10/16	10:39

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QC Summary

Workorder: 401514

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1588107										
QC1203600513	401514002	MS									
Copper	50.0	2.55		51.9	ug/L		98.6	(75%-125%)	SKJ	08/10/16	10:46
QC1203600514	401514002	MSD									
Copper	50.0	2.55		52.6	ug/L	1.46	100	(0%-20%)		08/10/16	10:48
QC1203600515	401514002	SDILT									
Copper		2.55	BD	0.487	ug/L	4.58		(0%-10%)		08/10/16	10:49
Metals Analysis-ICP											
Batch	1581757										
QC1203584936	LCS										
Calcium	5000			5090	ug/L		102	(80%-120%)	HSC	07/21/16	14:00
Iron	5000			5270	ug/L		105	(80%-120%)			
Magnesium	5000			5180	ug/L		104	(80%-120%)			
Phosphorous	500			501	ug/L		100	(80%-120%)			
Potassium	5000			4960	ug/L		99.1	(80%-120%)			
Sodium	5000			5340	ug/L		107	(80%-120%)			
QC1203584935	MB										
Calcium			U	50.0	ug/L					07/21/16	13:56
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Phosphorous			U	60.0	ug/L						
Potassium			U	50.0	ug/L						
Sodium			U	100	ug/L						
QC1203584937	401514001	MS									
Calcium	5000	20800		26200	ug/L		N/A	(75%-125%)		07/21/16	14:07
Iron	5000	177		5380	ug/L		104	(75%-125%)			
Magnesium	5000	5620		10800	ug/L		103	(75%-125%)			

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QC Summary

Workorder: 401514

Page 6 of 7

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1581757										
Phosphorous	500	U	60.0	528	ug/L		100	(75%-125%)			
Potassium	5000		9800	14900	ug/L		101	(75%-125%)	HSC	07/21/16	14:07
Sodium	5000		99400	111000	ug/L		N/A	(75%-125%)			
QC1203584938	401514001	MSD									
Calcium	5000		20800	26600	ug/L	1.34	N/A	(0%-20%)		07/21/16	14:10
Iron	5000		177	5430	ug/L	0.781	105	(0%-20%)			
Magnesium	5000		5620	10800	ug/L	0.518	105	(0%-20%)			
Phosphorous	500	U	60.0	529	ug/L	0.312	101	(0%-20%)			
Potassium	5000		9800	15100	ug/L	1.25	105	(0%-20%)			
Sodium	5000		99400	111000	ug/L	0.307	N/A	(0%-20%)			
QC1203584939	401514001	SDILT									
Calcium			20800	D	4210	ug/L	1.11	(0%-10%)		07/21/16	14:13
Iron			177	BD	38.4	ug/L	8.57	(0%-10%)			
Magnesium			5620	D	1190	ug/L	5.43	(0%-10%)			
Phosphorous		U	25.5	DU	300	ug/L	N/A	(0%-10%)			
Potassium			9800	D	1870	ug/L	4.86	(0%-10%)			
Sodium			99400	D	20100	ug/L	.872	(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 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.

GEL LABORATORIES LLC

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QC Summary

Workorder: 401514

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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 #: GEL401514
Work Order #: 401514**

Product: Alkalinity

Analytical Method: 2320_ALKALINITY

Analytical Procedure: GL-GC-E-033 REV# 12

Analytical Batch: 1583508

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
401514002	B35VV0
1203589088	Method Blank (MB)
1203589089	Laboratory Control Sample (LCS)
1203589090	401514002(B35VV0) 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.

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: GEL401514 GEL Work Order: 401514

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: Kristen Mizzell

Date: 28 JUL 2016

Title: Analyst I

Sample Data Summary

8/10/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 28, 2016

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-042

Client Sample ID:	B35VV0	Project:	CPRC0F16042
Sample ID:	401514002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	11-JUL-16 11:01		
Receive Date:	14-JUL-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
2320_ALKALINITY: COMMON "As Received"												
Alkalinity, Total as CaCO3		136000	330	1000	ug/L		1	RXB5	07/22/16	2054	1583508	1

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: July 28, 2016

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

Contact: Mr. Scot Fitzgerald

Workorder: 401514

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1583508										
QC1203589090	401514002	DUP									
Alkalinity, Total as CaCO3		136000		136000	ug/L	0.133		(0%-20%)	RXB5	07/22/16	21:00
QC1203589089	LCS										
Alkalinity, Total as CaCO3	50000			53900	ug/L		108	(80%-120%)		07/22/16	20:48
QC1203589088	MB										
Alkalinity, Total as CaCO3			U	330	ug/L					07/22/16	20:43

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 \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
 * Indicates that a Quality Control parameter was not within specifications.
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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