

July 21, 2016



July 21, 2016

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

Re: CHPRC SAF F16-042
Work Order: 399946
SDG: GEL399946

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 23, 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 - 7H
Chain of Custody: F16-042-091, F16-042-092, F16-042-095, F16-042-096, F16-042-111 and F16-042-112
Enclosures



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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM SIR16-447
REV NUM 0
DATE INITIATED 6/27/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F16-042
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 1
SAMPLE NUMBERS B35YD7
SAMPLE MATRIX WATER
COLLECTION DATE -
SDG NUM GEL399946

ISSUE BACKGROUND

CLASS Field Sampling Issue
TYPE Incorrect Sample Preservation
DESCRIPTION The metals container for sample ID B35YD7 was received at a pH of 8.

DISPOSITION

DESCRIPTION Proposed Resolution: Preserve with HNO3 to the correct pH and proceed with analysis.
JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 06/25/2016
ACCEPTED BY: Scot Fitzgerald DATE: 06/27/2016

SAMPLE ISSUE RESOLUTION	SIR NUM	SIR16-509
	REV NUM	0
	DATE INITIATED	7/20/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F16-042
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 B35YD3, B35YD8
SAMPLE MATRIX WATER
COLLECTION DATE 6/21/2016 - 6/21/2016
SDG NUM GEL399946

ISSUE BACKGROUND

CLASS Laboratory Issue
TYPE Analysis Holding Time Exceeded
DESCRIPTION MB, 399946001, MS and MSD failed surrogate recovery low; LCS failed DRO spike recovery slightly low; MS and MSD failed slightly low. Both samples in this SDG were re-extracted out of holding. The re-extraction met all quality control acceptance criteria. There were not target analytes detected above the PQL in the samples in both extractions.

DISPOSITION

DESCRIPTION Proposed Resolution: The lab will report the out of hold data where available and narrate the issue.

JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 07/20/2016
ACCEPTED BY: Scot Fitzgerald DATE: 07/20/2016

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-042
SDG: GEL399946

July 21, 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 23, 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 SIRs for issues regarding this SDG..

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:

<u>Laboratory Identification</u>	<u>Sample Description</u>
399946001	B35YD3
399946002	B35YD4
399946003	B35YD8
399946004	B35YD9
399946005	B35YD7
399946006	B35YF2

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.

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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 Volatile, General Chemistry and Metals.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Heather Shaffer
Project Manager

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL399946
Work Order #: 399946

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

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

Blank (MB) Statement

Target analytes were detected in the blank 1203575153 (MB) below the reporting limit.

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.

Miscellaneous Information

Additional Comments

Results for this batch were reported from unfractionated extracts. There were no target analytes detected above the RDL in the client samples, therefore fractionation was not necessary.

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.

Technical Information

Holding Time Specifications

Samples 399946001 (B35YD3) and 399946003 (B35YD8) were re-extracted out of holding due to surrogate failure. The surrogate recoveries did not confirm, so both sets of results were reported where applicable.

Miscellaneous Information

Manual Integrations

Samples 1203577703 (LCS) and 1203577704 (LCSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

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.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium and sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 399946005 (B35YD7) and 399946006 (B35YF2).

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.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of strontium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203573164 (MB).

General Chemistry

Alkalinity

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blank associated with this data was slightly above the normal acceptance limits. The data for sample

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1203573615 (MB) was deemed acceptable because the values for all reported samples were more than 10 times the value of the method blank.

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		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-042-112	PAGE 1 OF 1
COLLECTOR D.E. WRIGHT/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE	7H
SAMPLING LOCATION C9402, I-006 DUP	PROJECT DESIGNATION 100-NR-2 Drilling - Water	FIELD LOGBOOK NO. FNF-N-645-5-4	SAF NO. F16-042	AIR QUALITY	<input type="checkbox"/>
ICE CHEST NO. C-03-59	ACTUAL SAMPLE DEPTH 74.5	OFFSITE PROPERTY NO. 6761	COA 304070	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC		BILL OF LADING/AIR BILL NO. 7765 8051 1360			

MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION HNO3 to pH <2	HOLDING TIME 6 Months	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 500ml	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
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	SPECIAL HANDLING AND/OR STORAGE					
SAMPLE NO. B35YF2	MATRIX*	SAMPLE DATE 6-21-16	SAMPLE TIME 1300	✓		

399944

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D.E. WRIGHT/CHPRC	DATE/TIME JUN 21 2016 1440	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 21 2016 1410	(1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium};	
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUN 22 2016 0900	RECEIVED BY/STORED IN Chris Fulton CHPRC	DATE/TIME JUN 22 2016 0900	6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc};	
RELINQUISHED BY/REMOVED FROM Chris Fulton CHPRC	DATE/TIME JUN 22 2016 1400	RECEIVED BY/STORED IN M. Kriston	DATE/TIME 6/23/16 0900	6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	FILTER	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST

CH2MHIII Plateau Remediation Company

COLLECTOR: D.E. WIGHT/CHPRC

SAMPLING LOCATION: C9402, I-006

ICE CHEST NO.: GWS-559

SHIPPED TO: GEL Laboratories, LLC

COMPANY CONTACT: TODAY, D

TELEPHONE NO.: 376-6427

PROJECT DESIGNATION: 100-NR-2 Drilling - Water

FIELD LOGBOOK NO.: 645-5-4

ACTUAL SAMPLE DEPTH: 74.5

OFFSITE PROPERTY NO.: 888 6761

PROJECT COORDINATOR: TODAY, D

SAF NO.: F16-042

COA: 304070

BILL OF LADING/AIR BILL NO.: 776990511360

F16-042-111

PRICE CODE: 7H

AIR QUALITY:

METHOD OF SHIPMENT: FEDERAL EXPRESS

PAGE 1 OF 1

DATA TURNAROUND: 30 Days / 30 Days

ORIGINAL

399946

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS
A=Air	*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
DL=Drum	
L=Liquid	
S=Soil	
SE=Sediment	
T=Tissue	
V=Vegetation	
W=Water	
WI=Wipe	
X=Other	
	HNO3 to pH <2
	6 Months
	G/P
	1
	500ml
	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SAMPLE NO. B35YD7	MATRIX* WATER
	SAMPLE DATE: 6-21-16
	SAMPLE TIME: 1300
	✓

