

April 03, 2018

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

Re: CHPRC SAF S18-003
Work Order: 445538
SDG: GEL445538

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 09, 2018. 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,

Anna Dupree for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: S18-003-132, S18-003-133, S18-003-135, S18-003-136, S18-003-284, S18-003-288,
S18-003-470, S18-003-481, S18-003-498 and S18-003-499
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S18-003
SDG: GEL445538**

April 03, 2018

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 March 09, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
445538001	B3HH13
445538002	B3HFN5
445538003	B3HH33
445538004	B3HH34
445538005	B3HFN3
445538006	B3HFPO
445538007	B3HH18
445538008	B3HH24
445538009	B3HH25
445538010	B3HH19
445538011	B3HLW3
445538012	B3HLW2

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, GC Volatiles (GRO), GC/MS Volatile, General Chemistry, Metals and Radiochemistry.

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



Anna Dupree for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL445538
Work Order #: 445538

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

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203991255 (Non SDG 445658001PS)	Acetone	60* (70%-130%)
1203991257 (Non SDG 445658001PSD)	Acetone	58* (70%-130%)

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.

Quality Control (QC) Information

Matrix Spike (MS/MSD) Recovery Statement

The MSD (See Below) spike recovery was slightly below the acceptance limits. This non-compliance is not likely to affect sample results as all other quality control criteria have been met for the entire batch.

Sample	Analyte	Value
1203989826 (B3HFP0MSD)	Diesel Range Organics	66* (70%-130%)

Miscellaneous Information

Manual Integrations

Samples 1203989824 (LCS), 1203989825 (B3HFP0MS) and 1203989826 (B3HFP0MSD) required manual

integration to correctly position the baseline as set in the calibration standard injections.

GC Volatiles (GRO)

Volatile Total Petroleum Hydrocarbons by Flame Ionization Detector

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.

Metals

Determination of Metals by ICP

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

Determination of Metals by ICP-MS

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

General Chemistry

Ion Chromatography

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

Technical Information

Sample Dilutions

The following samples 1203986836 (B3HH34DUP), 1203986837 (B3HH34PS), 445538001 (B3HH13), 445538002 (B3HFN5) and 445538004 (B3HH34) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	445538		
	001	002	004
Chloride	20X	10X	5X

Nitrate	20X	10X	1X
Sulfate	20X	10X	5X

Miscellaneous Information

Manual Integrations

Samples 1203986836 (B3HH34DUP), 1203986837 (B3HH34PS), 445538001 (B3HH13), 445538002 (B3HFN5), 445538003 (B3HH33) and 445538004 (B3HH34) were manually integrated to correctly position the baseline as set in the calibration standards.

n-Hexane Extractable Material

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.

Alkalinity

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

Radiochemistry

SRISO_SEP_PRECIP_GPC: COMMON

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

Recounts

Sample 445538006 (B3HFP0) was verified by recounting at least five days from the separation date. The recount is reported.

9310_ALPHABETA_GPC: Gross Beta

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

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203988767 (B3HHN9MS) and 1203988768 (B3HHN9MSD), aliquots were reduced to conserve sample volume.

TRITIUM_DIST_LSC: COMMON

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

The matrix spike, 1203988928 (B3HH18MS), aliquot was reduced to conserve sample volume.

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 445538	C.O.C. # S18-003-288
Page 1 of 1		

Collector: Ed Kader / ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 - 91-71	Ice Chest No.: GWS-400
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771756282710
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9138

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HH13	N	W	MAR 08 2018	1119	1x125-mL G/P	9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: GW 02	48 Hours	Cool <=6C

