

June 29, 2016



gel.com

June 29, 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: 399481
SDG: GEL399481

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 16, 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,

A handwritten signature in cursive script that reads "Heather Shaffer".

Heather Shaffer
Project Manager

Purchase Order: 304070 - 8C
Chain of Custody: F16-043-067 and F16-043-069
Enclosures



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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-441
REV NUM	0
DATE INITIATED	6/22/2016

SAMPLE EVENT INFORMATION

SAF NUM(S)	F16-043
OPERABLE UNIT(S)	100-NR-2
PROJECT(S)	100-NR-2 GW
SAMPLE EVENT TITLE(S)	100-NR-2 Well Drilling and Installation of Wells
LABORATORY	GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES	2
SAMPLE NUMBERS	B35YC0, B35YC2
SAMPLE MATRIX	SOIL
COLLECTION DATE	6/14/2016 - 6/14/2016
SDG NUM	GEL399481

ISSUE BACKGROUND

CLASS	Laboratory Issue
TYPE	Quality Control Failure
DESCRIPTION	The method blank has a detect of Aliphatic Hydrocarbons C8-C10 above the PQL. The samples also have similar detects. There is a small pattern in this RT range. The small pattern appears to have come over during the extraction process and is not indigenous to these samples.

DISPOSITION

DESCRIPTION	Proposed Resolution: Initiate SIR, report results and include a detailed comment in the case narrative.
JUSTIFICATION	Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 06/22/2016
 ACCEPTED BY: Scot Fitzgerald DATE: 06/22/2016

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-043
SDG: GEL399481

June 29, 2016

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on June 16, 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. Please see the enclosed SIR regarding QC issues..

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
399481001	B35YC0
399481002	B35YC2

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: Diesel Range Organics, FID Flame Ionization Detector, GC/MS Semivolatile, General Chemistry 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 29, 2016

Heather Shaffer

Heather Shaffer
Project Manager

**Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399481
Work Order #: 399481**

GC/MS Semivolatile

Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

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

Laboratory Control Sample (LCS) Recovery

The LCS (See Below) did not meet the 70%-130% spike recovery acceptance criteria per CPRC request. Each of these analytes were recovered within GEL's SPC limits. The data were reported.

Sample	Analyte	Value
1203569970 (LCS)	Benzo(a)pyrene	65* (70%-130%)
	Benzo(k)fluoranthene	58* (70%-130%)

FID Flame Ionization Detector

Washington Method for the Determination of Extractable Petroleum Hydrocarbons

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

Method blank 1203569837 (MB) contained a hit of Aliphatics Hydrocarbons C8-C10 just above the RDL. A similar concentration of Aliphatics Hydrocarbons C8-C10 was present in all client samples. The source of contamination was likely from impurities in one or more of the solvents used for the extractions and fractionations. Detects in samples were B qualified and should be considered as false positives.

Matrix Spike (MS) Recovery Statement

The MSD (See Below) recovery was not within the acceptance limits due to sample matrix interference. The MS and LCS recoveries were within acceptance limits. The data were reported.

Sample	Analyte	Value
1203569840 (B35YC2MSD)	Aromatic Hydrocarbons >C10-C12	64* (70%-130%)

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent differences (RPD) between the MS and MSD (See Below) were not within the required acceptance limits. The MSD recovery was below acceptance limits, while the MS recovery passed. The LCS recovery also passed. The data were reported.

Sample	Analyte	Value
1203569839MS and 1203569840MSD (B35YC2)	Aromatic Hydrocarbons >C10-C12	26* (0%-20%)

The relative percent differences (RPD) between the MS and MSD (See Below) were not within the required acceptance limits. The individual recoveries in the MS and MSD were within acceptance limits. The data were reported.

Sample	Analyte	Value
1203569839MS and 1203569840MSD (B35YC2)	Aromatic Hydrocarbons >C12-C16	26* (0%-20%)
	Aromatic Hydrocarbons >C16-C21	22* (0%-20%)

Diesel Range Organics

Analysis of Diesel Range Organics by Flame Ionization Detector

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

Continuing Calibration Verification (CCV) Requirements

The associated calibration verification standards (ICV or CCV) did not meet the acceptance criteria. The target analytes failed to meet the acceptance criteria with a positive bias in one of the standards analyzed for this batch of the samples. This non-compliance has no adverse effects on the data as the associated environmental samples were not detected with target analytes above the PQL.

Quality Control (QC) Information

Surrogate Recoveries

QC samples (See Below) failed to meet acceptance criteria for surrogate recovery. The data for all reported client samples in this batch met surrogate recovery acceptance criteria. The data are reported as is.

Sample	Analyte	Value
1203571154 (MB)	o-Terphenyl	27* (60%-140%)
1203571155 (LCS)	o-Terphenyl	56* (60%-140%)
1203571156 (B35YC8MS)	o-Terphenyl	50* (60%-140%)

Matrix Spike (MS/MSD) Recovery Statement

The MS and/or MSD (See Below) did not meet spike recovery acceptance limits. The failures were attributed to sample matrix interference as the MS and MSD displayed similar spike recovery.

Sample	Analyte	Value
1203571156 (B35YC8MS)	Diesel Range Organics	53* (70%-130%)
1203571157 (B35YC8MSD)	Diesel Range Organics	69* (70%-130%)

The MS and/or MSD (See Below) did not meet spike recovery acceptance limits. The associated MS or MSD did not confirm. The discrepancy in recoveries appears to be associated with the heterogeneous nature of the sample matrix. As the LCS passed spike recovery acceptance limits, the data were reported.

