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

July 22, 2016

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

Re: CHPRC SAF F16-057
Work Order: 401274
SDG: GEL401274

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 12, 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: 303110 - 7C
Chain of Custody: F16-057-011 and F16-057-012
Enclosures

Table of Contents

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-057
SDG: GEL401274

July 22, 2016

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on July 12, 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
401274001	B36216
401274002	B36217

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.

July 23, 2016

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL401274
Work Order #: 401274

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.

General Chemistry

Carbon, Total Organic

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.

Solids, Total Dissolved

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

Sample Aliquot
Insufficient amount of 1203585105 (B36216DUP) was provided; therefore, reduced aliquot was used. The detection and reporting limits were adjusted accordingly.

COD

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 1203583176 (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.

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.

Total Hardness

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

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-057-011	PAGE 1 OF 1
COLLECTOR: Barb Briggs CHPRC	COMPANY CONTACT: SUMNER, LC	TELEPHONE NO.: 376-3922	PROJECT COORDINATOR: SUMNER, LC	PRICE CODE: 7C	DATA TURNAROUND
SAMPLING LOCATION: 299-W6-13___ BAILED	PROJECT DESIGNATION: 200 West Pump & Treat - Special Sampling - Water		SAF NO.: F16-057	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.: GWS-553	FIELD LOGBOOK NO.: ~~HNF-N-~~ 50735	ACTUAL SAMPLE DEPTH: (N/A)	COA: 303110	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 6812		BILL OF LADING/AIR BILL NO.: 7767 1251 3548		

401274

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS						
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.	PRESERVATION	H2SO4 to pH <2/Cool <=6C	HCl or H2SO4 to pH <2/Cool	HNO3 to pH <2	Cool <=6C	Cool <=6C
		HOLDING TIME	28 Days	28 Days	6 Months	14 Days	7 Days
		TYPE OF CONTAINER	G/P	aG	G/P	G/P	G/P
		NO. OF CONTAINER(S)	1 bb 7-11-16	1 bb 7-11-16	1	1	1
		VOLUME	~~60mL~~ 125	~~125mL~~ 250	250mL	125mL	125mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	410.4_COD: COMMON;	9060_TOC: COMMON;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	2320_ALKALINITY: COMMON;	160.1_TDS: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B36216	WATER	JUL 11 2016	0935	✓	✓	✓	✓	✓

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Barb Briggs CHPRC [signature]	DATE/TIME: JUL 11 2016 1030	RECEIVED BY/STORED IN: Lesly Wall CHPRC [signature]	DATE/TIME: JUL 11 2016 1030
RELINQUISHED BY/REMOVED FROM: Lesly Wall CHPRC [signature]	DATE/TIME: JUL 11 2016 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME
RELINQUISHED BY/REMOVED FROM: Fx	DATE/TIME	RECEIVED BY/STORED IN: M. Kruslow [signature]	DATE/TIME: 7-12-16 0915
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

SPECIAL INSTRUCTIONS

NA

(1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON;

FILTER

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 6/27/2016 FSR ID = FSR33552 TRVL NUM = TRVL-16-184 A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-057-012	PAGE 1 OF 1
COLLECTOR Barb Briggs CHPRC	**COMPANY CONTACT** SUMNER, LC	**TELEPHONE NO.** 376-3922	**PROJECT COORDINATOR** SUMNER, LC	**PRICE CODE** 7C; **AIR QUALITY** ☐; **DATA TURNAROUND** 15 Days / 15 Days
SAMPLING LOCATION 299-W6-13___ BAILED	**PROJECT DESIGNATION** 200 West Pump & Treat - Special Sampling - Water		**SAF NO.** F16-057	
ICE CHEST NO. 665-553	**FIELD LOGBOOK NO.** HNF-N-507 35	**ACTUAL SAMPLE DEPTH** (N/A)	**COA** 303110	**METHOD OF SHIPMENT** FEDERAL EXPRESS **ORIGINAL**
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 6812		**BILL OF LADING/AIR BILL NO.** 776712513548	

401274

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH <2
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.	HOLDING TIME	6 Months
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	250mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B36217	WATER	JUL 11 2016	0935	✓

July 23, 2016

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Barb Briggs CHPRC — DATE/TIME JUL 11 2016 1030	RECEIVED BY/STORED IN Lesly Wall /CHPRC — DATE/TIME JUL 11 2016 1030	NA (1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON;
RELINQUISHED BY/REMOVED FROM Lesly Wall /CHPRC — DATE/TIME JUL 11 2016 1400	RECEIVED BY/STORED IN FEDEX — DATE/TIME	
RELINQUISHED BY/REMOVED FROM IX — DATE/TIME	RECEIVED BY/STORED IN — DATE/TIME 7-12-16 0915	
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	

