

June 7, 2016



a member of **The GEL Group** INC



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June 06, 2016

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

Re: CHPRC SAF F16-043
Work Order: 398190
SDG: GEL398190

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 27, 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 - 8C
Chain of Custody: F16-043-007 and F16-043-012
Enclosures

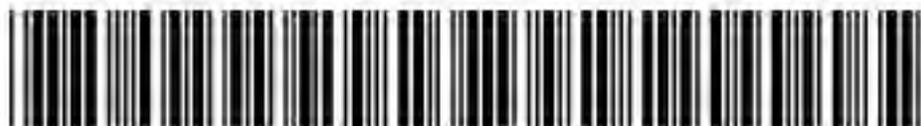


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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-043
SDG: GEL398190

June 06, 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 May 27, 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
398190001	B35VC1
398190002	B35VC7

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.

June 7, 2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL398190
Work Order #: 398190

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.

Technical Information

Sample Dilutions

Sample was diluted in order to bring raw values of titanium within the linear range of the instrument, and for the analytes interfered with, in order to ensure that the inter-element correction factors were valid for antimony. 398190001 (B35VC1).

Analyte	398190
	001
Antimony	5X

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 less than the MDL or 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 copper. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203556373 (MB).

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits.

This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203556376 (B35VC1MS)	Copper	73.9* (75%-125%)
	Nickel	31.6* (75%-125%)

Technical Information

Sample Dilutions

Sample 398190001 (B35VC1) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	398190	
	001	002
Several	20X 2X	2X

General Chemistry

pH

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

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203557641 (B35VB5DUP)	pH	Received 25-MAY-16, out of holding 24-MAY-16
398190001 (B35VC1)	pH	Received 27-MAY-16, out of holding 24-MAY-16
398190002 (B35VC7)	pH	Received 27-MAY-16, out of holding 25-MAY-16

Radiochemistry

Dry Weight

June 7, 2016

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

COLLECTOR Frank Hall CHPRC

SAMPLING LOCATION C9400, I-003

ICE CHEST NO. GWS-497

SHIPPED TO GEL Laboratories, LLC

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COMPANY CONTACT TODAY, D

TELEPHONE NO. 376-6427

PROJECT COORDINATOR TODAY, D

PRICE CODE 8C

DATA TURNAROUND 15 Days / 15 Days

PROJECT DESIGNATION 100-NR-2 Drilling - Soil

FIELD LOGBOOK NO. HNF-N-645 4-10

ACTUAL SAMPLE DEPTH 57.17 - 59.67

SAF NO. F16-043

COA 304070

METHOD OF SHIPMENT FEDERAL EXPRESS

BILL OF LADING/AIR BILL NO. 976374721674

MATRIX*	SAFETY HAZARDS/REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	DATE/TIME
A=Air DL=Drum 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	None	6 Months	G/P	1	250mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	5-25-16	1125	✓
		None	ASAP	G/P	1	60mL	9045_pH (Non-Aqueous) COMMON;			✓
		Moisture Resistant Cont.			1	200g	SEE ITEM (2) IN SPECIAL INSTRUCTIONS			✓

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO. B35VC7

MATRIX* SOIL

SPECIAL INSTRUCTIONS

SAMPLE B35VC5 PORTION D; SAMPLE B35VC6 PORTION C; SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS; SAMPLE A AND B PORTION SAMPLES B35VC7, B35VC8, B35VC9, B35VD0

(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};

(2) Moisture Content - D2216 {Percent moisture (wet sample)};

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Frank Hall CHPRC	MAY 25 2016 1228	Frank Hall	Frank Hall CHPRC	MAY 25 2016 1230
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	FEDEX	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930
Frank Hall CHPRC	MAY 25 2016 1400	Frank Hall	Frank Hall CHPRC	MAY 27 2016 0930