FILTER

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM D.E. WIGHT/CHPRC	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 21 2016 1410	(1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};
RELINQUISHED BY/REMOVED FROM SSU-1	RECEIVED BY/STORED IN Chris Fulton CHPRC	DATE/TIME JUN 22 2016 0900	FILTER
RELINQUISHED BY/REMOVED FROM Chris Fulton CHPRC	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 22 2016 0900	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN M. Kinslow	DATE/TIME 6-25-16 0900	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	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 = FSR33115	TRVL NUM = TRVL-16-168	A-6003-618 (REV 2)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-042-095	PAGE 1 OF 1
COLLECTOR D.E. WIGHT/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9402, I-006 DUP	PROJECT DESIGNATION 100-NR-2 Drilling - Water		SAF NO. F16-042	AIR QUALITY	
ICE CHEST NO. RTA 6255-544	FIELD LOGBOOK NO. HNF-N-645-5-4	ACTUAL SAMPLE DEPTH 74.5	COA 304070	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 6761		BILL OF LADING/AIR BILL NO. 776590510823		

399944

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HCI to pH <2/Cool <=6C	HCI to pH <2/Cool <=6C	HCI to pH <2/Cool <=6C
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	14 Days	14/40 Days	14/40 Days	14/40 Days
		G/P	aG	aG	aG
		1	3	3	3
		250mL	1L	1L	1L
		2320 ALKALINITY; COMMON (Alkalinity);	WTPH, DIESEL; COMMON; WTPH, MOTOR OIL; COMMON;	WTPH, GC; COMMON;	WTPH, GC; COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B35YD8	WATER	6-21-16	1300

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D.E. WIGHT/CHPRC	DATE/TIME JUN 21 2016 1410	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 21 2016 1410		
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUN 22 2016 0900	RECEIVED BY/STORED IN Chris Fulton CHPRC	DATE/TIME JUN 22 2016 0900		
RELINQUISHED BY/REMOVED FROM Chris Fulton CHPRC	DATE/TIME JUN 22 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 22 2016 0900		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN W. Gibson	DATE/TIME 6/23/16 0900		
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 RECEIVED BY	TITLE	DISPOSED BY	DATE/TIME		
SECTION					
FINAL SAMPLE DISPOSITION					
PRINTED ON 6/8/2016	FSR ID = FSR33116	TRVL NUM = TRVL-16-168	A-6003-618 (REV 2)		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-042-091	PAGE 1 OF 1
COLLECTOR D.E. WIGHT/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9402, I-006	PROJECT DESIGNATION 100-NR-2 Drilling - Water	FIELD LOGBOOK NO. HNF-N-645-5-4	SAF NO. F16-042	AIR QUALITY	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. GWS-544	OFFSITE PROPERTY NO. 6761	ACTUAL SAMPLE DEPTH 74.5	COA 304070		ORIGINAL
SHIPPED TO GEL Laboratories, LLC					
BILL OF LADING/AIR BILL NO. FWS80510803					

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HCI to pH <2/Cool <=6C	HCI to pH <2/Cool <=6C	HCI to pH <2/Cool <=6C
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	Cool <=6C 14 Days	14/40 Days	14/40 Days	14/40 Days
		G/P	ag	ag	ag
		1	3	3	3
		250mL	1L	1L	1L
		2320 ALKALINITY: COMMON (Alkalinity);	WTPH, DIESEL: COMMON; WTPH, MOTOR OIL: COMMON;	WTPH, GC: COMMON;	WTPH, GC: COMMON;
SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	SAMPLE DATE	SAMPLE TIME
B35YD3	WATER	6-21-16	1300		

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM D.E. WIGHT/CHPRC	RECEIVED BY/STORED IN SSU-1 Chris Fulton CHPRC	DATE/TIME JUN 21 2016 1410
RELINQUISHED BY/REMOVED FROM SSU-1	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 2 2016 0900
RELINQUISHED BY/REMOVED FROM Chris Fulton CHPRC	RECEIVED BY/STORED IN M. Kristian	DATE/TIME JUN 2 2016 1400
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME 6-23-16 0900
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
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
LABORATORY SECTION	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSED BY	DATE/TIME

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-042-096	PAGE 1 OF 1
COLLECTOR D.E. WRIGHT/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9402, I-006 DUP	PROJECT DESIGNATION 100-NR-2 Drilling - Water	FIELD LOGBOOK NO. MNF-N-645-5-4	SAF NO. F16-042	AIR QUALITY	<input type="checkbox"/>
ICE CHEST NO. 7205-541	FIELD LOGBOOK NO. MNF-N-645-5-4	ACTUAL SAMPLE DEPTH 79.5	COA 304070	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 6761	BILL OF LADING/AIR BILL NO. 776580510823			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION HCl or H2SO4 to pH <2/Cool. 14 Days	HOLDING TIME	TYPE OF CONTAINER aGs*	NO. OF CONTAINER(S) 4	VOLUME 40ml	SAMPLE ANALYSIS SEE ITEM (I) IN SPECIAL INSTRUCTIONS
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	SPECIAL HANDLING AND/OR STORAGE					
SAMPLE NO. B35YD9	MATRIX* WATER	SAMPLE DATE 6-21-14	SAMPLE TIME 1300			

399946

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM D.E. WRIGHT/CHPRC	DATE/TIME JUN 21 2016 1410	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUN 21 2016 1410	** All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis.** The laboratory is to use one of the low level VOA bottles for moisture content determination.** VOA bottles will be labeled with an appended suffix of K, L, M, N, or P. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages. (1) 8260_VOA_GCMS: COMMON {Chloroform, Ethylbenzene};	
RELINQUISHED BY/REMOVED FROM SSU-1 Chris Fulton CHPRC	DATE/TIME JUN 2 2016 0900	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUN 2 2016 0900		
RELINQUISHED BY/REMOVED FROM Chris Fulton CHPRC	DATE/TIME JUN 2 2016 1400	RECEIVED BY/STORED IN M. Kinslow	DATE/TIME 6-23-16 0900		
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 = FSR33116		TRVL NUM = TRVL-16-168	
				A-6003-618 (REV 2)	

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

PROJECT COORDINATOR: TODAYAK, D

TELEPHONE NO.: 376-6427

PRICE CODE: 7H

DATA TURNAROUND: 30 Days / 30 Days

SAF NO.: F16-042

AIR QUALITY:

COA: 304070

METHOD OF SHIPMENT: FEDERAL EXPRESS

ORIGINAL

F16-042-092

PAGE 1 OF 1

BILL OF LADING/AIR BILL NO.: 776580510833

399944

OFFSITE PROPERTY NO.: 6761

ACTUAL SAMPLE DEPTH: 74.5

COMPANY CONTACT: TODAYAK, D

PROJECT DESIGNATION: 100-NR-2 Drilling - Water

FIELD LOGBOOK NO.:

PRESCRIPTION: HCl or H2SO4 to pH <2/ Cool 14 Days

HOLDING TIME:

TYPE OF CONTAINER: aGs*

NO. OF CONTAINER(S): 4

VOLUME: 40mL

SAMPLE ANALYSIS: SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE DATE: 6-21-16