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 6/27/2016 **FSR ID = FSR33552** **TRVL NUM = TRVL-16-184** A-6003-618 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 401274
Received By: MK	Date Received: 7-12-16

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): cpm 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	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 2° 3°
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130462962 Secondary Temperature Device Serial # (If Applicable):
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 7767 1251 3548 2°C 3798 3°C 3802 2°C 3526 2°C 3662 15°C No ice

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials KS Date 7/12/16 Page 1 of 1

GL-CHL-SR-001 Rev 3

Data Review Qualifier Definitions

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

Report Date: 22−JUL−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 22 July 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 #: GEL401274
Work Order #: 401274

Product: **Determination of Metals by ICP**
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1580981

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batch: 1580980

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
401274002	B36217
1203582968	Method Blank (MB)**ICP**
1203582969	Laboratory Control Sample (LCS)
1203582972	401273014(NonSDGL) Serial Dilution (SD)
1203582970	401273014(NonSDGS) Matrix Spike (MS)
1203582971	401273014(NonSDGSD) Matrix Spike Duplicate (MSD)

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: GEL401274 GEL Work Order: 401274

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: 22 JUL 2016 **Title: Group Leader**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL401274 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

SAMPLE ID: 401274001 **BASIS:** As Received **DATE COLLECTED** 11−JUL−16

CLIENT ID: B36216 **LEVEL:** Low **DATE RECEIVED** 12−JUL−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−70−2	Calcium	64900	ug/L		50	200	200	1	P	HSC	07/14/16 10:18	071416−1	1580981
7440−50−8	Copper	12.2	ug/L		3	10	10	1	P	HSC	07/14/16 10:18	071416−1	1580981
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	07/14/16 10:18	071416−1	1580981
7439−95−4	Magnesium	21800	ug/L		110	300	300	1	P	HSC	07/14/16 10:18	071416−1	1580981
7439−96−5	Manganese	17.4	ug/L		2	10	10	1	P	HSC	07/14/16 10:18	071416−1	1580981
7631−86−9	Silica	41000	ug/L		53	213	213	1	P	HSC	07/14/16 10:18	071416−1	1580981

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1580981	1580980	SW846 3005A	50	mL	50	mL	07/12/16	JP1

***Analytical Methods:**

P **SW846 3005A/6010C**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL401274 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

SAMPLE ID: 401274002 **BASIS:** As Received **DATE COLLECTED** 11−JUL−16

CLIENT ID: B36217 **LEVEL:** Low **DATE RECEIVED** 12−JUL−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−70−2	Calcium	69900	ug/L		50	200	200	1	P	HSC	07/14/16 10:21	071416−1	1580981
7440−50−8	Copper	328	ug/L		3	10	10	1	P	HSC	07/14/16 10:21	071416−1	1580981
7439−89−6	Iron	12100	ug/L		30	100	100	1	P	HSC	07/14/16 10:21	071416−1	1580981
7439−95−4	Magnesium	22600	ug/L		110	300	300	1	P	HSC	07/14/16 10:21	071416−1	1580981
7439−96−5	Manganese	8500	ug/L		2	10	10	1	P	HSC	07/14/16 10:21	071416−1	1580981
7631−86−9	Silica	40700	ug/L		53	213	213	1	P	HSC	07/14/16 10:21	071416−1	1580981

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1580981	1580980	SW846 3005A	50	mL	50	mL	07/12/16	JP1

***Analytical Methods:**

P **SW846 3005A/6010C**

Quality Control Summary

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

QC Summary

Report Date: July 22, 2016

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

Contact: Mr. Scot Fitzgerald

Workorder: 401274

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1580981											
QC1203582969 LCS											
Calcium	5000				5300	ug/L		106	(80%-120%)	HSC	07/14/16 09:46
Copper	500				510	ug/L		102	(80%-120%)		
Iron	5000				5320	ug/L		106	(80%-120%)		
Magnesium	5000				5260	ug/L		105	(80%-120%)		
Manganese	500				503	ug/L		101	(80%-120%)		
Silica	10700				10400	ug/L		97	(80%-120%)		
QC1203582968 MB											
Calcium				U	50.0	ug/L					07/14/16 09:41
Copper				U	3.00	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Manganese				U	2.00	ug/L					
Silica				U	53.0	ug/L					
QC1203582970 401273014 MS											
Calcium	5000		51900		57100	ug/L		N/A	(75%-125%)		07/14/16 09:52
Copper	500	U	3.00		521	ug/L		104	(75%-125%)		
Iron	5000		184		5420	ug/L		105	(75%-125%)		
Magnesium	5000		17200		22500	ug/L		105	(75%-125%)		
Manganese	500	B	2.15		494	ug/L		98.5	(75%-125%)		
Silica	10700		45200		54900	ug/L		N/A	(75%-125%)		
QC1203582971 401273014 MSD											