LABORATORY SECTION RECEIVED BY

FINAL SAMPLE DISPOSITION DISPOSAL METHOD

PRINTED ON 5/23/2016

FSR ID = FSR32402

TRVL NUM = TRVL-16-151

A-6003-618 (REV 2)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-043-007	PAGE 1 OF 1
COLLECTOR	Frank Hall CHPRC	COMPANY CONTACT	TODAK, D	PROJECT COORDINATOR	TODAK, D
SAMPLING LOCATION	C9400, I-002	PROJECT DESIGNATION	100-NR-2 Drilling - Soil	SAF NO.	F16-043
ICE CHEST NO.	6WS-497	FIELD LOGBOOK NO.	45' to 47'	COA	304070
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	6665	BILL OF LADING/AIR BILL NO. 776374721674	
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	TELEPHONE NO.	376-6427	PRICE CODE	8C
POSSIBLE SAMPLE HAZARDS/ REMARKS	*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	ACTUAL SAMPLE DEPTH	45' to 47'	AIR QUALITY	<input type="checkbox"/>
SPECIAL HANDLING AND/OR STORAGE				METHOD OF SHIPMENT	FEDERAL EXPRESS
					ORIGINAL

PRESERVATION	None	None	None
HOLDING TIME	6 Months	ASAP	None
TYPE OF CONTAINER	G/P	G/P	Moisture Resistant Cont.
NO. OF CONTAINER(S)	1	1	1
VOLUME	250mL	60mL	200g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9045_pH (Non-Aqueous); COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS
SAMPLE NO.		MATRIX*	
B35VC1	SOIL		
SAMPLE DATE	MAY 24 2016	SAMPLE TIME	1430

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	Frank Hall CHPRC	SSU #1	MAY 24 2016
RELINQUISHED BY/REMOVED FROM	SSU #1	SSU #1	MAY 25 2016 1000
RELINQUISHED BY/REMOVED FROM	Frank Hall CHPRC	SSU #1	MAY 25 2016 1400
RELINQUISHED BY/REMOVED FROM	Frank Hall CHPRC	FEDEX	MAY 27-16 0930
RELINQUISHED BY/REMOVED FROM	Frank Hall CHPRC	M. Kraslow	
RELINQUISHED BY/REMOVED FROM			
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

SPECIAL INSTRUCTIONS

SAMPLE B35VB9 PORTION D; SAMPLE B35VC0 PORTION C; SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS; SAMPLE A AND B PORTION SAMPLES B35VC1, B35VC2, B35VC3, B35VC4
 (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};
 (2) Moisture Content - D2216 {Percent moisture (wet sample)};



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order:
Received By: <u>MLC</u>		Date Received: <u>5-27-16</u>
Suspected Hazard Information	Yes	No
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

*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): 0.2

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?	<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>2° 3°</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>130461962</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.				Circle Applicable: FedEx Air <u>7763</u> FedEx Ground <u>8384</u> UPS <u>4157</u> Field Services <u>20</u> Courier <u>7472</u> Other <u>1516</u> <u>7472</u> <u>1674</u> <u>30</u> <u>8087</u> <u>4849</u> <u>20</u>

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 >= 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 06 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 #: GEL398190
Work Order #: 398190

Product: Determination of Metals by ICP
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1570308

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1570314

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 26
Preparation Batches: 1570307 and 1570313

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398190001	B35VC1
398190002	B35VC7
1203556358	Method Blank (MB) ICP
1203556359	Laboratory Control Sample (LCS)
1203556362	398190001(B35VC1L) Serial Dilution (SD)
1203556360	398190001(B35VC1D) Sample Duplicate (DUP)
1203556361	398190001(B35VC1S) Matrix Spike (MS)
1203556373	Method Blank (MB) ICP-MS
1203556374	Laboratory Control Sample (LCS)
1203556377	398190001(B35VC1L) Serial Dilution (SD)
1203556375	398190001(B35VC1D) Sample Duplicate (DUP)
1203556376	398190001(B35VC1S) Matrix Spike (MS)
1203559687	398190001(B35VC1PS) Post Spike (PS)

The samples in this SDG were analyzed on a "dry weight" 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 less than the MDL or 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 copper. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203556373 (MB)-ICP-MS.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203556376 (B35VC1MS)	Copper	73.9* (75%-125%)
	Nickel	31.6* (75%-125%)

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample was diluted in order to bring raw values of titanium within the linear range of the instrument, and for the analytes interfered with, in order to ensure that the inter-element correction factors were valid for antimony. 398190001 (B35VC1)-ICP. Sample 398190001 (B35VC1)-ICP-MS was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times. ICP-MS.