APRIL 5, 2018

Relinquished By: <i>[Signature]</i> MAR 08 2018 1355 <small>Ed Kader / ICHPRC</small> Print First and Last Name Signature Date/Time	Received By: <i>[Signature]</i> MAR 08 2018 1355 <small>Lesly Wall / ICHPRC</small> Print First and Last Name Signature Date/Time	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <i>[Signature]</i> MAR 08 2018 1400 <small>Lesly Wall / ICHPRC</small> Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time	
Relinquished By: Fed Ex Print First and Last Name Signature Date/Time	Received By: Print First and Last Name Signature Date/Time	
Relinquished By: Print First and Last Name Signature Date/Time	Received By: Chakeris Tarpin / GEL Laboratories <i>[Signature]</i> 3/9/18 Print First and Last Name Signature Date/Time	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: Date/Time:

REV. 0

69 lbs

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445088			C.O.C.# S18-003-284			
Collector: Lany Rosane ICHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-003		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: CERCLA, MARCH 2018		Logbook No.: HNF-N-506 98/53		Ice Chest No.: 6WS-607401				
Shipped To (Lab): GEL Laboratories, LLC		Method of Shipment Commercial Carrier		Bill of Lading/Air Bill No.: 771754678792				
Protocol CERCLA		Priority: 30 Days		Offsite Property No.: 9134				
POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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				SPECIAL INSTRUCTIONS N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HFN5	N	W	3-8-18	0900	1x125-mL G/P	9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: GW 02	48 Hours	Cool <=6C

APRIL 5, 2018

Relinquished By: Lany Rosane ICHPRC Signature: <i>Lany Rosane</i> Date/Time: MAR 08 2018 1055	Received By: Troy Bacon CHPRC Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1055	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Troy Bacon CHPRC Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____		
Relinquished By: Fed Ex Signature: _____ Date/Time: _____	Received By: Chakeris Tarplin/ GEL Laboratories Signature: <i>Chri Tar</i> Date/Time: 3/9/18 0855		
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

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REV. 0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-470 Page 1 of 1
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Collector: Ed Kauer /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506. 97/71	Ice Chest No.: 623-8-18 GWS-687-401
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7717 5467 8792
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9134

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HH33	N	W	MAR 08 2018	0730	1x125-mL G/P	9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: GW 02	48 Hours	Cool <=6C

APRIL 5, 2018

Relinquished By:  Ed Kauer /CHPRC Print First and Last Name Signature Date/Time: MAR 08 2018 1033	Received By: Troy Bacon /CHPRC Troy L Bacon Print First and Last Name Signature Date/Time: MAR 08 2018 1033	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Troy Bacon /CHPRC Troy L Bacon Print First and Last Name Signature Date/Time: MAR 08 2018 1400	Received By: FEDEX Print First and Last Name Signature Date/Time:	
Relinquished By: Fed Ex Print First and Last Name Signature Date/Time:	Received By: Chakeris Tarplin /GEL Laboratories Chakeris Tarplin Print First and Last Name Signature Date/Time: 3/9/18 0855	
Relinquished By: Print First and Last Name Signature Date/Time:	Received By: Print First and Last Name Signature Date/Time:	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: Date/Time:

REV. 0

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-481
		Page 1 of 1

Collector: Ed Kauer /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506-97-71	Ice Chest No.: GWS-481 401
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771754678792
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9134

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HH34	N	W	Ed Kauer 3-8-18	0951	1x125-mL G/P	9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: GW 02	48 Hours	Cool <=6C

MAR 08 2018

APRIL 5, 2018

Relinquished By: Ed Kauer /CHPRC Print First and Last Name Signature Date/Time: MAR 08 2018 1037	Received By: Troy Bacon /CHPRC Print First and Last Name Signature Date/Time: MAR 08 2018 1037	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Troy Bacon /CHPRC Print First and Last Name Signature Date/Time: MAR 08 2018 1400	Received By: FEDEX Print First and Last Name Signature Date/Time:	
Relinquished By: Fed Ex Print First and Last Name Signature Date/Time:	Received By: Chakeris Tarplin / GEL Laboratories Print First and Last Name Signature Date/Time: 3/9/18 0855	
Relinquished By: Print First and Last Name Signature Date/Time:	Received By: Print First and Last Name Signature Date/Time:	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: Date/Time:

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REV. 0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-132
		Page 1 of 1

Collector: Larry Rosane <small>CHPRC</small>	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 98/53	Ice Chest No.: 9202815 GWS test 401
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771754678792
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9134

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HFN3	N	W	3-8-18	0926	4x1-L G	1664A_OILGREASE: COMMON	28 Days	HCl to pH <2 / Cool <=6C
B3HFN3	N	W	↓	↓	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B3HFN3	N	W			5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3HFN3	N	W	↓	↓	1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2
B3HFN3	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3HFN3	N	W	↓	↓	4x1-L aG	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2 / Cool <=6C
B3HFN3	N	W			3-8-18	0926	5x40-mL aGs*	WTPH_GASOLINE: COMMON

APRIL 5, 2018

Relinquished By: Larry Rosane <small>CHPRC</small> Signature: <i>Larry Rosane</i> Date/Time: MAR 08 2018 1055	Received By: Troy Bacon <small>CHPRC</small> Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1055	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Troy Bacon <small>CHPRC</small> Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: Fed Ex Signature: _____ Date/Time: _____	Received By: Chakeris Tarplin/ <small>GEL Laboratories</small> Signature: <i>Chri Tar</i> Date/Time: 3/9/18 0855	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____
		Disposed By: _____ Date/Time: _____

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REV. 0

70lbs

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-133
Page 1 of 1		

Collector: Lary Rosane CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 98/53	Ice Chest No.: GWS-385
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771754679148
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9134

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HFPO	N	W	3-8-18	1028	4x1-L G	1664A_OILGREASE: COMMON	28 Days	HCl to pH <2 / Cool <=6C
B3HFPO	N	W	↓	↓	1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2
B3HFPO	N	W	↓	↓	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3HFPO	N	W	↓	↓	4x1-L aG	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2 / Cool <=6C
B3HFPO	N	W	3-8-18	1028	4x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2 / Cool <=6C

Relinquished By: Lary Rosane CHPRC <i>Lary Rosane</i> MAR 08 2018 1055 <small>Print First and Last Name Signature Date/Time</small>	Received By: Troy Bacon CHPRC <i>Troy L. Bacon</i> MAR 08 2018 1055 <small>Print First and Last Name Signature Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other		
Relinquished By: Troy Bacon CHPRC <i>Troy L. Bacon</i> MAR 08 2018 1400 <small>Print First and Last Name Signature Date/Time</small>	Received By: FEDEX <small>Print First and Last Name Signature Date/Time</small>			
Relinquished By: Fed Ex <small>Print First and Last Name Signature Date/Time</small>	Received By: Chakeris Tarplin/ GEL Laboratories <i>Chakeris Tarplin</i> 3/9/18 0855 <small>Print First and Last Name Signature Date/Time</small>			
Relinquished By: <small>Print First and Last Name Signature Date/Time</small>	Received By: <small>Print First and Last Name Signature Date/Time</small>			
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

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REV. 0

44105

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# S18-003-135
		445538		Page 1 of 1
Collector: Larry Rosana ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650		
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071		
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 90/53	Ice Chest No.: GWS-400		
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7717 5628 2710		
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9138		

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative		
B3HH18	N	W	3-8-18	0715	4x1-L G	1664A_OILGREASE: COMMON	28 Days	HCl to pH <2 / Cool <=6C		
B3HH18	N	W			1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C		
B3HH18	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2		
B3HH18	N	W			1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2		
B3HH18	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2		
B3HH18	N	W			1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None		
B3HH24	Y	W			3-8-18	0715	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2