Sample	Analyte	Value
1203571156 (B35YC8MS)	Motor Oil	54* (70%-130%)

MS/MSD Relative Percent Difference (RPD) Statement

The MS and MSD (See Below) did not meet RPD acceptance limits. The discrepancy in recoveries appears to be associated with the heterogeneous nature of the sample matrix. As the LCS passed spike recovery acceptance limits, the data were reported.

Sample	Analyte	Value
1203571156MS and 1203571157MSD (B35YC8)	Diesel Range Organics	26* (0%-20%)
	Motor Oil	38* (0%-20%)

Miscellaneous Information

Manual Integrations

Samples 1203571155 (LCS), 1203571156 (B35YC8MS) and 1203571157 (B35YC8MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

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
1203572158 (B35YC0DUP)	pH	Received 16-JUN-16, out of holding 14-JUN-16
399481001 (B35YC0)	pH	Received 16-JUN-16, out of holding 14-JUN-16
399481002 (B35YC2)	pH	Received 16-JUN-16, out of holding 14-JUN-16

Radiochemistry

Dry Weight

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

CH2M Hill Plateau Remediation Company
COLLECTOR E.L. Kauer/ChPRC
SAMPLING LOCATION C9402, I-002 DUP
ICE CHEST NO. CWS-527
SHIPPED TO GEL Laboratories, LLC
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 58100
COMPANY CONTACT TODAYK, D
TELEPHONE NO. 376-6427
PROJECT COORDINATOR TODAYK, D
PRICE CODE 8C
AIR QUALITY
METHOD OF SHIPMENT FEDERAL EXPRESS
DATA TURNAROUND 15 Days / 15 Days
PAGE 1 OF 1

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	MATRIX*
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	Cool <=6C	14/40 Days	aG	1	250mL	8270_SVOA_GC MS SIM; COMMON;	6-14-16	1120	SOIL
		Cool <=6C	14/40 Days	G	1	120mL	WTPH_DIESEL; WTPH_MOTOR OIL; COMMON;			
		Cool <=6C	14 Days	aG	1	120mL	WEPH_GC; COMMON;			
		None	ASAP	G/P	1	60mL	9045_pH (Non-Aqueous); COMMON;			
		None		Moisture Resistant Cont	1	200g	SEE ITEM (1) IN SPECIAL INSTRUCTIONS			

FIELD LOG 454-17
ACTUAL SAMPLE DEPTH 30.2-32.7
OFFSITE PROPERTY NO. 6730
BILL OF LADING/AIR BILL NO. 7765 2689 1390

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM E.L. Kauer/ChPRC	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 14 2016
RELINQUISHED BY/REMOVED FROM SSU-1	RECEIVED BY/STORED IN Leahy Wall ChPRC Leahy Wall	DATE/TIME JUN 15 2016 0810
RELINQUISHED BY/REMOVED FROM Leahy Wall ChPRC Leahy Wall	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 15 2016 0810
RELINQUISHED BY/REMOVED FROM Leahy Wall ChPRC Leahy Wall	RECEIVED BY/STORED IN M. Kauder/ChPRC	DATE/TIME 6-16-16 0915
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME

LABORATORY SECTION RECEIVED BY
FINAL SAMPLE DISPOSITION DISPOSAL METHOD
14 of 79

PRINTED ON 6/8/2016 **FSR ID = FSR33111** **TRVL NUM = TRVL-16-168** **A-6003-618 (REV 2)**

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		399481	PRICE CODE	8C	PAGE 1 OF 1
COLLECTOR E.L. Kauer/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	SAF NO. F16-043	AIR QUALITY	<input type="checkbox"/>	TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9402, I-002	PROJECT DESIGNATION 100-NR-2 Drilling - Soil	FIELD LOGBOOK NO. HNF-N-645 4-17	ACTUAL SAMPLE DEPTH 30.2-32.7	COA 304070	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
ICE CHEST NO. GWS-527	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO. 77652689 1390					
SHIPPED TO GEL Laboratories, LLC							
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water	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	PRESERVATION Cool <=6C	Cool <=6C	Cool <=6C	None	None	None
		14/40 Days	14/40 Days	14 Days	ASAP	None	None
		aG	G	aG	G/P	Moisture Resistant	1
		1	1	1	1	1	1
		250ml	120ml	120ml	60ml	200g	
		8270 SVOA_GC MS.SIM; COMMON;	WTPH_DIESEL; COMMON; WTPH_MOTOR OIL; COMMON;	WEPH_GC; COMMON;	9045_pH (Non-Aqueous); COMMON;	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B35Y00	SOIL	6-14-17	1120				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM E.L. Kauer/CHPRC	DATE/TIME JUN 14 2016	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 14 2016	SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS;	
RELINQUISHED BY/REMOVED FROM SSU-1 Lesly Wall	DATE/TIME JUN 15 2016 0810	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 15 2016 0810	(1) Moisture Content - D2216 {Percent moisture (wet sample)};	
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 6/8/2016	FSR ID = FSR33110	TRVL NUM = TRVL-16-168	A-6003-618 (REV 2)		

SAMPLE RECEIPT & REVIEW FORM

Client: <u>OPRC</u>		SDG/AR/COC/Work Order: <u>399481</u>
Received By: <u>M/C</u>		Date Received: <u>6-16-16</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts):
Classified Radioactive II or III by RSO?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

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: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1c 2c</u>
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>184402902</u> Secondary Temperature Device Serial # (if Applicable):
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9	Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7765 2909 9355 2c</u> <u>9263 2c</u> <u>0193 20c NO ice</u> <u>9024 2c</u> <u>9355 21c NO ice</u> <u>7765 2639 1840 1c</u> <u>1390 2c</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/16/16 Page 1 of 1

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 29 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

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399481
Work Order #: 399481

Product: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method: SW846 3541/8270D SIM PAH
Analytical Procedure: GL-OA-E-009 REV# 36
Analytical Batch: 1575554

Preparation Method: SW846 3541
Preparation Procedure: GL-OA-E-066 REV# 6
Preparation Batch: 1575552

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399481001	B35YC0
399481002	B35YC2
1203569969	Method Blank (MB)
1203569970	Laboratory Control Sample (LCS)
1203569973	399585001(B35YC5) Matrix Spike (MS)
1203569974	399585001(B35YC5) Matrix Spike Duplicate (MSD)

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.