Analyte	398190	
	001	002
Several	5X 20X 2X 1X	2X 1X

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: GEL398190 GEL Work Order: 398190

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 07 JUN 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398190

CONTRACT: CPRC0F16043

METHOD TYPE: SW846

SAMPLE ID:398190001

BASIS: Dry Weight

DATE COLLECTED 24-MAY-16

CLIENT ID: B35VC1

LEVEL: Low

DATE RECEIVED 27-MAY-16

MATRIX: SOIL

%SOLIDS: 96.3

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	8490000	ug/kg	D	3110	10400	50	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7440-36-0	Antimony	1680	ug/kg	UD	1680	5100	5100	5	P	JWJ	06/01/16 16:01	060116A-1	1570308
7440-38-2	Arsenic	1730	ug/kg	D	207	1040	10	2	MS	BAJ	06/02/16 14:42	160602-3	1570314
7440-39-3	Barium	65100	ug/kg	D	104	414	20	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7440-43-9	Cadmium	35.6	ug/kg	BD	20.7	207	5	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7440-70-2	Calcium	3130000	ug/kg		8160	25500	25500	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7440-47-3	Chromium	20800	ug/kg	D	207	622	10	2	MS	BAJ	06/02/16 14:42	160602-3	1570314
7440-48-4	Cobalt	5780	ug/kg	D	62.2	207	20	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7440-50-8	Copper	15200	ug/kg	DN	68.4	207	8	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7439-89-6	Iron	15900000	ug/kg		8160	25500	25500	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7439-92-1	Lead	2460	ug/kg	D	104	414	15	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7439-95-4	Magnesium	3910000	ug/kg		8670	30600	30600	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7439-96-5	Manganese	266000	ug/kg	D	2070	10400	5	20	MS	BAJ	06/02/16 18:41	160602-5	1570314
7439-98-7	Molybdenum	1960	ug/kg	D	62.2	207	20	2	MS	BAJ	06/02/16 19:39	160602-6	1570314
7440-02-0	Nickel	15500	ug/kg	DN	104	414	40	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7723-14-0	Phosphorous	576000	ug/kg		5100	15300	15300	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7440-09-7	Potassium	764000	ug/kg		6530	25500	25500	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7782-49-2	Selenium	1250	ug/kg	D	342	1040	50	2	MS	BAJ	06/02/16 14:42	160602-3	1570314
7440-22-4	Silver	102	ug/kg	U	102	510	510	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7440-23-5	Sodium	234000	ug/kg		7140	25500	25500	1	P	JWJ	06/01/16 15:37	060116A-1	1570308
7440-24-6	Strontium	33100	ug/kg	D	414	2070	10	2	MS	BAJ	06/01/16 19:54	160601-2	1570314
7440-62-2	Vanadium	41500	ug/kg	D	311	1040	1040	2	MS	BAJ	06/02/16 14:42	160602-3	1570314
7440-66-6	Zinc	29700	ug/kg	D	414	2070	25	2	MS	BAJ	06/01/16 19:54	160601-2	1570314

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570308	1570307	SW846 3050B	0.509	g	50	mL	05/31/16	JP1
1570314	1570313	SW846 3050B	0.501	g	50	mL	05/31/16	JP1

***Analytical Methods:**

P SW846 3050B/6010C
MS SW846 3050B/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398190