APRIL 5, 2018

Relinquished By: Larry Rosana ICHPRC Print First and Last Name: Larry Rosana Signature: [Signature] Date/Time: MAR 08 2018 1240	Received By: Troy Bacon CHPRC Print First and Last Name: Troy L. Bacon Signature: [Signature] Date/Time: MAR 08 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Troy Bacon CHPRC Print First and Last Name: Troy L. Bacon Signature: [Signature] Date/Time: MAR 08 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: [Signature] Date/Time:	
Relinquished By: Fed Ex Print First and Last Name: Fed Ex Signature: [Signature] Date/Time:	Received By: Chakeris Tarplin GEL Laboratories Print First and Last Name: [Signature] Signature: [Signature] Date/Time: 3/9/18 0855	
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-136 Page 1 of 1
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Collector: Larry Rosane /CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 09/153	Ice Chest No.: 605-389
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7717 5628 3164
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9138

POSSIBLE SAMPLE HAZARDS/REMARK
 ** ** 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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative		
B3HH25	Y	W	3-8-18	1149	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2		
B3HH19	N	W	↓	↓	4x1-L G	1664A_OILGREASE: COMMON	28 Days	HCl to pH <2 / Cool <=6C		
B3HH19	N	W			1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C		
B3HH19	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 06	6 Months	HNO3 to pH <2		
B3HH19	N	W			1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2		
B3HH19	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2		
B3HH19	N	W			3-8-18	1149	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

Relinquished By: <u>Larry Rosane</u> MAR 08 2018 1240 <small>Print First and Last Name Signature Date/Time</small>	Received By: <u>Larry Rosane</u> MAR 08 2018 1240 <small>Print First and Last Name Signature Date/Time</small>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid TL = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: <u>Larry Rosane</u> MAR 08 2018 1400 <small>Print First and Last Name Signature Date/Time</small>	Received By: <u>FEDEX</u> <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: <u>Fed Ex</u> <small>Print First and Last Name Signature Date/Time</small>	Received By: <u>Keris Tarplin</u> 3/9/18 0855 <small>Print First and Last Name Signature Date/Time</small>	
Relinquished By: _____ <small>Print First and Last Name Signature Date/Time</small>	Received By: _____ <small>Print First and Last Name Signature Date/Time</small>	
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____ Disposed By: _____ Date/Time: _____

APRIL 5, 2018

REV. 0

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-498 Page 1 of 1
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Collector: Larry Rosana CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 98/53	Ice Chest No.: GWS-400
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771756282710
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9138

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HLW3	N	W	3-8-18	0715	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3HLW3	N	W	↓	↓	4x1-L aG	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2 / Cool <=6C
B3HLW3	N	W	3-8-18	0715	5x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2 / Cool <=6C

APRIL 5, 2018

Relinquished By: Larry Rosana CHPRC Print First and Last Name: Larry Rosana Signature: <i>Larry Rosana</i> Date/Time: MAR 08 2018 1240	Received By: Troy Bacon CHPRC Print First and Last Name: Troy L. Bacon Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Troy Bacon CHPRC Print First and Last Name: Troy L. Bacon Signature: <i>Troy L. Bacon</i> Date/Time: MAR 08 2018 1400	Received By: FEDEX Print First and Last Name: _____ Signature: _____ Date/Time: _____	
Relinquished By: Fed Ex Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: Chakeris Tarpila GEL Laboratories Print First and Last Name: _____ Signature: <i>Chakeris Tarpila</i> Date/Time: 3/9/18 0855	
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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REV. 0

CH2M Hill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 445538	C.O.C.# S18-003-499
Page 1 of 1		

Collector: Larry Rosane ICHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S18-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071
Project Title: CERCLA, MARCH 2018	Logbook No.: HNF-N-506 99/53	Ice Chest No.: 605-389
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771756283164
Protocol: CERCLA	Priority: 30 Days	Offsite Property No.: 9138