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS (See Below) did not meet the 70%-130% spike recovery acceptance criteria per CPRC request. Each of these analytes were recovered within GEL's SPC limits. The data were reported.

Sample	Analyte	Value
1203569970 (LCS)	Benzo(a)pyrene	65* (70%-130%)
	Benzo(k)fluoranthene	58* (70%-130%)

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: GEL399481 GEL Work Order: 399481

The Qualifiers in this report are defined as follows:

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

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

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

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: **Barbara Bailey**

Date: **29 JUN 2016**

Title: **Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481001	Date Received: 06/16/2016 09:15	%Moisture: 3.4
Client ID: B35YC0	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575554	Method: SW846 3541/8270D SIM P.	SOP Ref: GL-OA-E-009
Run Date: 06/20/2016 20:21	Inst: MSD2.I	Dilution: 1
Prep Date: 06/20/2016 10:54	Analyst: AGS1	Inj. Vol: 1 uL
Data File: s062016.B\s2f2009.D	Aliquot: 30.03 g	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	1.72	ug/kg	1.72	6.89
208-96-8	Acenaphthylene	U	1.72	ug/kg	1.72	6.89
120-12-7	Anthracene	U	1.72	ug/kg	1.72	6.89
56-55-3	Benzo(a)anthracene	U	1.72	ug/kg	1.72	6.89
50-32-8	Benzo(a)pyrene	U	1.72	ug/kg	1.72	6.89
205-99-2	Benzo(b)fluoranthene	U	1.72	ug/kg	1.72	6.89
191-24-2	Benzo(ghi)perylene	U	1.72	ug/kg	1.72	6.89
207-08-9	Benzo(k)fluoranthene	U	1.72	ug/kg	1.72	6.89
218-01-9	Chrysene	U	1.72	ug/kg	1.72	6.89
53-70-3	Dibenzo(a,h)anthracene	U	1.72	ug/kg	1.72	6.89
206-44-0	Fluoranthene	U	1.72	ug/kg	1.72	6.89
86-73-7	Fluorene	U	1.72	ug/kg	1.72	6.89
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.72	ug/kg	1.72	6.89
91-20-3	Naphthalene	U	1.03	ug/kg	1.03	6.89
85-01-8	Phenanthrene	J	1.72	ug/kg	1.72	6.89
129-00-0	Pyrene	U	1.72	ug/kg	1.72	6.89

Semi-Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number:	GEL399481	Date Collected:	06/14/2016 11:20	Matrix:	SOIL
Lab Sample ID:	399481002	Date Received:	06/16/2016 09:15	%Moisture:	3.5
Client ID:	B35YC2	Client:	CPRC001	Project:	CPRC0F16043
Batch ID:	1575554	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Run Date:	06/20/2016 20:49	Inst:	MSD2.I	Dilution:	1
Prep Date:	06/20/2016 10:54	Analyst:	AGS1	Inj. Vol:	1 uL
Data File:	s062016.B\s2f2010.D	Aliquot:	30.02 g	Final Volume:	1 mL
		Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	1.73	ug/kg	1.73	6.91
208-96-8	Acenaphthylene	U	1.73	ug/kg	1.73	6.91
120-12-7	Anthracene	U	1.73	ug/kg	1.73	6.91
56-55-3	Benzo(a)anthracene	U	1.73	ug/kg	1.73	6.91
50-32-8	Benzo(a)pyrene	U	1.73	ug/kg	1.73	6.91
205-99-2	Benzo(b)fluoranthene	U	1.73	ug/kg	1.73	6.91
191-24-2	Benzo(ghi)perylene	U	1.73	ug/kg	1.73	6.91
207-08-9	Benzo(k)fluoranthene	U	1.73	ug/kg	1.73	6.91
218-01-9	Chrysene	U	1.73	ug/kg	1.73	6.91
53-70-3	Dibenzo(a,h)anthracene	U	1.73	ug/kg	1.73	6.91
206-44-0	Fluoranthene	U	1.73	ug/kg	1.73	6.91
86-73-7	Fluorene	U	1.73	ug/kg	1.73	6.91
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.73	ug/kg	1.73	6.91
91-20-3	Naphthalene	U	1.04	ug/kg	1.04	6.91
85-01-8	Phenanthrene	J	1.73	ug/kg	1.73	6.91
129-00-0	Pyrene	U	1.73	ug/kg	1.73	6.91

Quality Control Summary

June 29, 2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 21, 2016

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1575554										
QC1203569970	LCS										
Acenaphthene	333			254	ug/kg		76	(70%-130%)	AGS1	06/20/16	19:25
Acenaphthylene	333			260	ug/kg		78	(70%-130%)			
Anthracene	333			304	ug/kg		91	(70%-130%)			
Benzo(a)anthracene	333			249	ug/kg		75	(70%-130%)			
Benzo(a)pyrene	333			216	ug/kg		65 *	(70%-130%)			
Benzo(b)fluoranthene	333			269	ug/kg		81	(70%-130%)			
Benzo(ghi)perylene	333			267	ug/kg		80	(70%-130%)			
Benzo(k)fluoranthene	333			191	ug/kg		58 *	(70%-130%)			
Chrysene	333			281	ug/kg		84	(70%-130%)			
Dibenzo(a,h)anthracene	333			238	ug/kg		72	(70%-130%)			
Fluoranthene	333			285	ug/kg		86	(70%-130%)			
Fluorene	333			257	ug/kg		77	(70%-130%)			
Indeno(1,2,3-cd)pyrene	333			239	ug/kg		72	(70%-130%)			
Naphthalene	333			265	ug/kg		80	(70%-130%)			
Phenanthrene	333			277	ug/kg		83	(70%-130%)			
Pyrene	333			256	ug/kg		77	(70%-130%)			
**5-alpha-Androstane	167			147	ug/kg		88	(25%-129%)			
QC1203569969	MB										
Acenaphthene			U	1.67	ug/kg					06/20/16	18:56
Acenaphthylene			U	1.67	ug/kg						