CONTRACT: CPRC0F16043

METHOD TYPE: SW846

SAMPLE ID:398190002

BASIS: Dry Weight

DATE COLLECTED 25-MAY-16

CLIENT ID: B35VC7

LEVEL: Low

DATE RECEIVED 27-MAY-16

MATRIX: SOIL

%SOLIDS: 97.2

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	4900000	ug/kg	D	2900	9650	50	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7440-36-0	Antimony	331	ug/kg	U	331	1000	1000	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7440-38-2	Arsenic	1030	ug/kg	D	193	965	10	2	MS	BAJ	06/02/16 14:53	160602-3	1570314
7440-39-3	Barium	45800	ug/kg	D	96.5	386	20	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7440-43-9	Cadmium	23.2	ug/kg	BD	19.3	193	5	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7440-70-2	Calcium	1460000	ug/kg		8020	25100	25100	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7440-47-3	Chromium	8520	ug/kg	D	193	579	10	2	MS	BAJ	06/02/16 14:53	160602-3	1570314
7440-48-4	Cobalt	3190	ug/kg	D	57.9	193	20	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7440-50-8	Copper	7530	ug/kg	DN	63.7	193	8	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7439-89-6	Iron	8430000	ug/kg		8020	25100	25100	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7439-92-1	Lead	3040	ug/kg	D	96.5	386	15	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7439-95-4	Magnesium	2270000	ug/kg		8530	30100	30100	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7439-96-5	Manganese	165000	ug/kg	D	193	965	5	2	MS	BAJ	06/02/16 18:40	160602-5	1570314
7439-98-7	Molybdenum	402	ug/kg	D	57.9	193	20	2	MS	BAJ	06/02/16 19:46	160602-6	1570314
7440-02-0	Nickel	7950	ug/kg	DN	96.5	386	40	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7723-14-0	Phosphorous	295000	ug/kg		5020	15000	15000	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7440-09-7	Potassium	753000	ug/kg		6420	25100	25100	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7782-49-2	Selenium	846	ug/kg	BD	319	965	50	2	MS	BAJ	06/02/16 14:53	160602-3	1570314
7440-22-4	Silver	100	ug/kg	U	100	502	502	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7440-23-5	Sodium	133000	ug/kg		7020	25100	25100	1	P	JWJ	06/01/16 15:48	060116A-1	1570308
7440-24-6	Strontium	22800	ug/kg	D	386	1930	10	2	MS	BAJ	06/01/16 20:07	160601-2	1570314
7440-62-2	Vanadium	16100	ug/kg	D	290	965	965	2	MS	BAJ	06/02/16 14:53	160602-3	1570314
7440-66-6	Zinc	19000	ug/kg	D	386	1930	25	2	MS	BAJ	06/01/16 20:07	160601-2	1570314

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1570308	1570307	SW846 3050B	0.513	g	50	mL	05/31/16	JP1
1570314	1570313	SW846 3050B	0.533	g	50	mL	05/31/16	JP1

***Analytical Methods:**

P SW846 3050B/6010C
MS SW846 3050B/6020A

Quality Control Summary

June 7, 2016

GEL LABORATORIES LLC

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QC Summary

Report Date: June 7, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570314										
QC1203556375 398190001 DUP											
Aluminum	D	8490000	D	9070000	ug/kg	6.67		(0%-20%)	BAJ	06/01/16	19:57
Arsenic	D	1730	D	1740	ug/kg	0.972	^	(+/-1030)		06/02/16	14:44
Barium	D	65100	D	70700	ug/kg	8.25		(0%-20%)		06/01/16	19:57
Cadmium	BD	35.6	BD	50.2	ug/kg	33.8	^	(+/-206)			
Chromium	D	20800	D	25200	ug/kg	19.1		(0%-20%)		06/02/16	14:44
Cobalt	D	5780	D	6240	ug/kg	7.63		(0%-20%)		06/01/16	19:57
Copper	DN	15200	D	15500	ug/kg	1.97		(0%-20%)			
Lead	D	2460	D	2460	ug/kg	0.0449		(0%-20%)			
Manganese	D	266000	D	268000	ug/kg	1.09		(0%-20%)		06/02/16	18:43
Molybdenum	D	1960	D	2120	ug/kg	7.92		(0%-20%)		06/02/16	19:40
Nickel	DN	15500	D	18900	ug/kg	19.5		(0%-20%)		06/01/16	19:57
Selenium	D	1250	BD	984	ug/kg	24.1	^	(+/-1030)		06/02/16	14:44
Strontium	D	33100	D	33400	ug/kg	0.816		(0%-20%)		06/01/16	19:57
Vanadium	D	41500	D	38800	ug/kg	6.78		(0%-20%)		06/02/16	14:44
Zinc	D	29700	D	26500	ug/kg	11.6		(0%-20%)		06/01/16	19:57
QC1203556374 LCS											
Aluminum		198000	D	209000	ug/kg			106 (80%-120%)		06/01/16	19:51
Arsenic		4940	D	4250	ug/kg			86.1 (80%-120%)		06/02/16	14:40
Barium		4940	D	5090	ug/kg			103 (80%-120%)		06/01/16	19:51
Cadmium		4940	D	4400	ug/kg			89.1 (80%-120%)			