SAMPLE TIME: 1300

SAMPLE NO.: B35YD4

MATRIX*: WATER

SPECIAL HANDLING AND/OR STORAGE:

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

SHIPPED TO: GEL Laboratories, LLC

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM: D.E. WIGHT/CHPRG

DATE/TIME: JUN 21 2016 1410

RECEIVED BY/STORED IN: SSU-1 Chris Fulton

DATE/TIME: JUN 22 2016 0800

RELINQUISHED BY/REMOVED FROM: Chris Fulton

DATE/TIME: JUN 22 2016 1400

RECEIVED BY/STORED IN: FEDEX

DATE/TIME: JUN 22 2016 0900

RELINQUISHED BY/REMOVED FROM: Chris Fulton

DATE/TIME: JUN 22 2016 1400

RECEIVED BY/STORED IN: M. Keston

DATE/TIME: 6-23-16 0900

SPECIAL INSTRUCTIONS: ** All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis. ** The laboratory is to use one of the low level VOA bottles for moisture content determination. ** VOA bottles will be labeled with an appended suffix of K, L, M, N, or P. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages. (1) 8260_VOA_GCMS: COMMON {Chloroform, Ethylbenzene};

LABORATORY SECTION: RECEIVED BY

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD

PRINTED ON 6/8/2016

FRS ID = FSR33115

TRVL NUM = TRVL-16-168

A-6003-618 (REV 2)

SAMPLE RECEIPT & REVIEW FORM

Client: <u>OPRC</u>		SDG/AR/COC/Work Order: <u>3999440</u>
Received By: <u>MF</u>		Date Received: <u>6-23-16</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?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<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?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<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 checked="" 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 checked="" 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>2C</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130462962</u> Secondary Temperature Device Serial # (if Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#: <u>*See Below</u>
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in-relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.				Circle Applicable: FedEx Air <input checked="" type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <input type="checkbox"/> <u>7765 8051 0823 20</u> <u>7765 8051 1360 19 No ice</u>

Comments (Use Continuation Form if needed):
 * B35YD7 PH = 8 - Preserved w/HNO3 per P.M.
Lot # 718139

PM (or PMA) review: Initials DS Date 6/21/16 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 $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 21 July 2016

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

July 21, 2016

**GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399946
Work Order #: 399946**

Product: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260C

Analytical Procedure: GL-OA-E-038 REV# 22

Analytical Batch: 1577534

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399946002	B35YD4
399946004	B35YD9
1203575153	Method Blank (MB)
1203575154	Laboratory Control Sample (LCS)
1203575155	400025001(NonSDG) Post Spike (PS)
1203575156	400025001(NonSDG) Post Spike Duplicate (PSD)

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

Data Summary:

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

Certification Statement

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

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399946 GEL Work Order: 399946

The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the sample.
- 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: Erin Haubert

Date: 19 JUL 2016

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number:	GEL399946	Date Collected:	06/21/2016 13:00	Matrix:	WATER
Lab Sample ID:	399946002	Date Received:	06/23/2016 09:00	Client:	CPRC001
Client ID:	B35YD4	Method:	SW846 8260C	Project:	CPRC0F16042
Batch ID:	1577534	Inst:	VOA3.I	SOP Ref:	GL-OA-E-038
Run Date:	06/27/2016 17:03	Analyst:	CDS1	Dilution:	1
Prep Date:	06/27/2016 17:03	Column:	DB-624	Purge Vol:	5 mL
Data File:	062716V3\3P116.D				

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
67-66-3	Chloroform	J	1.49	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL399946	Date Collected: 06/21/2016 13:00	Matrix: WATER
Lab Sample ID: 399946004	Date Received: 06/23/2016 09:00	
Client ID: B35YD9	Client: CPRC001	Project: CPRC0F16042
Batch ID: 1577534	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 06/27/2016 17:33	Inst: VOA3.I	Dilution: 1
Prep Date: 06/27/2016 17:33	Analyst: CDS1	Purge Vol: 5 mL
Data File: 062716V3\3P117.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
67-66-3	Chloroform	J	1.35	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 19, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1577534										
QC1203575154	LCS										
Chloroform	50.0			48.2	ug/L		96	(70%-130%)	CDS1	06/27/16	10:28
Ethylbenzene	50.0			49.0	ug/L		98	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			48.1	ug/L		96	(70%-130%)			
**Bromofluorobenzene	50.0			51.4	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			49.9	ug/L		100	(70%-130%)			
QC1203575153	MB										
Chloroform			U	0.300	ug/L					06/27/16	11:29
Ethylbenzene			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			51.5	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			49.6	ug/L		99	(70%-130%)			
**Toluene-d8	50.0			51.6	ug/L		103	(70%-130%)			
QC1203575155	400025001	PS									
Chloroform	50.0	J	0.360	47.7	ug/L		95	(70%-130%)		06/27/16	18:04
Ethylbenzene	50.0	U	0.00	48.0	ug/L		96	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		58.1	47.6	ug/L		95	(70%-130%)			
**Bromofluorobenzene	50.0		48.8	48.0	ug/L		96	(70%-130%)			
**Toluene-d8	50.0		55.8	48.9	ug/L		98	(70%-130%)			
QC1203575156	400025001	PSD									
Chloroform	50.0	J	0.360	50.0	ug/L	5	99	(0%-20%)		06/27/16	18:34
Ethylbenzene	50.0	U	0.00	50.7	ug/L	6	101	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		58.1	50.3	ug/L		101	(70%-130%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1577534										
**Bromofluorobenzene	50.0	48.8		53.9	ug/L		108	(70%-130%)			
**Toluene-d8	50.0	55.8		51.2	ug/L		102	(70%-130%)	CDS1	06/27/16	18:34

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: GEL399946

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203575154	LCS for batch 1577534	96	100	103
1203575153	MB for batch 1577534	103	103	99
399946002	B35YD4	104	106	91
399946004	B35YD9	107	105	93
1203575155	B35M74PS	95	98	96
1203575156	B35M74PSD	101	102	108

Surrogate

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

Acceptance Limits

(70%-130%)

(70%-130%)

(70%-130%)

* 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 #: GEL399946
Work Order #: 399946

Product: Washington Method for the Determination of Extractable Petroleum Hydrocarbons

Analytical Method: WA EPH

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

Analytical Batches: 1577353 and 1577352

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399946001	B35YD3
399946003	B35YD8
1203574626	Method Blank (MB)
1203574627	Laboratory Control Sample (LCS)
1203574628	399946003(B35YD8) Matrix Spike (MS)
1203574629	399946003(B35YD8) Matrix Spike Duplicate (MSD)

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

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

Results for this batch were reported from unfractionated extracts. There were no target analytes detected above the RDL in the client samples, therefore fractionation was not necessary.