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

QC Summary

Workorder: 401274

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1580981											
Calcium	5000		51900		55700	ug/L	2.49	N/A	(0%-20%)		07/14/16 09:55
Copper	500	U	3.00		517	ug/L	0.634	103	(0%-20%)	HSC	
Iron	5000		184		5340	ug/L	1.59	103	(0%-20%)		
Magnesium	5000		17200		21900	ug/L	2.57	93.2	(0%-20%)		
Manganese	500	B	2.15		489	ug/L	1.17	97.3	(0%-20%)		
Silica	10700		45200		54100	ug/L	1.48	N/A	(0%-20%)		
QC1203582972 401273014 SDILT											
Calcium			51900	D	10600	ug/L	2.52		(0%-10%)		07/14/16 09:58
Copper		U	1.47	DU	15.0	ug/L	N/A		(0%-10%)		
Iron			184	BD	35.9	ug/L	2.4		(0%-10%)		
Magnesium			17200	D	3540	ug/L	2.63		(0%-10%)		
Manganese		B	2.15	DU	10.0	ug/L	N/A		(0%-10%)		
Silica			45200	D	9040	ug/L	.0531		(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.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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QC Summary

Workorder: **401274**

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

Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

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

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL401274
Work Order #: 401274

Product: **Carbon, Total Organic**
Analytical Method: SW846 9060A
Analytical Procedure: GL-GC-E-093 REV# 14
Analytical Batch: 1581217

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
1203583576	Method Blank (MB)
1203583577	Laboratory Control Sample (LCS)
1203583578	401274001(B36216) Sample Duplicate (DUP)
1203583580	401273019(NonSDG) Sample Duplicate (DUP)
1203583581	401274001(B36216) Post Spike (PS)
1203583583	401273019(NonSDG) Post Spike (PS)

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.

Product: **Solids, Total Dissolved**
Analytical Method: 160.1_TDS
Analytical Procedure: GL-GC-E-001 REV# 15
Analytical Batch: 1581819

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
1203585076	Method Blank (MB)
1203585077	Laboratory Control Sample (LCS)
1203585105	401274001(B36216) 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.

Technical Information

Sample Aliquot
Insufficient amount of 1203585105 (B36216DUP) was provided; therefore, reduced aliquot was used. The detection and reporting limits were adjusted accordingly.

Product: **COD**
Analytical Method: EPA 410.4
Analytical Procedure: GL-GC-E-061 REV# 19
Analytical Batch: 1581050

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
1203583176	Method Blank (MB)
1203583177	Laboratory Control Sample (LCS)
1203583179	401274001(B36216) Sample Duplicate (DUP)
1203583181	401274001(B36216) Matrix Spike (MS)

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 1203583176 (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.

Product: **Total Hardness**
Analytical Method: 130.2_HARDNESS
Analytical Procedure: GL-GC-E-100 REV# 7
Analytical Batch: 1582089

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
401274002	B36217
1203585691	Method Blank (MB)
1203585692	Laboratory Control Sample (LCS)
1203585694	401274001(B36216) Sample Duplicate (DUP)
1203585696	401274001(B36216) Matrix Spike (MS)

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.

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 12
Analytical Batch: 1581130

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

GEL Sample ID#	Client Sample Identification
401274001	B36216
1203583373	Method Blank (MB)
1203583374	Laboratory Control Sample (LCS)
1203583375	400517001(NonSDG) Sample Duplicate (DUP)

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

Data Summary:

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

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL401274 GEL Work Order: 401274

The Qualifiers in this report are defined as follows:

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

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

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

Review/Validation

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

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

Signature:  **Name: Aubrey Kingsbury**

Date: 22 JUL 2016 **Title: Analyst I**

Sample Data Summary

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Certificate of Analysis

Report Date: July 22, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-057

Client Sample ID: B36216
Sample ID: 401274001
Matrix: WATER
Collect Date: 11-JUL-16 09:35
Receive Date: 12-JUL-16
Collector: Client