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QC Summary

Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570314										
Chromium	4940		D	5210	ug/kg		105	(80%-120%)		06/02/16	14:40
Cobalt	4940		D	5320	ug/kg		108	(80%-120%)	BAJ	06/01/16	19:51
Copper	4940		D	5020	ug/kg		102	(80%-120%)			
Lead	4940		D	4880	ug/kg		98.9	(80%-120%)			
Manganese	4940		D	4910	ug/kg		99.3	(80%-120%)		06/02/16	18:39
Molybdenum	4940		D	5060	ug/kg		102	(80%-120%)		06/02/16	19:37
Nickel	4940		D	4990	ug/kg		101	(80%-120%)		06/01/16	19:51
Selenium	4940		D	4160	ug/kg		84.3	(80%-120%)		06/02/16	14:40
Strontium	4940		D	4840	ug/kg		98.1	(80%-120%)		06/01/16	19:51
Vanadium	4940		D	4840	ug/kg		97.9	(80%-120%)		06/02/16	14:40
Zinc	4940		D	4320	ug/kg		87.4	(80%-120%)		06/01/16	19:51
QC1203556373 MB											
Aluminum			DU	2920	ug/kg					06/01/16	19:49
Arsenic			DU	195	ug/kg					06/02/16	14:37
Barium			DU	97.3	ug/kg					06/01/16	19:49
Cadmium			DU	19.5	ug/kg						
Chromium			DU	195	ug/kg					06/02/16	14:37
Cobalt			DU	58.4	ug/kg					06/01/16	19:49
Copper			BD	98.8	ug/kg						
Lead			DU	97.3	ug/kg						
Manganese			DU	195	ug/kg					06/02/16	18:37
Molybdenum			DU	58.4	ug/kg					06/02/16	19:36
Nickel			DU	97.3	ug/kg					06/01/16	19:49

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QC Summary

Workorder: 398190

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570314										
Selenium			DU	321	ug/kg				BAJ	06/02/16	14:37
Strontium			DU	389	ug/kg					06/01/16	19:49
Vanadium			DU	292	ug/kg					06/02/16	14:37
Zinc			DU	389	ug/kg					06/01/16	19:49
QC1203556376 398190001 MS											
Aluminum	195000	D	8490000	D	8240000	ug/kg	N/A	(75%-125%)		06/01/16	19:59
Arsenic	4880	D	1730	D	6140	ug/kg	90.5	(75%-125%)		06/02/16	14:46
Barium	4880	D	65100	D	70100	ug/kg	N/A	(75%-125%)		06/01/16	19:59
Cadmium	4880	BD	35.6	D	4180	ug/kg	84.9	(75%-125%)			
Chromium	4880	D	20800	D	20900	ug/kg	N/A	(75%-125%)		06/02/16	14:46
Cobalt	4880	D	5780	D	10400	ug/kg	95.5	(75%-125%)		06/01/16	19:59
Copper	4880	DN	15200	DN	18900	ug/kg	73.9*	(75%-125%)			
Lead	4880	D	2460	D	7240	ug/kg	98.1	(75%-125%)			
Manganese	4880	D	266000	D	255000	ug/kg	N/A	(75%-125%)		06/02/16	18:44
Molybdenum	4880	D	1960	D	6010	ug/kg	83	(75%-125%)		06/02/16	19:42
Nickel	4880	DN	15500	DN	17100	ug/kg	31.6*	(75%-125%)		06/01/16	19:59
Selenium	4880	D	1250	D	4920	ug/kg	75.2	(75%-125%)		06/02/16	14:46
Strontium	4880	D	33100	D	39000	ug/kg	N/A	(75%-125%)		06/01/16	19:59
Vanadium	4880	D	41500	D	46500	ug/kg	N/A	(75%-125%)		06/02/16	14:46
Zinc	4880	D	29700	D	32700	ug/kg	N/A	(75%-125%)		06/01/16	19:59
QC1203559687 398190001 PS											
Copper	25.0	DN	73.6	D	98.7	ug/L	101	(80%-120%)		06/01/16	20:02
Nickel	25.0	DN	75.0	D	98.3	ug/L	93.2	(80%-120%)			