POSSIBLE SAMPLE HAZARDS/REMARK ** ** 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	SPECIAL INSTRUCTIONS N/A
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Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HLW2	N	W	3-8-18	1149	5x40-mL aGs*	8260_VOA_GCMS: COMMON	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3HLW2	N	W	↓	↓	4x1-L aG	WTPH_DIESEL: COMMON; WTPH_MOTOR OIL: COMMON	14/40 Days	HCl to pH <2 / Cool <=6C
B3HLW2	N	W	3-8-18	1149	5x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2 / Cool <=6C

APRIL 5, 2018

Relinquished By: Larry Rosane Signature: <i>Larry Rosane</i> Date/Time: MAR 08 2018 1240	Received By: Lesly Wall Signature: <i>Lesly Wall</i> Date/Time: MAR 08 2018 1240	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Lesly Wall Signature: <i>Lesly Wall</i> Date/Time: MAR 08 2018 1400	Received By: FEDEX Signature: _____ Date/Time: _____	
Relinquished By: Fed Ex Signature: _____ Date/Time: _____	Received By: Chakeris Tarplin Signature: <i>Chakeris Tarplin</i> Date/Time: 3/9/18 0855	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:
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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 analyte was detected in the associated method blank \geq MDC or $>$ 5% sample activity.	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 03 April 2018

State	Certification
Alaska	17-018
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	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
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
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

**GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL445538
Work Order #: 445538**

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

Analytical Method: SW846 8260C

Analytical Procedure: GL-OA-E-038 REV# 26

Analytical Batch: 1747916

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538011	B3HLW3
445538012	B3HLW2
1203991253	Method Blank (MB)
1203991254	Laboratory Control Sample (LCS)
1203991255	445658001(NonSDG) Post Spike (PS)
1203991257	445658001(NonSDG) Post Spike Duplicate (PSD)
1203992152	Method Blank (MB)
1203992153	Laboratory Control Sample (LCS)

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

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203991255 (Non SDG 445658001PS)	Acetone	60* (70%-130%)
1203991257 (Non SDG 445658001PSD)	Acetone	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: GEL445538 GEL Work Order: 445538

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.

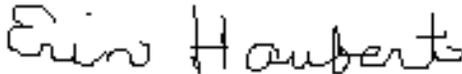
RA Indicates that sample is re-analyzed without re-extraction.

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: Erin Haubert

Date: 04 APR 2018

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 09:26	Matrix: WATER
Lab Sample ID: 445538005	Date Received: 03/09/2018 08:55	
Client ID: B3HFN3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747916	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 03/16/2018 18:02	Inst: VOA3.I	Dilution: 1
Prep Date: 03/16/2018 18:02	Analyst: JP1	Purge Vol: 5 mL
Data File: 031618V3\3Z518.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	2.83	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	JT	3.26	ug/L	3.00	10.0	20.0

Volatile
Certificate of Analysis
Sample Summary

SDG Number: GEL445538	Date Collected: 03/08/2018 07:15	Matrix: WATER
Lab Sample ID: 445538011	Date Received: 03/09/2018 08:55	
Client ID: B3HLW3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747916	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 03/16/2018 18:34	Inst: VOA3.I	Dilution: 1
Prep Date: 03/16/2018 18:34	Analyst: JP1	Purge Vol: 5 mL
Data File: 031618V3\3Z519.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride		46.0	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 11:49	Matrix: WATER
Lab Sample ID: 445538012	Date Received: 03/09/2018 08:55	
Client ID: B3HLW2	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747916	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 03/16/2018 19:05	Inst: VOA3.I	Dilution: 1
Prep Date: 03/16/2018 19:05	Analyst: JP1	Purge Vol: 5 mL
Data File: 031618V3\3Z520.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	3.18	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	JT	4.94	ug/L	3.00	10.0	20.0