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: GEL399946 GEL Work Order: 399946

The Qualifiers in this report are defined as follows:

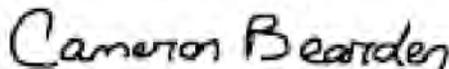
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- U 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: 28 JUN 2016

Title: Group Leader

Sample Data Summary

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

Page 1 of 1

SDG Number: GEL399946	Date Collected: 06/21/2016 13:00	Matrix: WATER
Lab Sample ID: 399946001	Date Received: 06/23/2016 09:00	
Client ID: B35YD3	Client: CPRC001	Project: CPRC0F16042
Batch ID: 1577353	Method: WA EPH	SOP Ref: GL-OA-E-075
Run Date: 06/27/2016 14:59	Inst: FID5.I	Dilution: 1
Prep Date: 06/26/2016 08:30	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062716_WA\F5F2714.D	Aliquot: 1040 mL	Final Volume: 2 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aliphatic Hydrocarbons >C10-C12	U	14.4	ug/L	14.4	38.5
	Aliphatic Hydrocarbons >C12-C16	U	14.4	ug/L	14.4	38.5
	Aliphatic Hydrocarbons >C16-C21	U	14.4	ug/L	14.4	38.5
	Aliphatic Hydrocarbons >C21-C34	U	14.4	ug/L	14.4	38.5
	Aliphatic Hydrocarbons C8-C10	J	25.9	ug/L	14.4	38.5
	Aromatic Hydrocarbons >C10-C12	U	14.4	ug/L	14.4	38.5
	Aromatic Hydrocarbons >C12-C16	U	14.4	ug/L	14.4	38.5
	Aromatic Hydrocarbons >C16-C21	U	14.4	ug/L	14.4	38.5
	Aromatic Hydrocarbons >C21-C34	U	14.4	ug/L	14.4	38.5
	Aromatic Hydrocarbons C8-C10	J	25.6	ug/L	14.4	38.5

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

Page 1 of 1

SDG Number: GEL399946	Date Collected: 06/21/2016 13:00	Matrix: WATER
Lab Sample ID: 399946003	Date Received: 06/23/2016 09:00	
Client ID: B35YD8	Client: CPRC001	Project: CPRC0F16042
Batch ID: 1577353	Method: WA EPH	SOP Ref: GL-OA-E-075
Run Date: 06/27/2016 11:32	Inst: FID5.I	Dilution: 1
Prep Date: 06/26/2016 08:30	Analyst: JMB3	Inj. Vol: 1 uL
Data File: 062716_WA\F5F2707.D	Aliquot: 1050 mL	Final Volume: 2 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
	Aliphatic Hydrocarbons >C10-C12	U	14.3	ug/L	14.3	38.1
	Aliphatic Hydrocarbons >C12-C16	U	14.3	ug/L	14.3	38.1
	Aliphatic Hydrocarbons >C16-C21	U	14.3	ug/L	14.3	38.1
	Aliphatic Hydrocarbons >C21-C34	U	14.3	ug/L	14.3	38.1
	Aliphatic Hydrocarbons C8-C10	U	14.3	ug/L	14.3	38.1
	Aromatic Hydrocarbons >C10-C12	U	14.3	ug/L	14.3	38.1
	Aromatic Hydrocarbons >C12-C16	U	14.3	ug/L	14.3	38.1
	Aromatic Hydrocarbons >C16-C21	U	14.3	ug/L	14.3	38.1
	Aromatic Hydrocarbons >C21-C34	U	14.3	ug/L	14.3	38.1
	Aromatic Hydrocarbons C8-C10	U	14.3	ug/L	14.3	38.1

Quality Control Summary

July 21, 2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 28, 2016

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1577353										
QC1203574627 LCS											
Aliphatic Hydrocarbons >C10-C12	400			384	ug/L		96	(70%-130%)	JMB3	06/27/16	13:01
Aliphatic Hydrocarbons >C12-C16	400			427	ug/L		107	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	400			403	ug/L		101	(70%-130%)			
Aliphatic Hydrocarbons >C21-C34	600		D	573	ug/L		96	(70%-130%)		06/27/16	12:31
Aliphatic Hydrocarbons C8-C10	200			191	ug/L		96	(70%-130%)		06/27/16	13:01
Aromatic Hydrocarbons >C10-C12	400			337	ug/L		84	(70%-130%)			
Aromatic Hydrocarbons >C12-C16	200			205	ug/L		102	(70%-130%)			
Aromatic Hydrocarbons >C16-C21	800		D	690	ug/L		86	(70%-130%)		06/27/16	12:31
Aromatic Hydrocarbons >C21-C34	400			360	ug/L		90	(70%-130%)		06/27/16	13:01
Aromatic Hydrocarbons C8-C10	200			169	ug/L		84	(70%-130%)			
**1-Chlorooctadecane	40.0			37.5	ug/L		94	(60%-140%)			
**o-Terphenyl	40.0			37.2	ug/L		93	(60%-140%)			
QC1203574626 MB											
Aliphatic Hydrocarbons >C10-C12			U	15.0	ug/L					06/27/16	12:01
Aliphatic Hydrocarbons >C12-C16			U	15.0	ug/L						
Aliphatic Hydrocarbons >C16-C21			U	15.0	ug/L						
Aliphatic Hydrocarbons >C21-C34			U	15.0	ug/L						
Aliphatic Hydrocarbons C8-C10			U	15.0	ug/L						
Aromatic Hydrocarbons >C10-C12			U	15.0	ug/L						
Aromatic Hydrocarbons >C12-C16			U	15.0	ug/L						