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QC Summary

Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1570314										
QC1203556377	398190001	SDILT									
Aluminum	D	41000	D	8810	ug/L	7.58		(0%-10%)	BAJ	06/01/16	20:05
Arsenic	D	8.33	D	1.74	ug/L	4.57		(0%-10%)		06/02/16	14:50
Barium	D	314	D	61.6	ug/L	2.06		(0%-10%)		06/01/16	20:05
Cadmium	BD	0.172	DU	104	ug/L	N/A		(0%-10%)			
Chromium	D	101	D	20.8	ug/L	3.71		(0%-10%)		06/02/16	14:50
Cobalt	D	27.9	D	6.05	ug/L	8.4		(0%-10%)		06/01/16	20:05
Copper	DN	73.6	D	15.9	ug/L	8.22		(0%-10%)			
Lead	D	11.9	D	2.34	ug/L	1.26		(0%-10%)			
Manganese	D	128	D	25.1	ug/L	2.26		(0%-10%)		06/02/16	18:45
Molybdenum	D	9.46	D	1.81	ug/L	4.38		(0%-10%)		06/02/16	19:44
Nickel	DN	75.0	D	15.8	ug/L	5.12		(0%-10%)		06/01/16	20:05
Selenium	D	6.05	DU	1710	ug/L	N/A		(0%-10%)		06/02/16	14:50
Strontium	D	160	D	30.0	ug/L	5.97		(0%-10%)		06/01/16	20:05
Vanadium	D	200	D	39.3	ug/L	1.99		(0%-10%)		06/02/16	14:50
Zinc	D	143	D	32.0	ug/L	11.4		(0%-10%)		06/01/16	20:05

Metals Analysis-ICP

Batch 1570308

QC1203556360	398190001	DUP									
Antimony	DU	1680	DU	1630	ug/kg	N/A			JWJ	06/01/16	16:04
Calcium		3130000		2960000	ug/kg	5.48		(0%-20%)		06/01/16	15:39
Iron		15900000		15200000	ug/kg	4.57		(0%-20%)			
Magnesium		3910000		4110000	ug/kg	4.81		(0%-20%)			

June 7, 2016

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QC Summary

Workorder: 398190

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1570308										
Phosphorous		576000		501000	ug/kg	14.1		(0%-20%)			
Potassium		764000		675000	ug/kg	12.3		(0%-20%)	JWJ	06/01/16	15:39
Silver	U	102	U	98.7	ug/kg	N/A					
Sodium		234000		237000	ug/kg	1.36		(0%-20%)			
QC1203556359	LCS										
Antimony	49300			50000	ug/kg		101	(80%-120%)		06/01/16	15:34
Calcium	493000			517000	ug/kg		105	(80%-120%)			
Iron	493000			505000	ug/kg		103	(80%-120%)			
Magnesium	493000			522000	ug/kg		106	(80%-120%)			
Phosphorous	49300			50000	ug/kg		101	(80%-120%)			
Potassium	493000			504000	ug/kg		102	(80%-120%)			
Silver	49300			49900	ug/kg		101	(80%-120%)			
Sodium	493000			501000	ug/kg		102	(80%-120%)			
QC1203556358	MB										
Antimony			U	313	ug/kg					06/01/16	15:31
Calcium			U	7590	ug/kg						
Iron			U	7590	ug/kg						
Magnesium			U	8060	ug/kg						
Phosphorous			U	4740	ug/kg						
Potassium			U	6070	ug/kg						
Silver			U	94.9	ug/kg						
Sodium			U	6640	ug/kg						
QC1203556361	398190001	MS									
Antimony	49300	DU	1680	D	46700	ug/kg	94.7	(75%-125%)		06/01/16	16:07

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QC Summary

Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1570308										
Calcium	493000	3130000		3990000	ug/kg		N/A	(75%-125%)		06/01/16	15:41
Iron	493000	15900000		17700000	ug/kg		N/A	(75%-125%)	JWJ		
Magnesium	493000	3910000		4950000	ug/kg		N/A	(75%-125%)			
Phosphorous	49300	576000		582000	ug/kg		N/A	(75%-125%)			
Potassium	493000	764000		1240000	ug/kg		96.3	(75%-125%)			
Silver	49300	U 102		46400	ug/kg		94.1	(75%-125%)			
Sodium	493000	234000		744000	ug/kg		103	(75%-125%)			
QC1203556362 398190001 SDILT											
Antimony		DU -2.55	DU	8410	ug/L		N/A	(0%-10%)		06/01/16	16:10
Calcium		30700	D	6550	ug/L	6.64		(0%-10%)		06/01/16	15:45
Iron		156000	D	33100	ug/L	6.04		(0%-10%)			
Magnesium		38400	D	8200	ug/L	6.88		(0%-10%)			
Phosphorous		5650	D	1180	ug/L	4.55		(0%-10%)			
Potassium		7490	D	1580	ug/L	5.56		(0%-10%)			
Silver		U -2.31	DU	510	ug/L		N/A	(0%-10%)			
Sodium		2300	D	469	ug/L	2.19		(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.