GEL LABORATORIES LLC

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1575554										
Anthracene			U	1.67	ug/kg						
Benzo(a)anthracene			U	1.67	ug/kg				AGS1	06/20/16	18:56
Benzo(a)pyrene			U	1.67	ug/kg						
Benzo(b)fluoranthene			U	1.67	ug/kg						
Benzo(ghi)perylene			U	1.67	ug/kg						
Benzo(k)fluoranthene			U	1.67	ug/kg						
Chrysene			U	1.67	ug/kg						
Dibenzo(a,h)anthracene			U	1.67	ug/kg						
Fluoranthene			U	1.67	ug/kg						
Fluorene			U	1.67	ug/kg						
Indeno(1,2,3-cd)pyrene			U	1.67	ug/kg						
Naphthalene			U	0.999	ug/kg						
Phenanthrene			U	1.67	ug/kg						
Pyrene			U	1.67	ug/kg						
**5-alpha-Androstane	167			138	ug/kg		83	(25%-129%)			
QC1203569973 399585001 MS											
Acenaphthene	352	U	1.76	269	ug/kg		76	(18%-115%)		06/20/16	21:46
Acenaphthylene	352	U	1.76	325	ug/kg		92	(19%-116%)			
Anthracene	352	U	1.76	275	ug/kg		78	(23%-115%)			
Benzo(a)anthracene	352	U	1.76	263	ug/kg		75	(23%-124%)			
Benzo(a)pyrene	352	U	1.76	224	ug/kg		64	(20%-130%)			
Benzo(b)fluoranthene	352	U	1.76	219	ug/kg		62	(20%-134%)			
Benzo(ghi)perylene	352	U	1.76	237	ug/kg		67	(18%-118%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1575554										
Benzo(k)fluoranthene	352	U	1.76	179	ug/kg		51	(23%-128%)	AGS1	06/20/16	21:46
Chrysene	352	U	1.76	278	ug/kg		79	(18%-121%)			
Dibenzo(a,h)anthracene	352	U	1.76	239	ug/kg		68	(12%-132%)			
Fluoranthene	352	U	1.76	210	ug/kg		60	(21%-124%)			
Fluorene	352	U	1.76	328	ug/kg		93	(21%-118%)			
Indeno(1,2,3-cd)pyrene	352	U	1.76	243	ug/kg		69	(11%-130%)			
Naphthalene	352	U	1.06	260	ug/kg		74	(14%-114%)			
Phenanthrene	352	J	2.11	275	ug/kg		78	(24%-106%)			
Pyrene	352	U	1.76	284	ug/kg		81	(16%-122%)			
**5-alpha-Androstane	176		152	122	ug/kg		69	(25%-129%)			
QC1203569974 399585001 MSD											
Acenaphthene	353	U	1.76	287	ug/kg	6	81	(0%-30%)		06/20/16	22:14
Acenaphthylene	353	U	1.76	287	ug/kg	12	81	(0%-30%)			
Anthracene	353	U	1.76	293	ug/kg	6	83	(0%-30%)			
Benzo(a)anthracene	353	U	1.76	273	ug/kg	4	77	(0%-30%)			
Benzo(a)pyrene	353	U	1.76	229	ug/kg	2	65	(0%-30%)			
Benzo(b)fluoranthene	353	U	1.76	226	ug/kg	3	64	(0%-30%)			
Benzo(ghi)perylene	353	U	1.76	216	ug/kg	9	61	(0%-30%)			
Benzo(k)fluoranthene	353	U	1.76	194	ug/kg	8	55	(0%-30%)			
Chrysene	353	U	1.76	287	ug/kg	3	81	(0%-30%)			
Dibenzo(a,h)anthracene	353	U	1.76	222	ug/kg	7	63	(0%-30%)			
Fluoranthene	353	U	1.76	242	ug/kg	14	69	(0%-30%)			

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1575554										
Fluorene	353	U	1.76	314	ug/kg	4	89	(0%-30%)	AGS1	06/20/16	22:14
Indeno(1,2,3-cd)pyrene	353	U	1.76	228	ug/kg	6	65	(0%-30%)			
Naphthalene	353	U	1.06	281	ug/kg	8	80	(0%-30%)			
Phenanthrene	353	J	2.11	289	ug/kg	5	81	(0%-30%)			
Pyrene	353	U	1.76	282	ug/kg	1	80	(0%-30%)			
*5-alpha-Androstane	176		152	108	ug/kg		61	(25%-129%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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
- o Analyte failed to recover within LCS limits (Organics only)

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.