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QC Summary

Workorder: 399946

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1577353										
Aromatic Hydrocarbons >C16-C21			U	15.0	ug/L						
Aromatic Hydrocarbons >C21-C34			U	15.0	ug/L				JMB3	06/27/16	12:01
Aromatic Hydrocarbons C8-C10			U	15.0	ug/L						
**1-Chlorooctadecane	40.0			35.0	ug/L		88	(60%-140%)			
**o-Terphenyl	40.0			35.5	ug/L		89	(60%-140%)			
QC1203574628 399946003 MS											
Aliphatic Hydrocarbons >C10-C12	381	U	14.3	367	ug/L		96	(70%-130%)		06/27/16	13:30
Aliphatic Hydrocarbons >C12-C16	381	U	14.3	404	ug/L		106	(70%-130%)			
Aliphatic Hydrocarbons >C16-C21	381	U	14.3	394	ug/L		103	(70%-130%)			
Aliphatic Hydrocarbons >C21-C34	571	U	14.3	E 569	ug/L		100	(70%-130%)			
Aliphatic Hydrocarbons C8-C10	190	U	14.3	189	ug/L		99	(70%-130%)			
Aromatic Hydrocarbons >C10-C12	381	U	14.3	323	ug/L		85	(70%-130%)			
Aromatic Hydrocarbons >C12-C16	190	U	14.3	194	ug/L		102	(70%-130%)			
Aromatic Hydrocarbons >C16-C21	762	U	14.3	E 688	ug/L		90	(70%-130%)			
Aromatic Hydrocarbons >C21-C34	381	U	14.3	340	ug/L		89	(70%-130%)			
Aromatic Hydrocarbons C8-C10	190	U	14.3	168	ug/L		88	(70%-130%)			
**1-Chlorooctadecane	38.1		29.7	29.9	ug/L		78	(60%-140%)			
**o-Terphenyl	38.1		35.9	34.9	ug/L		92	(60%-140%)			
QC1203574629 399946003 MSD											
Aliphatic Hydrocarbons >C10-C12	381	U	14.3	338	ug/L	8	89	(0%-20%)		06/27/16	14:00
Aliphatic Hydrocarbons >C12-C16	381	U	14.3	372	ug/L	8	98	(0%-20%)			
Aliphatic Hydrocarbons >C16-C21	381	U	14.3	360	ug/L	9	94	(0%-20%)			
Aliphatic Hydrocarbons >C21-C34	571	U	14.3	E 531	ug/L	7	93	(0%-20%)			
Aliphatic Hydrocarbons C8-C10	190	U	14.3	174	ug/L	8	91	(0%-20%)			

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
GC-FID											
Batch	1577353										
Aromatic Hydrocarbons >C10-C12	381	U	14.3		297	ug/L	8	78	(0%-20%)	JMB3	06/27/16 14:00
Aromatic Hydrocarbons >C12-C16	190	U	14.3		179	ug/L	8	94	(0%-20%)		
Aromatic Hydrocarbons >C16-C21	762	U	14.3	E	628	ug/L	9	82	(0%-20%)		
Aromatic Hydrocarbons >C21-C34	381	U	14.3		325	ug/L	5	85	(0%-20%)		
Aromatic Hydrocarbons C8-C10	190	U	14.3		155	ug/L	8	81	(0%-20%)		
**1-Chlorooctadecane	38.1		29.7		26.9	ug/L		71	(60%-140%)		
**o-Terphenyl	38.1		35.9		31.9	ug/L		84	(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
- 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)

July 21, 2016

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QC Summary

Workorder: 399946

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<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
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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.

^ 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: GEL399946

Matrix Type: LIQUID

Sample ID	Client ID	COD %REC	OTP %REC
399946003	B35YD8	78	94
1203574626	MB for batch 1577352	88	89
1203574627	LCS for batch 1577352DL	91 D	91 D
1203574627	LCS for batch 1577352	94	93
1203574628	B35YD8MS	78	92
1203574629	B35YD8MSD	71	84
399946001	B35YD3	76	94

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
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399946
Work Order #: 399946

Product: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: NWTPH-Dx

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

Analytical Batch: 1578659

Preparation Method: SW846 3535A

Preparation Procedure: GL-OA-E-013 REV# 29

Preparation Batch: 1578658

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399946001	B35YD3
399946003	B35YD8
1203577702	Method Blank (MB)
1203577703	Laboratory Control Sample (LCS)
1203577704	Laboratory Control Sample Duplicate (LCSD)

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

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

Continuing Calibration Verification (CCV) Requirements

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

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. Samples 399946001 (B35YD3) and 399946003 (B35YD8) were re-extracted out of holding. The results were reported with proper qualifier.

Sample Re-extraction/Re-analysis

Samples 399946001 (B35YD3) and 399946003 (B35YD8) were re-extracted due to QC failures in the original extraction. The re-extraction was performed out of holding. The sample results were consistent between the within holding time data and out of holding data. There were not target analytes detected above the PQL in both

analyses. The out of holding data were reported at the client's instruction.

Miscellaneous Information

Manual Integrations

Samples 1203577703 (LCS) and 1203577704 (LCSD) 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: GEL399946 GEL Work Order: 399946

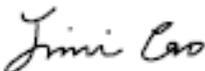
The Qualifiers in this report are defined as follows:

- 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.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: 19 JUL 2016

Title: Data Validator

Sample Data Summary

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

Page 1 of 1

SDG Number: GEL399946	Date Collected: 06/21/2016 13:00	Matrix: WATER
Lab Sample ID: 399946001	Date Received: 06/23/2016 09:00	
Client ID: B35YD3	Client: CPRC001	Project: CPRC0F16042
Batch ID: 1578659	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 07/05/2016 23:17	Inst: FID7.I	Dilution: 1
Prep Date: 07/01/2016 04:20	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 070516DRO-MO\7g0515.D	Aliquot: 1050 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	UX	47.6	ug/L	47.6	190
	Motor Oil	JX	62.7	ug/L	47.6	190

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

SDG Number: GEL399946	Date Collected: 06/21/2016 13:00	Matrix: WATER
Lab Sample ID: 399946003	Date Received: 06/23/2016 09:00	
Client ID: B35YD8	Client: CPRC001	Project: CPRC0F16042
Batch ID: 1578659	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 07/05/2016 23:56	Inst: FID7.I	Dilution: 1
Prep Date: 07/01/2016 04:20	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 070516DRO-MO\7g0516.D	Aliquot: 1050 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	UX	47.6	ug/L	47.6	190
	Motor Oil	UX	47.6	ug/L	47.6	190

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: July 19, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1578659										
QC1203577703	LCS										
Diesel Range Organics	2000			1960	ug/L		98	(70%-130%)	LXA1	07/05/16	22:00
Motor Oil	2000			2330	ug/L		117	(70%-130%)			
**o-Terphenyl	20.0			19.6	ug/L		98	(60%-140%)			
QC1203577704	LCSD										
Diesel Range Organics	2000			1840	ug/L	7	92	(0%-20%)		07/05/16	22:39
Motor Oil	2000			2230	ug/L	4	111	(0%-20%)			
**o-Terphenyl	20.0			18.2	ug/L		91	(60%-140%)			
QC1203577702	MB										
Diesel Range Organics			U	50.0	ug/L					07/05/16	21:22
Motor Oil			U	50.0	ug/L						
**o-Terphenyl	20.0			13.5	ug/L		67	(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
- 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

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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: GEL399946

Matrix Type: LIQUID

Sample ID	Client ID	OTP %REC
1203577702	MB for batch 1578658	67
1203577703	LCS for batch 1578658	98
1203577704	LCSD for batch 1578658	91
399946001	B35YD3	60
399946003	B35YD8	65