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: April 4, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
QC1203991254	LCS										
1,1,1-Trichloroethane	50.0			45.9	ug/L		92	(70%-130%)	JP1	03/16/18	10:35
1,1,2-Trichloroethane	50.0			43.3	ug/L		87	(70%-130%)			
1,1-Dichloroethane	50.0			44.6	ug/L		89	(70%-130%)			
1,1-Dichloroethylene	50.0			46.5	ug/L		93	(70%-130%)			
1,2-Dichloroethane	50.0			41.9	ug/L		84	(70%-130%)			
2-Butanone	250			265	ug/L		106	(70%-130%)			
4-Methyl-2-pentanone	250			241	ug/L		96	(70%-130%)			
Acetone	250			254	ug/L		102	(70%-130%)			
Benzene	50.0			41.7	ug/L		83	(70%-130%)			
Carbon disulfide	250			225	ug/L		90	(70%-130%)			
Carbon tetrachloride	50.0			44.7	ug/L		89	(70%-130%)			
Chlorobenzene	50.0			45.7	ug/L		91	(70%-130%)			
Chloroform	50.0			45.5	ug/L		91	(70%-130%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
Ethylbenzene	50.0			49.6	ug/L		99	(70%-130%)	JP1	03/16/18	10:35
Methylene chloride	50.0			41.0	ug/L		82	(70%-130%)			
Tetrachloroethylene	50.0			46.0	ug/L		92	(70%-130%)			
Toluene	50.0			45.9	ug/L		92	(70%-130%)			
Trichloroethylene	50.0			45.2	ug/L		90	(70%-130%)			
Vinyl chloride	50.0			50.9	ug/L		102	(70%-130%)			
Xylenes (total)	150			149	ug/L		99	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.0	ug/L		102	(70%-130%)			
**Bromofluorobenzene	50.0			49.1	ug/L		98	(70%-130%)			
**Toluene-d8	50.0			51.6	ug/L		103	(70%-130%)			
QC1203992153 LCS											
1,1,1-Trichloroethane	50.0			47.8	ug/L		96	(70%-130%)		03/19/18	12:05
1,1,2-Trichloroethane	50.0			46.4	ug/L		93	(70%-130%)			
1,1-Dichloroethane	50.0			46.0	ug/L		92	(70%-130%)			
1,1-Dichloroethylene	50.0			47.3	ug/L		95	(70%-130%)			
1,2-Dichloroethane	50.0			48.4	ug/L		97	(70%-130%)			