Surrogate Recovery Report

SDG Number: GEL399481

Matrix Type: SOLID

Sample ID	Client ID	5-alpha %REC
1203569969	MB for batch 1575552	83
1203569970	LCS for batch 1575552	88
399481001	B35YC0	69
399481002	B35YC2	77
1203569973	B35YC5MS	69
1203569974	B35YC5MSD	61

Surrogate

5-alpha- = 5-alpha-Androstane

Acceptance Limits

(25%-129%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Flame Ionization Detector Analysis

Case Narrative

**FID Flame Ionization Detector
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL399481
 Work Order #: 399481**

Product: Washington Method for the Determination of Extractable Petroleum Hydrocarbons

Analytical Method: WA EPH

Analytical Procedure: GL-OA-E-075 REV# 0

Analytical Batches: 1575485 and 1575484

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399481001	B35YC0
399481002	B35YC2
1203569837	Method Blank (MB)
1203569838	Laboratory Control Sample (LCS)
1203569839	399481002(B35YC2) Matrix Spike (MS)
1203569840	399481002(B35YC2) Matrix Spike Duplicate (MSD)

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.

Quality Control (QC) Information

Method Blank (MB) Statement

Method blank 1203569837 (MB) contained a hit of Aliphatics Hydrocarbons C8-C10 just above the RDL. A similar concentration of Aliphatics Hydrocarbons C8-C10 was present in all client samples. The source of contamination was likely from impurities in one or more of the solvents used for the extractions and fractionations. Detects in samples were B qualified and should be considered as false positives.

Matrix Spike (MS) Recovery Statement

The MSD (See Below) recovery was not within the acceptance limits due to sample matrix interference. The MS and LCS recoveries were within acceptance limits. The data were reported.

Sample	Analyte	Value
1203569840 (B35YC2MSD)	Aromatic Hydrocarbons >C10-C12	64* (70%-130%)

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent differences (RPD) between the MS and MSD (See Below) were not within the required acceptance limits. The MSD recovery was below acceptance limits, while the MS recovery passed. The LCS recovery also passed. The data were reported.

Sample	Analyte	Value
---------------	----------------	--------------

1203569839MS and 1203569840MSD (B35YC2)	Aromatic Hydrocarbons >C10-C12	26* (0%-20%)
---	--------------------------------	--------------

The relative percent differences (RPD) between the MS and MSD (See Below) were not within the required acceptance limits. The individual recoveries in the MS and MSD were within acceptance limits. The data were reported.

Sample	Analyte	Value
1203569839MS and 1203569840MSD (B35YC2)	Aromatic Hydrocarbons >C12-C16	26* (0%-20%)
	Aromatic Hydrocarbons >C16-C21	22* (0%-20%)

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: GEL399481 GEL Work Order: 399481

The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the sample.
- T Spike and/or spike duplicate 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.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

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: Cameron Bearden

Date: 23 JUN 2016

Title: Group Leader

Sample Data Summary

**Flame Ionization Detector
Certificate of Analysis
Sample Summary**

Page 1 of 2

SDG Number: GEL399481
 Lab Sample ID: 399481001
 Client ID: B35YC0
 Batch ID: 1575485
 Run Date: 06/21/2016 19:27
 Prep Date: 06/20/2016 12:30
 Data File: 062116_WA\F5F2110.D

Date Collected: 06/14/2016 11:20
 Date Received: 06/16/2016 09:15
 Client: CPRC001
 Method: WA EPH
 Inst: FID5.I
 Analyst: JMB3
 Aliquot: 30.05 g
 Column: DB-5ms

Matrix: SOIL
 %Moisture: 3.4
 Project: CPRC0F16043
 SOP Ref: GL-OA-E-075
 Dilution: 1
 Inj. Vol: 1 uL
 Final Volume: 2 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aromatic Hydrocarbons >C10-C12	TU	689	ug/Kg	689	1380
	Aromatic Hydrocarbons >C12-C16	U	689	ug/Kg	689	1380
	Aromatic Hydrocarbons >C16-C21	U	689	ug/Kg	689	1380
	Aromatic Hydrocarbons >C21-C34	TU	689	ug/Kg	689	1380
	Aromatic Hydrocarbons C8-C10	U	689	ug/Kg	689	1380

**Flame Ionization Detector
Certificate of Analysis
Sample Summary**

Page 2 of 2

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481001	Date Received: 06/16/2016 09:15	%Moisture: 3.4
Client ID: B35YC0	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575485	Method: WA EPH	SOP Ref: GL-OA-E-075
Run Date: 06/22/2016 01:00	Inst: FID5.I	Dilution: 1
Prep Date: 06/20/2016 12:30	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062116_WA\F5F2121.D	Aliquot: 30.05 g	Final Volume: 2 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aliphatic Hydrocarbons >C10-C12	U	689	ug/Kg	689	1380
	Aliphatic Hydrocarbons >C12-C16	U	689	ug/Kg	689	1380
	Aliphatic Hydrocarbons >C16-C21	U	689	ug/Kg	689	1380
	Aliphatic Hydrocarbons >C21-C34	U	689	ug/Kg	689	1380
	Aliphatic Hydrocarbons C8-C10	BT	1820	ug/Kg	689	1380

**Flame Ionization Detector
Certificate of Analysis
Sample Summary**

Page 1 of 2

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481002	Date Received: 06/16/2016 09:15	%Moisture: 3.5
Client ID: B35YC2	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575485	Method: WA EPH	SOP Ref: GL-OA-E-075
Run Date: 06/21/2016 19:58	Inst: FID5.I	Dilution: 1
Prep Date: 06/20/2016 12:30	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062116_WA\F5F2111.D	Aliquot: 30.23 g	Final Volume: 2 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aromatic Hydrocarbons >C10-C12	TU	686	ug/Kg	686	1370
	Aromatic Hydrocarbons >C12-C16	U	686	ug/Kg	686	1370
	Aromatic Hydrocarbons >C16-C21	U	686	ug/Kg	686	1370
	Aromatic Hydrocarbons >C21-C34	TU	686	ug/Kg	686	1370
	Aromatic Hydrocarbons C8-C10	U	686	ug/Kg	686	1370