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(60%-140%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399946
Work Order #: 399946

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1576789

Product: Determination of Metals by ICP
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1576807

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batches: 1576788 and 1576806

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399946005	B35YD7
399946006	B35YF2
1203573209	Method Blank (MB)ICP
1203573210	Laboratory Control Sample (LCS)
1203573213	399946006(B35YF2L) Serial Dilution (SD)
1203573211	399946006(B35YF2S) Matrix Spike (MS)
1203573212	399946006(B35YF2SD) Matrix Spike Duplicate (MSD)
1203573164	Method Blank (MB)ICP-MS
1203573165	Laboratory Control Sample (LCS)
1203573168	399946006(B35YF2L) Serial Dilution (SD)
1203573166	399946006(B35YF2S) Matrix Spike (MS)
1203573167	399946006(B35YF2SD) Matrix Spike Duplicate (MSD)

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

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium and sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 399946005 (B35YD7) and 399946006 (B35YF2)-ICP.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of strontium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203573164 (MB)-ICP-MS.

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399946 GEL Work Order: 399946

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Jamie Johnson

Date: 18 JUL 2016

Title: Group Leader

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399946

CONTRACT: CPRC0F16042

METHOD TYPE: SW846

SAMPLE ID:399946005

BASIS: As Received

DATE COLLECTED 21-JUN-16

CLIENT ID: B35YD7

LEVEL: Low

DATE RECEIVED 23-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	39.4	ug/L	B	15	50	50	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-38-2	Arsenic	1.7	ug/L	U	1.7	5	5	1	MS	BAJ	07/07/16 17:54	160707-2	1576789
7440-39-3	Barium	86.7	ug/L		0.6	2	2	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-70-2	Calcium	97700	ug/L		50	200	200	1	P	HSC	06/29/16 09:36	062916-1	1576807
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-48-4	Cobalt	1.05	ug/L		0.1	1	1	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-50-8	Copper	1.53	ug/L		0.35	1	1	1	MS	BAJ	07/07/16 17:54	160707-2	1576789
7439-89-6	Iron	248	ug/L		30	100	100	1	P	HSC	06/29/16 09:36	062916-1	1576807
7439-92-1	Lead	0.766	ug/L	B	0.5	2	2	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7439-95-4	Magnesium	19600	ug/L		110	300	300	1	P	HSC	06/29/16 09:36	062916-1	1576807
7439-96-5	Manganese	260	ug/L		1	5	5	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7439-98-7	Molybdenum	3.1	ug/L		0.165	0.5	0.5	1	MS	BAJ	07/08/16 17:32	160708-6	1576789
7440-02-0	Nickel	1.53	ug/L	B	0.5	2	2	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	HSC	06/29/16 09:36	062916-1	1576807
7440-09-7	Potassium	7490	ug/L		50	150	150	1	P	HSC	06/29/16 09:36	062916-1	1576807
7782-49-2	Selenium	2.44	ug/L	B	1.5	5	5	1	MS	BAJ	07/07/16 17:54	160707-2	1576789
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BAJ	07/07/16 21:16	160707-3	1576789
7440-23-5	Sodium	99700	ug/L		100	300	300	1	P	HSC	06/29/16 09:36	062916-1	1576807
7440-24-6	Strontium	563	ug/L		2	10	10	1	MS	BAJ	07/11/16 17:10	160711-16	1576789
7440-62-2	Vanadium	5.87	ug/L	B	4.5	10	10	1	MS	BAJ	07/08/16 23:36	160708-15	1576789
7440-66-6	Zinc	177	ug/L		3.5	10	10	1	MS	BAJ	07/11/16 17:10	160711-16	1576789

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1576789	1576788	SW846 3005A	50	mL	50	mL	06/24/16	SXW1
1576807	1576806	SW846 3005A	50	mL	50	mL	06/24/16	SXW1

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399946

CONTRACT: CPRC0F16042

METHOD TYPE: SW846

SAMPLE ID:399946006

BASIS: As Received

DATE COLLECTED 21-JUN-16

CLIENT ID: B35YF2

LEVEL: Low

DATE RECEIVED 23-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	15	ug/L	U	15	50	50	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-38-2	Arsenic	1.91	ug/L	B	1.7	5	5	1	MS	BAJ	07/07/16 17:57	160707-2	1576789
7440-39-3	Barium	94.8	ug/L		0.6	2	2	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-43-9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-70-2	Calcium	100000	ug/L		50	200	200	1	P	HSC	06/29/16 09:45	062916-1	1576807
7440-47-3	Chromium	2	ug/L	U	2	10	10	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-48-4	Cobalt	0.978	ug/L	B	0.1	1	1	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-50-8	Copper	1.05	ug/L		0.35	1	1	1	MS	BAJ	07/07/16 17:57	160707-2	1576789
7439-89-6	Iron	262	ug/L		30	100	100	1	P	HSC	06/29/16 09:45	062916-1	1576807
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7439-95-4	Magnesium	20300	ug/L		110	300	300	1	P	HSC	06/29/16 09:45	062916-1	1576807
7439-96-5	Manganese	271	ug/L		1	5	5	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7439-98-7	Molybdenum	3.41	ug/L		0.165	0.5	0.5	1	MS	BAJ	07/08/16 17:33	160708-6	1576789
7440-02-0	Nickel	1.78	ug/L	B	0.5	2	2	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	HSC	06/29/16 09:45	062916-1	1576807
7440-09-7	Potassium	7650	ug/L		50	150	150	1	P	HSC	06/29/16 09:45	062916-1	1576807
7782-49-2	Selenium	2.71	ug/L	B	1.5	5	5	1	MS	BAJ	07/07/16 17:57	160707-2	1576789
7440-22-4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BAJ	07/07/16 21:19	160707-3	1576789
7440-23-5	Sodium	110000	ug/L		100	300	300	1	P	HSC	06/29/16 09:45	062916-1	1576807
7440-24-6	Strontium	603	ug/L		2	10	10	1	MS	BAJ	07/11/16 17:12	160711-16	1576789
7440-62-2	Vanadium	5.24	ug/L	B	4.5	10	10	1	MS	BAJ	07/08/16 23:38	160708-15	1576789
7440-66-6	Zinc	114	ug/L		3.5	10	10	1	MS	BAJ	07/11/16 17:12	160711-16	1576789

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1576789	1576788	SW846 3005A	50	mL	50	mL	06/24/16	SXW1
1576807	1576806	SW846 3005A	50	mL	50	mL	06/24/16	SXW1