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

QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
2-Butanone	250			254	ug/L		102	(70%-130%)	JP1	03/19/18	12:05
4-Methyl-2-pentanone	250			249	ug/L		100	(70%-130%)			
Acetone	250			239	ug/L		95	(70%-130%)			
Benzene	50.0			44.3	ug/L		89	(70%-130%)			
Carbon disulfide	250			229	ug/L		92	(70%-130%)			
Carbon tetrachloride	50.0			47.3	ug/L		95	(70%-130%)			
Chlorobenzene	50.0			44.5	ug/L		89	(70%-130%)			
Chloroform	50.0			43.9	ug/L		88	(70%-130%)			
Ethylbenzene	50.0			47.1	ug/L		94	(70%-130%)			
Methylene chloride	50.0			41.9	ug/L		84	(70%-130%)			
Tetrachloroethylene	50.0			44.1	ug/L		88	(70%-130%)			
Toluene	50.0			44.4	ug/L		89	(70%-130%)			
Trichloroethylene	50.0			45.8	ug/L		92	(70%-130%)			
Vinyl chloride	50.0			53.8	ug/L		108	(70%-130%)			
Xylenes (total)	150			144	ug/L		96	(70%-130%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
**1,2-Dichloroethane-d4	50.0			55.3	ug/L		111	(70%-130%)	JP1	03/19/18	12:05
**Bromofluorobenzene	50.0			47.8	ug/L		96	(70%-130%)			
**Toluene-d8	50.0			49.2	ug/L		98	(70%-130%)			
QC1203991253	MB										
1,1,1-Trichloroethane			U	0.300	ug/L					03/16/18	12:10
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
Chloroform			U	0.300	ug/L				JP1	03/16/18	12:10
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			55.1	ug/L		110	(70%-130%)			
**Bromofluorobenzene	50.0			50.2	ug/L		100	(70%-130%)			
**Toluene-d8	50.0			48.8	ug/L		98	(70%-130%)			
QC1203992152 MB											
1,1,1-Trichloroethane			U	0.300	ug/L					03/19/18	14:12
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
1,2-Dichloroethane			U	0.300	ug/L				JP1	03/19/18	14:12
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
Xylenes (total)			U	0.300	ug/L				JP1	03/19/18	14:12
**1,2-Dichloroethane-d4	50.0			56.0	ug/L		112	(70%-130%)			
**Bromofluorobenzene	50.0			50.4	ug/L		101	(70%-130%)			
**Toluene-d8	50.0			50.2	ug/L		100	(70%-130%)			
QC1203991255 445658001 PS											
1,1,1-Trichloroethane	50.0	U	0.00	46.3	ug/L		93	(70%-130%)		03/19/18	21:40
1,1,2-Trichloroethane	50.0	U	0.00	43.8	ug/L		88	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	45.1	ug/L		90	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	45.7	ug/L		91	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	46.3	ug/L		93	(70%-130%)			
2-Butanone	250	U	0.00	190	ug/L		76	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00	243	ug/L		97	(70%-130%)			
Acetone	250	JT	3.86 T	153	ug/L		60*	(70%-130%)			
Benzene	50.0	U	0.00	42.0	ug/L		84	(70%-130%)			
Carbon disulfide	250	U	0.00	221	ug/L		88	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00	46.9	ug/L		94	(70%-130%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
Chlorobenzene	50.0	U	0.00	42.2	ug/L		84	(70%-130%)	JP1	03/19/18	21:40
Chloroform	50.0	U	0.00	43.9	ug/L		88	(70%-130%)			
Ethylbenzene	50.0	U	0.00	45.8	ug/L		92	(70%-130%)			
Methylene chloride	50.0	U	0.00	40.6	ug/L		81	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	43.6	ug/L		87	(70%-130%)			
Toluene	50.0	U	0.00	43.4	ug/L		87	(70%-130%)			
Trichloroethylene	50.0	U	0.00	43.2	ug/L		86	(70%-130%)			
Vinyl chloride	50.0	U	0.00	49.7	ug/L		99	(70%-130%)			
Xylenes (total)	150	U	0.00	140	ug/L		93	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		57.4	55.4	ug/L		111	(70%-130%)			
**Bromofluorobenzene	50.0		54.0	48.7	ug/L		97	(70%-130%)			
**Toluene-d8	50.0		51.0	52.3	ug/L		105	(70%-130%)			
QC1203991257 445658001 PSD											
1,1,1-Trichloroethane	50.0	U	0.00	44.2	ug/L	4	88	(0%-20%)		03/19/18	22:12
1,1,2-Trichloroethane	50.0	U	0.00	46.2	ug/L	5	92	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	42.0	ug/L	7	84	(0%-20%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
1,1-Dichloroethylene	50.0	U	0.00		44.2	ug/L	3	88	(0%-20%)	JP1	03/19/18 22:12
1,2-Dichloroethane	50.0	U	0.00		45.4	ug/L	2	91	(0%-20%)		
2-Butanone	250	U	0.00		186	ug/L	2	74	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		249	ug/L	2	100	(0%-20%)		
Acetone	250	JT	3.86	T	149	ug/L	3	58*	(0%-20%)		
Benzene	50.0	U	0.00		41.7	ug/L	1	83	(0%-20%)		
Carbon disulfide	250	U	0.00		210	ug/L	5	84	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		44.6	ug/L	5	89	(0%-20%)		
Chlorobenzene	50.0	U	0.00		43.7	ug/L	4	87	(0%-20%)		
Chloroform	50.0	U	0.00		42.1	ug/L	4	84	(0%-20%)		
Ethylbenzene	50.0	U	0.00		46.9	ug/L	2	94	(0%-20%)		
Methylene chloride	50.0	U	0.00		39.1	ug/L	4	78	(0%-20%)		
Tetrachloroethylene	50.0	U	0.00		43.7	ug/L	0	87	(0%-20%)		
Toluene	50.0	U	0.00		45.4	ug/L	4	91	(0%-20%)		
Trichloroethylene	50.0	U	0.00		42.0	ug/L	3	84	(0%-20%)		