**Flame Ionization Detector
Certificate of Analysis
Sample Summary**

Page 2 of 2

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481002	Date Received: 06/16/2016 09:15	%Moisture: 3.5
Client ID: B35YC2	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575485	Method: WA EPH	SOP Ref: GL-OA-E-075
Run Date: 06/22/2016 01:30	Inst: FID5.I	Dilution: 1
Prep Date: 06/20/2016 12:30	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062116_WA\F5F2122.D	Aliquot: 30.23 g	Final Volume: 2 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aliphatic Hydrocarbons >C10-C12	U	686	ug/Kg	686	1370
	Aliphatic Hydrocarbons >C12-C16	U	686	ug/Kg	686	1370
	Aliphatic Hydrocarbons >C16-C21	U	686	ug/Kg	686	1370
	Aliphatic Hydrocarbons >C21-C34	U	686	ug/Kg	686	1370
	Aliphatic Hydrocarbons C8-C10	BT	1570	ug/Kg	686	1370

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 22, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1575485										
QC1203569838	LCS										
Aliphatic Hydrocarbons >C10-C12	6660			4770	ug/Kg		72	(70%-130%)	JMB3	06/21/16	23:59
Aliphatic Hydrocarbons >C12-C16	6660			5030	ug/Kg		75	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	6660			5100	ug/Kg		77	(70%-130%)			
Aliphatic Hydrocarbons C8-C10	6660		B	5820	ug/Kg		87	(70%-130%)			
Aromatic Hydrocarbons >C10-C12	6660			4900	ug/Kg		74	(70%-130%)		06/21/16	18:27
Aromatic Hydrocarbons >C12-C16	6660			5580	ug/Kg		84	(70%-130%)			
Aromatic Hydrocarbons >C16-C21	13300			10700	ug/Kg		81	(70%-130%)			
Aromatic Hydrocarbons >C21-C34	13300			9490	ug/Kg		71	(70%-130%)			
**1-Chlorooctadecane	1330			923	ug/Kg		69	(60%-140%)		06/21/16	23:59
**o-Terphenyl	1330			1060	ug/Kg		80	(60%-140%)		06/21/16	18:27
QC1203569837	MB										
Aliphatic Hydrocarbons >C10-C12			U	667	ug/Kg					06/21/16	23:29
Aliphatic Hydrocarbons >C12-C16			U	667	ug/Kg						
Aliphatic Hydrocarbons >C16-C21			U	667	ug/Kg						
Aliphatic Hydrocarbons >C21-C34			U	667	ug/Kg						
Aliphatic Hydrocarbons C8-C10				1810	ug/Kg						
Aromatic Hydrocarbons >C10-C12			U	667	ug/Kg					06/21/16	17:56
Aromatic Hydrocarbons >C12-C16			U	667	ug/Kg						
Aromatic Hydrocarbons >C16-C21			U	667	ug/Kg						
Aromatic Hydrocarbons >C21-C34			U	667	ug/Kg						

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1575485										
Aromatic Hydrocarbons C8-C10			U	667	ug/Kg						
**1-Chlorooctadecane	1330			1050	ug/Kg		79	(60%-140%)	JMB3	06/21/16	23:29
**o-Terphenyl	1330			1000	ug/Kg		75	(60%-140%)		06/21/16	17:56
QC1203569839 399481002 MS											
Aliphatic Hydrocarbons >C10-C12	6900	U	686	5380	ug/Kg		78	(70%-130%)		06/22/16	02:01
Aliphatic Hydrocarbons >C12-C16	6900	U	686	5590	ug/Kg		81	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	6900	U	686	5700	ug/Kg		83	(70%-130%)			
Aliphatic Hydrocarbons C8-C10	6900	BT	1570	B	6850	ug/Kg		76	(70%-130%)		
Aromatic Hydrocarbons >C10-C12	6900	TU	686		5650	ug/Kg		82	(70%-130%)		06/21/16 20:28
Aromatic Hydrocarbons >C12-C16	6900	U	686		6450	ug/Kg		94	(70%-130%)		
Aromatic Hydrocarbons >C16-C21	13800	U	686		12100	ug/Kg		88	(70%-130%)		
Aromatic Hydrocarbons >C21-C34	13800	TU	686		10600	ug/Kg		77	(70%-130%)		
**1-Chlorooctadecane	1380		1010		1050	ug/Kg		76	(60%-140%)		06/22/16 02:01
**o-Terphenyl	1380		1080		1190	ug/Kg		86	(60%-140%)		06/21/16 20:28
QC1203569840 399481002 MSD											
Aliphatic Hydrocarbons >C10-C12	6850	U	686		4830	ug/Kg	11	70	(0%-20%)		06/22/16 02:31
Aliphatic Hydrocarbons >C12-C16	6850	U	686		4880	ug/Kg	14	71	(0%-20%)		
Aliphatic Hydrocarbons >C16-C21	6850	U	686		4950	ug/Kg	14	72	(0%-20%)		
Aliphatic Hydrocarbons C8-C10	6850	BT	1570	BT	6060	ug/Kg	12	66*	(0%-20%)		
Aromatic Hydrocarbons >C10-C12	6850	TU	686	T	4370	ug/Kg	26*	64*	(0%-20%)		06/21/16 20:58
Aromatic Hydrocarbons >C12-C16	6850	U	686		4990	ug/Kg	26*	73	(0%-20%)		
Aromatic Hydrocarbons >C16-C21	13700	U	686		9770	ug/Kg	22*	71	(0%-20%)		
Aromatic Hydrocarbons >C21-C34	13700	TU	686	T	8880	ug/Kg	18	65*	(0%-20%)		
**1-Chlorooctadecane	1370		1010		959	ug/Kg		70	(60%-140%)		06/22/16 02:31

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1575485										
**o-Terphenyl	1370	1080		954	ug/Kg		70	(60%-140%)	JMB3	06/21/16	20:58

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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
- o Analyte failed to recover within LCS limits (Organics only)

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.