***Analytical Methods:**

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

Quality Control Summary

July 21, 2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 18, 2016

Page 1 of 7

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1576789										
QC1203573165	LCS										
Aluminum	2000			2110	ug/L		106	(80%-120%)	BAJ	07/07/16	21:14
Antimony	50.0			48.7	ug/L		97.3	(80%-120%)			
Arsenic	50.0			51.9	ug/L		104	(80%-120%)		07/07/16	17:52
Barium	50.0			47.4	ug/L		94.8	(80%-120%)		07/07/16	21:14
Cadmium	50.0			51.0	ug/L		102	(80%-120%)			
Chromium	50.0			50.8	ug/L		102	(80%-120%)			
Cobalt	50.0			50.9	ug/L		102	(80%-120%)			
Copper	50.0			52.0	ug/L		104	(80%-120%)		07/07/16	17:52
Lead	50.0			49.9	ug/L		99.7	(80%-120%)		07/07/16	21:14
Manganese	50.0			51.5	ug/L		103	(80%-120%)			
Molybdenum	50.0			53.6	ug/L		107	(80%-120%)		07/08/16	17:31
Nickel	50.0			51.0	ug/L		102	(80%-120%)		07/07/16	21:14
Selenium	50.0			51.5	ug/L		103	(80%-120%)		07/07/16	17:52
Silver	50.0			52.4	ug/L		105	(80%-120%)		07/07/16	21:14
Strontium	50.0			55.2	ug/L		110	(80%-120%)		07/11/16	17:09
Vanadium	50.0			56.0	ug/L		112	(80%-120%)		07/08/16	23:35
Zinc	50.0			56.7	ug/L		113	(80%-120%)		07/11/16	17:09
QC1203573164	MB										
Aluminum			U	15.0	ug/L					07/07/16	21:11
Antimony			U	1.00	ug/L						

July 21, 2016

GEL LABORATORIES LLC

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

QC Summary

Workorder: 399946

Page 2 of 7

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1576789										
Arsenic			U	1.70	ug/L					07/07/16	17:49
Barium			U	0.600	ug/L				BAJ	07/07/16	21:11
Cadmium			U	0.110	ug/L						
Chromium			U	2.00	ug/L						
Cobalt			U	0.100	ug/L						
Copper			U	0.350	ug/L					07/07/16	17:49
Lead			U	0.500	ug/L					07/07/16	21:11
Manganese			U	1.00	ug/L						
Molybdenum			U	0.165	ug/L					07/08/16	17:29
Nickel			U	0.500	ug/L					07/07/16	21:11
Selenium			U	1.50	ug/L					07/07/16	17:49
Silver			U	0.200	ug/L					07/07/16	21:11
Strontium			B	2.56	ug/L					07/11/16	17:07
Vanadium			U	4.50	ug/L					07/08/16	23:33
Zinc			U	3.50	ug/L					07/11/16	17:07
QC1203573166 399946006 MS											
Aluminum	2000	U	15.0	2070	ug/L		103	(75%-125%)		07/07/16	21:21
Antimony	50.0	U	1.00	45.8	ug/L		91.3	(75%-125%)			
Arsenic	50.0	B	1.91	52.7	ug/L		102	(75%-125%)		07/07/16	17:59
Barium	50.0		94.8	135	ug/L		80.8	(75%-125%)		07/07/16	21:21
Cadmium	50.0	U	0.110	47.0	ug/L		94	(75%-125%)			
Chromium	50.0	U	2.00	48.9	ug/L		95.9	(75%-125%)			
Cobalt	50.0	B	0.978	48.1	ug/L		94.2	(75%-125%)			

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1576789										
Copper	50.0	1.05		43.6	ug/L		85.1	(75%-125%)	BAJ	07/07/16	17:59
Lead	50.0	U	0.500	45.7	ug/L		90.5	(75%-125%)		07/07/16	21:21
Manganese	50.0	271		313	ug/L		N/A	(75%-125%)			
Molybdenum	50.0	3.41		57.0	ug/L		107	(75%-125%)		07/08/16	17:34
Nickel	50.0	B	1.78	46.8	ug/L		90	(75%-125%)		07/07/16	21:21
Selenium	50.0	B	2.71	53.5	ug/L		102	(75%-125%)		07/07/16	17:59
Silver	50.0	U	0.200	47.0	ug/L		94.1	(75%-125%)		07/07/16	21:21
Strontium	50.0	603		643	ug/L		N/A	(75%-125%)		07/11/16	17:13
Vanadium	50.0	B	5.24	57.2	ug/L		104	(75%-125%)		07/08/16	23:39
Zinc	50.0	114		162	ug/L		96.8	(75%-125%)		07/11/16	17:13
QC1203573167 399946006 MSD											
Aluminum	2000	U	15.0	2120	ug/L	2.47	105	(0%-20%)		07/07/16	21:24
Antimony	50.0	U	1.00	48.4	ug/L	5.48	96.5	(0%-20%)			
Arsenic	50.0	B	1.91	54.2	ug/L	2.85	105	(0%-20%)		07/07/16	18:02
Barium	50.0	94.8		138	ug/L	2.13	86.6	(0%-20%)		07/07/16	21:24
Cadmium	50.0	U	0.110	48.7	ug/L	3.52	97.4	(0%-20%)			
Chromium	50.0	U	2.00	49.7	ug/L	1.59	97.5	(0%-20%)			
Cobalt	50.0	B	0.978	49.8	ug/L	3.42	97.6	(0%-20%)			
Copper	50.0	1.05		44.4	ug/L	1.86	86.8	(0%-20%)		07/07/16	18:02
Lead	50.0	U	0.500	46.6	ug/L	2	92.3	(0%-20%)		07/07/16	21:24
Manganese	50.0	271		331	ug/L	5.43	N/A	(0%-20%)			
Molybdenum	50.0	3.41		58.6	ug/L	2.72	110	(0%-20%)		07/08/16	17:36