Project: CPRC0F16057
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOC: COMMON "As Received"												
Total Organic Carbon #1		2310	330	1000	ug/L		1	TSM	07/15/16	1646	1581217	1
Total Organic Carbon #2		2370	330	1000	ug/L		1					
Total Organic Carbon #3		2410	330	1000	ug/L		1					
Total Organic Carbon #4		2430	330	1000	ug/L		1					
Total Organic Carbon Average		2380	330	1000	ug/L		1					
Solids Analysis												
160.1_TDS:COMMON "As Received"												
Total Dissolved Solids		363000	3400	14300	ug/L			SXW3	07/15/16	1333	1581819	2
Spectrometric Analysis												
410.4_COD: COMMON "As Received"												
COD	C	21600	8950	20000	ug/L		1	VH1	07/14/16	1430	1581050	3
Titration and Ion Analysis												
130.2_HARDNESS: COMMON "As Received"												
Hardness as CaCO3		240	1.00	2.00	mg/L			VH1	07/21/16	1446	1582089	4
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3		115000	725	1000	ug/L			RXB5	07/12/16	1917	1581130	5

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	160.1_TDS	
3	EPA 410.4	
4	130.2_HARDNESS	
5	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: July 22, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-057

Client Sample ID: B36217
Sample ID: 401274002
Matrix: WATER
Collect Date: 11-JUL-16 09:35
Receive Date: 12-JUL-16
Collector: Client

Project: CPRC0F16057
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis												
130.2_HARDNESS: COMMON "As Received"												
Hardness as CaCO3		314	1.00	2.00	mg/L			VH1	07/21/16	1446	1582089	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	130.2_HARDNESS	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
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 22, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **401274**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis												
Batch 1581217												
QC1203583578 401274001 DUP												
Total Organic Carbon Average			2380		2500	ug/L	4.87 ^		(+/-1000)	TSM	07/15/16	17:27
QC1203583580 401273019 DUP												
Total Organic Carbon Average		B	501	B	509	ug/L	1.58 ^		(+/-1000)		07/15/16	14:04
QC1203583577 LCS												
Total Organic Carbon Average	10000				9190	ug/L		91.9	(80%-120%)		07/15/16	02:59
QC1203583576 MB												
Total Organic Carbon Average				U	330	ug/L					07/15/16	02:49
QC1203583581 401274001 PS												
Total Organic Carbon Average	10.0		2.38		12.0	mg/L		95.9	(75%-125%)		07/15/16	18:11
QC1203583583 401273019 PS												
Total Organic Carbon Average	10.0	B	0.501		9.46	mg/L		89.6	(75%-125%)		07/15/16	14:44
Solids Analysis												
Batch 1581819												
QC1203585105 401274001 DUP												
Total Dissolved Solids			363000		417000	ug/L	13.8		(0%-20%)	SXW3	07/15/16	13:33
QC1203585077 LCS												
Total Dissolved Solids	300000				290000	ug/L		96.7	(80%-120%)		07/15/16	13:33
QC1203585076 MB												
Total Dissolved Solids				U	3400	ug/L					07/15/16	13:33
Spectrometric Analysis												
Batch 1581050												
QC1203583179 401274001 DUP												
COD		C	21600		24000	ug/L	10.2 ^		(+/-20000)	VH1	07/14/16	14:30
QC1203583177 LCS												
COD	500000				489000	ug/L		97.8	(80%-120%)		07/14/16	14:29
QC1203583176 MB												
COD				B	14700	ug/L					07/14/16	14:29
QC1203583181 401274001 MS												
COD	500000	C	21600		468000	ug/L		89.3	(75%-125%)		07/14/16	14:30

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QC Summary

Workorder: 401274

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Spectrometric Analysis										
Batch 1581050										
Titration and Ion Analysis										
Batch 1581130										
QC1203583375 400517001 DUP										
Alkalinity, Total as CaCO3		96000		96500	ug/L	0.525		(0%-20%)	RXB5	07/12/16 18:40
QC1203583374 LCS										
Alkalinity, Total as CaCO3	50000			53000	ug/L		106	(80%-120%)		07/12/16 18:34
QC1203583373 MB										
Alkalinity, Total as CaCO3			U	725	ug/L					07/12/16 18:30
Batch 1582089										
QC1203585694 401274001 DUP										
Hardness as CaCO3		240		240	mg/L	0		(0%-10%)	VH1	07/21/16 14:46
QC1203585692 LCS										
Hardness as CaCO3	500			471	mg/L		94.3	(90%-110%)		07/21/16 14:46
QC1203585691 MB										
Hardness as CaCO3			U	1.00	mg/L					07/21/16 14:46
QC1203585696 401274001 MS										
Hardness as CaCO3	200	240		433	mg/L		96.1	(90%-110%)		07/21/16 14:46

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: **401274**

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.