Flame Ionization Detector
Surrogate Recovery Report

SDG Number: GEL399481

Matrix Type: SOLID

Sample ID	Client ID	COD %REC	OTP %REC
1203569837	MB for batch 1575484		75
1203569838	LCS for batch 1575484		80
399481001	B35YC0		82
399481002	B35YC2		79
1203569839	B35YC2MS		86
1203569840	B35YC2MSD		70
1203569837	MB for batch 1575484	79	
1203569838	LCS for batch 1575484	69	
399481001	B35YC0	76	
399481002	B35YC2	74	
1203569839	B35YC2MS	76	
1203569840	B35YC2MSD	70	

Surrogate

COD = 1-Chlorooctadecane

OTP = o-Terphenyl

Acceptance Limits

(60%-140%)

(60%-140%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

FID Diesel Range Organics Analysis

Case Narrative

Diesel Range Organics
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL399481
Work Order #: 399481

Product: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: WTPH_DIESEL

Analytical Procedure: GL-OA-E-003 REV# 26

Analytical Batch: 1575984

Preparation Method: SW846 3541

Preparation Procedure: GL-OA-E-010 REV# 25

Preparation Batch: 1575983

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399481001	B35YC0
399481002	B35YC2
1203571154	Method Blank (MB)
1203571155	Laboratory Control Sample (LCS)
1203571156	399710001(B35YC8) Matrix Spike (MS)
1203571157	399710001(B35YC8) Matrix Spike Duplicate (MSD)

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

Continuing Calibration Verification (CCV) Requirements

The associated calibration verification standards (ICV or CCV) did not meet the acceptance criteria. The target analytes failed to meet the acceptance criteria with a positive bias in one of the standards analyzed for this batch of the samples. This non-compliance has no adverse effects on the data as the associated environmental samples were not detected with target analytes above the PQL.

Quality Control (QC) Information

Surrogate Recoveries

QC samples (See Below) failed to meet acceptance criteria for surrogate recovery. The data for all reported client samples in this batch met surrogate recovery acceptance criteria. The data are reported as is.

Sample	Analyte	Value
1203571154 (MB)	o-Terphenyl	27* (60%-140%)
1203571155 (LCS)	o-Terphenyl	56* (60%-140%)

1203571156 (B35YC8MS)	o-Terphenyl	50* (60%-140%)
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Matrix Spike (MS/MSD) Recovery Statement

The MS and/or MSD (See Below) did not meet spike recovery acceptance limits. The failures were attributed to sample matrix interference as the MS and MSD displayed similar spike recovery.

Sample	Analyte	Value
1203571156 (B35YC8MS)	Diesel Range Organics	53* (70%-130%)
1203571157 (B35YC8MSD)	Diesel Range Organics	69* (70%-130%)

The MS and/or MSD (See Below) did not meet spike recovery acceptance limits. The associated MS or MSD did not confirm. The discrepancy in recoveries appears to be associated with the heterogeneous nature of the sample matrix. As the LCS passed spike recovery acceptance limits, the data were reported.

Sample	Analyte	Value
1203571156 (B35YC8MS)	Motor Oil	54* (70%-130%)

MS/MSD Relative Percent Difference (RPD) Statement

The MS and MSD (See Below) did not meet RPD acceptance limits. The discrepancy in recoveries appears to be associated with the heterogeneous nature of the sample matrix. As the LCS passed spike recovery acceptance limits, the data were reported.

Sample	Analyte	Value
1203571156MS and 1203571157MSD (B35YC8)	Diesel Range Organics	26* (0%-20%)
	Motor Oil	38* (0%-20%)

Miscellaneous Information

Manual Integrations

Samples 1203571155 (LCS), 1203571156 (B35YC8MS) and 1203571157 (B35YC8MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

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: GEL399481 GEL Work Order: 399481

The Qualifiers in this report are defined as follows:

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

T Spike and/or spike duplicate 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.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

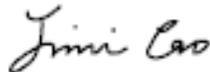
RE Indicates that sample is re-extracted.

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: Jimin Cao

Date: 23 JUN 2016

Title: Data Validator

Sample Data Summary

FID Diesel Range Organics
 Certificate of Analysis
 Sample Summary

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481001	Date Received: 06/16/2016 09:15	%Moisture: 3.4
Client ID: B35YC0	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575984	Method: WTPH_DIESEL	SOP Ref: GL-OA-E-003
Run Date: 06/21/2016 20:42	Inst: FID7.I	Dilution: 1
Prep Date: 06/21/2016 12:10	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062116DRO-MO\F7F2109.D	Aliquot: 30.01 g	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	TU	2240	ug/kg	2240	6900
	Motor Oil	JT	3490	ug/kg	2240	6900

**FID Diesel Range Organics
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: GEL399481	Date Collected: 06/14/2016 11:20	Matrix: SOIL
Lab Sample ID: 399481002	Date Received: 06/16/2016 09:15	%Moisture: 3.5
Client ID: B35YC2	Client: CPRC001	Project: CPRC0F16043
Batch ID: 1575984	Method: WTPH_DIESEL	SOP Ref: GL-OA-E-003
Run Date: 06/21/2016 21:21	Inst: FID7.I	Dilution: 1
Prep Date: 06/21/2016 12:10	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062116DRO-MO\F7F2110.D	Aliquot: 30.01 g	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	TU	2240	ug/kg	2240	6910
	Motor Oil	JT	3370	ug/kg	2240	6910