GEL LABORATORIES LLC

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1576789										
Nickel	50.0	B	1.78	47.7	ug/L	1.96	91.9	(0%-20%)	BAJ	07/07/16	21:24
Selenium	50.0	B	2.71	55.8	ug/L	4.21	106	(0%-20%)		07/07/16	18:02
Silver	50.0	U	0.200	46.8	ug/L	0.62	93.5	(0%-20%)		07/07/16	21:24
Strontium	50.0		603	641	ug/L	0.401	N/A	(0%-20%)		07/11/16	17:15
Vanadium	50.0	B	5.24	54.9	ug/L	4.13	99.4	(0%-20%)		07/08/16	23:41
Zinc	50.0		114	168	ug/L	3.51	108	(0%-20%)		07/11/16	17:15
QC1203573168 399946006 SDILT											
Aluminum		U	11.5	DU	75.0	ug/L	N/A	(0%-10%)		07/07/16	21:29
Antimony		U	0.121	DU	5.00	ug/L	N/A	(0%-10%)			
Arsenic		B	1.91	DU	8.50	ug/L	N/A	(0%-10%)		07/07/16	18:07
Barium			94.8	D	19.2	ug/L	1.29	(0%-10%)		07/07/16	21:29
Cadmium		U	0.026	DU	0.550	ug/L	N/A	(0%-10%)			
Chromium		U	0.996	DU	10.0	ug/L	N/A	(0%-10%)			
Cobalt		B	0.978	BD	0.231	ug/L	18.1	(0%-10%)			
Copper			1.05	DU	1.75	ug/L	N/A	(0%-10%)		07/07/16	18:07
Lead		U	0.480	DU	2.50	ug/L	N/A	(0%-10%)		07/07/16	21:29
Manganese			271	D	57.6	ug/L	6.15	(0%-10%)			
Molybdenum			3.41	D	0.661	ug/L	2.97	(0%-10%)		07/08/16	17:37
Nickel		B	1.78	DU	2.50	ug/L	N/A	(0%-10%)		07/07/16	21:29
Selenium		B	2.71	DU	7.50	ug/L	N/A	(0%-10%)		07/07/16	18:07
Silver		U	0.004	DU	1.00	ug/L	N/A	(0%-10%)		07/07/16	21:29
Strontium			603	D	122	ug/L	1.51	(0%-10%)		07/11/16	17:17

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1576789										
Vanadium		B	5.24	DU	22.5	ug/L	N/A	(0%-10%)	BAJ	07/08/16	23:43
Zinc			114	D	29.1	ug/L	27.9	(0%-10%)		07/11/16	17:17
Metals Analysis-ICP											
Batch	1576807										
QC1203573210	LCS										
Calcium	5000				5110	ug/L	102	(80%-120%)	HSC	06/29/16	09:33
Iron	5000				5060	ug/L	101	(80%-120%)			
Magnesium	5000				5220	ug/L	104	(80%-120%)			
Phosphorous	500				490	ug/L	98	(80%-120%)			
Potassium	5000				4980	ug/L	99.7	(80%-120%)			
Sodium	5000				5080	ug/L	102	(80%-120%)			
QC1203573209	MB										
Calcium			U		50.0	ug/L				06/29/16	09:29
Iron			U		30.0	ug/L					
Magnesium			U		110	ug/L					
Phosphorous			U		60.0	ug/L					
Potassium			U		50.0	ug/L					
Sodium			U		100	ug/L					
QC1203573211	399946006 MS										
Calcium	5000		100000		106000	ug/L	N/A	(75%-125%)		06/29/16	09:48
Iron	5000		262		5150	ug/L	97.7	(75%-125%)			
Magnesium	5000		20300		25400	ug/L	N/A	(75%-125%)			
Phosphorous	500	U	60.0		507	ug/L	100	(75%-125%)			
Potassium	5000		7650		12700	ug/L	102	(75%-125%)			

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1576807										
Sodium	5000	110000		112000	ug/L		N/A	(75%-125%)			
QC1203573212 399946006 MSD											
Calcium	5000	100000		105000	ug/L	0.818	N/A	(0%-20%)	HSC	06/29/16	09:51
Iron	5000	262		5130	ug/L	0.382	97.3	(0%-20%)			
Magnesium	5000	20300		25100	ug/L	1.33	N/A	(0%-20%)			
Phosphorous	500	U 60.0		503	ug/L	0.748	99.6	(0%-20%)			
Potassium	5000	7650		12600	ug/L	0.986	99.3	(0%-20%)			
Sodium	5000	110000		111000	ug/L	0.394	N/A	(0%-20%)			
QC1203573213 399946006 SDILT											
Calcium		100000	D	19900	ug/L	.549		(0%-10%)		06/29/16	09:55
Iron		262	BD	53.4	ug/L	2.03		(0%-10%)			
Magnesium		20300	D	4040	ug/L	.578		(0%-10%)			
Phosphorous		U 5.34	DU	300	ug/L	N/A		(0%-10%)			
Potassium		7650	D	1530	ug/L	.344		(0%-10%)			
Sodium		110000	D	21100	ug/L	3.76		(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

GEL LABORATORIES LLC

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QC Summary

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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 #: GEL399946
Work Order #: 399946

Product: Alkalinity

Analytical Method: 2320_ALKALINITY

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

Analytical Batch: 1576942

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399946001	B35YD3
399946003	B35YD8
1203573612	Laboratory Control Sample (LCS)
1203573615	Method Blank (MB)
1203573618	399946001(B35YD3) Sample Duplicate (DUP)

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

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement

The method blank associated with this data was slightly above the normal acceptance limits. The data for sample 1203573615 (MB) was deemed acceptable because the values for all reported samples were more than 10 times the value of the method blank.

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.

July 21, 2016

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: GEL399946 GEL Work Order: 399946

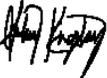
The Qualifiers in this report are defined as follows:

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.

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: 28 JUN 2016

Title: Analyst I

Sample Data Summary

July 21, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 28, 2016

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

Client Sample ID: B35YD3
Sample ID: 399946001
Matrix: WATER
Collect Date: 21-JUN-16 13:00
Receive Date: 23-JUN-16
Collector: Client
Project: CPRC0F16042
Client ID: CPRC001

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 2320_ALKALINITY: COMMON "As Received", C, 230000, 725, 1000, ug/L, KLP1, 06/24/16, 1322, 1576942, 1.

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, 2320_ALKALINITY.

Notes:

July 21, 2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 28, 2016

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

Client Sample ID: B35YD8
Sample ID: 399946003
Matrix: WATER
Collect Date: 21-JUN-16 13:00
Receive Date: 23-JUN-16
Collector: Client
Project: CPRC0F16042
Client ID: CPRC001

Table with 11 columns: Parameter, Qualifier, Result, DL, RL, Units, DF, Analyst, Date, Time Batch, Method. Row 1: 2320_ALKALINITY: COMMON "As Received", C, 232000, 725, 1000, ug/L, KLP1, 06/24/16, 1337, 1576942, 1.

The following Analytical Methods were performed:

Table with 3 columns: Method, Description, Analyst Comments. Row 1: 1, 2320_ALKALINITY.

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 28, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399946

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1576942										
QC1203573618	399946001	DUP									
Alkalinity, Total as CaCO3	C	230000		231000	ug/L	0.443		(0%-20%)	KLP1	06/24/16	13:33
QC1203573612	LCS										
Alkalinity, Total as CaCO3	50000			53700	ug/L		107	(80%-120%)		06/24/16	13:04
QC1203573615	MB										
Alkalinity, Total as CaCO3				2040	ug/L					06/24/16	13:01

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.