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QC Summary

Workorder: 398190

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 #: GEL398190
Work Order #: 398190

Product: pH

Analytical Method: SW846 9045D

Analytical Procedure: GL-GC-E-008 REV# 21

Analytical Batch: 1570790

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398190001	B35VC1
398190002	B35VC7
1203557640	Laboratory Control Sample (LCS)
1203557641	398144001(B35VB5) 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

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203557641 (B35VB5DUP)	pH	Received 25-MAY-16, out of holding 24-MAY-16
398190001 (B35VC1)	pH	Received 27-MAY-16, out of holding 24-MAY-16
398190002 (B35VC7)	pH	Received 27-MAY-16, out of holding 25-MAY-16

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: GEL398190 GEL Work Order: 398190

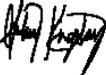
The Qualifiers in this report are defined as follows:

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

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: 06 JUN 2016

Title: Analyst I

Sample Data Summary

June 7, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 6, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B35VC1
Sample ID: 398190001
Matrix: SOIL
Collect Date: 24-MAY-16 14:30
Receive Date: 27-MAY-16
Collector: Client
Moisture: 3.67%
Project: CPRC0F16043
Client ID: CPRC001

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 9045_pH (Non-Aqueous):COMMON "As Received", X, 9.30, 0.010, 0.100, SU, 1, RXB5, 05/27/16, 1801, 1570790, 1.

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, SW846 9045D, (empty)

Notes:

June 7, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 6, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B35VC7 Project: CPRC0F16043
Sample ID: 398190002 Client ID: CPRC001
Matrix: SOIL
Collect Date: 25-MAY-16 11:25
Receive Date: 27-MAY-16
Collector: Client
Moisture: 2.83%

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 9045_pH (Non-Aqueous):COMMON "As Received", X, 8.85, 0.010, 0.100, SU, 1, RXB5, 05/27/16, 1802, 1570790, 1.

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, SW846 9045D, (empty)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 6, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1570790										
QC1203557641	398144001	DUP									
pH	X	9.44	X	9.39	SU	0.531		(0%-30%)	RXB5	05/27/16	17:59
QC1203557640	LCS										
pH	7.00			7.01	SU		100	(70%-130%)		05/27/16	17:59

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.

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL398190
Work Order #: 398190**

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified)

Analytical Procedure: GL-OA-E-020 REV# 10

Analytical Batch: 1570544

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398190001	B35VC1
398190002	B35VC7
1203557023	398249001(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.

June 7, 2016

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL398190 GEL Work Order: 398190

The Qualifiers in this report are defined as follows:

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: 06 JUN 2016

Title: Group Leader

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398190	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 398190001	Date Collected: 05/24/2016 14:30	Matrix: SOIL
	Date Received: 05/27/2016 09:30	%Moisture: 3.7
Client ID: B35VC1		Prep Basis: "As Received"
Batch ID: 1570544	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 05/27/2016 14:18	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1570544		
Prep Date: 05/27/2016 14:18		

CAS No.	Parmname	Qual	Result	Units	MDC	
	Moisture		3.67	percent	+/-	
Surrogate/Tracer recovery		Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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: GEL398190	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 398190002	Date Collected: 05/25/2016 11:25	Matrix: SOIL
	Date Received: 05/27/2016 09:30	%Moisture: 2.8
Client ID: B35VC7		Prep Basis: "As Received"
Batch ID: 1570544	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 05/27/2016 14:18	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1570544		
Prep Date: 05/27/2016 14:18		

CAS No.	Parmname	Qual	Result	Units	MDC	
	Moisture		2.83	percent	+/-	
Surrogate/Tracer recovery		Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

June 7, 2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 31, 2016
Page 1 of 1

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 398190

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Gravimetric Solids										
Batch	1570544									
QC1203557023	398249001	DUP								
Moisture		10.8		11.1	percent	RPD: 3	(0%-20%)	CXC1	05/27/16	14:18

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 $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- 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.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency $< 50\%$ of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

** Indicates analyte is a surrogate compound.

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

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

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