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: June 22, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1575984										
QC1203571155	LCS										
Diesel Range Organics	66600			48200	ug/kg		72	(70%-130%)	JMB3	06/21/16	18:20
Motor Oil	66600			57200	ug/kg		86	(70%-130%)			
**o-Terphenyl	666			374	ug/kg		56*	(60%-140%)			
QC1203571154	MB										
Diesel Range Organics			U	2170	ug/kg					06/21/16	17:42
Motor Oil			U	2170	ug/kg						
**o-Terphenyl	667			178	ug/kg		27*	(60%-140%)			
QC1203571156	399710001	MS									
Diesel Range Organics	69100	TU	2240	T	36800	ug/kg	53*	(70%-130%)		06/22/16	00:37
Motor Oil	69100	JT	3180	T	40400	ug/kg	54*	(70%-130%)			
**o-Terphenyl	691		437		344	ug/kg	50*	(60%-140%)			
QC1203571157	399710001	MSD									
Diesel Range Organics	69000	TU	2240	T	47700	ug/kg	26*	69*	(0%-20%)	06/22/16	01:15
Motor Oil	69000	JT	3180		59100	ug/kg	38*	81	(0%-20%)		
**o-Terphenyl	690		437		478	ug/kg	69	(60%-140%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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

GEL LABORATORIES LLC

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QC Summary

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
N	Spike Sample recovery is outside control limits.										
P	Aroclor target analyte with greater than 25% difference between column analyses.										
T	Spike and/or spike duplicate 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										
o	Analyte failed to recover within LCS limits (Organics only)										

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.

FID Diesel Range Organics
Surrogate Recovery Report

SDG Number: GEL399481

Matrix Type: SOLID

Sample ID	Client ID	OTP %REC
1203571154	MB for batch 1575983	27 *
1203571155	LCS for batch 1575983	56 *
399481001	B35YC0	61
399481002	B35YC2	65
1203571156	B35YC8MS	50 *
1203571157	B35YC8MSD	69

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(60%-140%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399481
Work Order #: 399481

Product: pH

Analytical Method: SW846 9045D

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

Analytical Batch: 1576381

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399481001	B35YC0
399481002	B35YC2
1203572155	Laboratory Control Sample (LCS)
1203572158	399481001(B35YC0) 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.

<u>Sample</u>	<u>Analyte</u>	<u>Value</u>
1203572158 (B35YC0DUP)	pH	Received 16-JUN-16, out of holding 14-JUN-16
399481001 (B35YC0)	pH	Received 16-JUN-16, out of holding 14-JUN-16
399481002 (B35YC2)	pH	Received 16-JUN-16, out of holding 14-JUN-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.

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399481 GEL Work Order: 399481

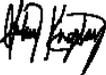
The Qualifiers in this report are defined as follows:

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: 24 JUN 2016

Title: Analyst I

Sample Data Summary

June 29, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 24, 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: B35YC0 Project: CPRC0F16043
Sample ID: 399481001 Client ID: CPRC001
Matrix: SOIL
Collect Date: 14-JUN-16 11:20
Receive Date: 16-JUN-16
Collector: Client
Moisture: 3.37%

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, 9.29, 0.010, 0.100, SU, 1, KLP1, 06/22/16, 1650, 1576381, 1.

The following Analytical Methods were performed:

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

Notes:

June 29, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 24, 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: B35YC2
Sample ID: 399481002
Matrix: SOIL
Collect Date: 14-JUN-16 11:20
Receive Date: 16-JUN-16
Collector: Client
Moisture: 3.52%
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, KLP1, 06/22/16, 1656, 1576381, 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 24, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1576381										
QC1203572158	399481001	DUP									
pH	X	9.29	X	9.29	SU	0		(0%-30%)	KLP1	06/22/16	16:53
QC1203572155	LCS										
pH	7.00			7.00	SU		100	(70%-130%)		06/22/16	16:49

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
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399481
Work Order #: 399481

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified)

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

Analytical Batch: 1575124

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399481001	B35YC0
399481002	B35YC2
1203569026	399481001(B35YC0) 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: GEL399481 GEL Work Order: 399481

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: 24 JUN 2016

Title: Group Leader

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399481	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 399481001	Date Collected: 06/14/2016 11:20	Matrix: SOIL
	Date Received: 06/16/2016 09:15	%Moisture: 3.4
Client ID: B35YC0		Prep Basis: "As Received"
Batch ID: 1575124	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 06/16/2016 13:58	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1575124		
Prep Date: 06/16/2016 13:58		

CAS No.	Parmname	Qual	Result	Units	Recovery%	Acceptable Limits	MDC
	Moisture		3.37	percent	+/-		
Surrogate/Tracer recovery							

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: GEL399481	Client: CPRC001	Project: CPRC0F16043
Lab Sample ID: 399481002	Date Collected: 06/14/2016 11:20	Matrix: SOIL
	Date Received: 06/16/2016 09:15	%Moisture: 3.5
Client ID: B35YC2		Prep Basis: "As Received"
Batch ID: 1575124	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 06/16/2016 13:58	Analyst: CXC1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1575124		
Prep Date: 06/16/2016 13:58		

CAS No.	Parmname	Qual	Result	Units	MDC
	Moisture		3.52	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 29, 2016

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QC Summary

Report Date: June 24, 2016

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Client : CH2M Hill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 399481

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Gravimetric Solids										
Batch	1575124									
QC1203569026	399481001	DUP								
Moisture		3.37		3.55	percent	RPD: 5	(0%-20%)	CXC1	06/16/16	13:58

Notes:

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

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
- A The TIC is a suspected aldol-condensation product
- 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 analyte was detected in both the associated QC blank and in the sample.
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- C Analyte has been confirmed by GC/MS analysis
- 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 Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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.
- UX Gamma Spectroscopy--Uncertain identification
- 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
- o Analyte failed to recover within LCS limits (Organics only)

June 29, 2016

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QC Summary

Workorder: 399481

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