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1747916										
Vinyl chloride	50.0	U	0.00	51.3	ug/L	3	103	(0%-20%)	JP1	03/19/18	22:12
Xylenes (total)	150	U	0.00	145	ug/L	3	97	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		57.4	52.8	ug/L		106	(70%-130%)			
**Bromofluorobenzene	50.0		54.0	47.7	ug/L		95	(70%-130%)			
**Toluene-d8	50.0		51.0	52.8	ug/L		106	(70%-130%)			

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.

Volatile
Surrogate Recovery Report

SDG Number: GEL445538

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203991254	LCS for batch 1747916	102	103	98
1203991253	MB for batch 1747916	110	98	100
445538005	B3HFN3	115	101	101
445538011	B3HLW3	114	103	105
445538012	B3HLW2	117	103	108
1203992153	LCS for batch 1747916	111	98	96
1203992152	MB for batch 1747916	112	100	101
1203991255	B3HLJ2PS	111	105	97
1203991257	B3HLJ2PSD	106	106	95

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

FID Diesel Range Organics Analysis

Case Narrative

**Diesel Range Organics
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL445538
Work Order #: 445538**

Product: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: NWTPH-Dx

Analytical Procedure: GL-OA-E-003 REV# 29

Analytical Batch: 1747281

Preparation Method: SW846 3535A

Preparation Procedure: GL-OA-E-013 REV# 32

Preparation Batch: 1747280

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538006	B3HFP0
445538011	B3HLW3
445538012	B3HLW2
1203989823	Method Blank (MB)
1203989824	Laboratory Control Sample (LCS)
1203989825	445538006(B3HFP0) Matrix Spike (MS)
1203989826	445538006(B3HFP0) 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.

Quality Control (QC) Information

Matrix Spike (MS/MSD) Recovery Statement

The MSD (See Below) spike recovery was slightly below the acceptance limits. This non-compliance is not likely to affect sample results as all other quality control criteria have been met for the entire batch.

Sample	Analyte	Value
1203989826 (B3HFP0MSD)	Diesel Range Organics	66* (70%-130%)

Miscellaneous Information

Manual Integrations

Samples 1203989824 (LCS), 1203989825 (B3HFP0MS) and 1203989826 (B3HFP0MSD) 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: GEL445538 GEL Work Order: 445538

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.

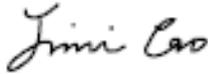
RA Indicates that sample is re-analyzed without re-extraction.

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: 30 MAR 2018****Title: Data Validator**

Sample Data Summary

FID Diesel Range Organics
 Certificate of Analysis
 Sample Summary

SDG Number: GEL445538	Date Collected: 03/08/2018 09:26	Matrix: WATER
Lab Sample ID: 445538005	Date Received: 03/09/2018 08:55	
Client ID: B3HFN3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747281	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 03/20/2018 00:10	Inst: FID7.I	Dilution: 1
Prep Date: 03/15/2018 18:00	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 031918-MO\F7c1912.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	JT	84.3	ug/L	47.6	190
	Motor Oil	J	80.9	ug/L	47.6	190

FID Diesel Range Organics
 Certificate of Analysis
 Sample Summary

SDG Number: GEL445538	Date Collected: 03/08/2018 10:28	Matrix: WATER
Lab Sample ID: 445538006	Date Received: 03/09/2018 08:55	
Client ID: B3HFP0	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747281	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 03/20/2018 00:49	Inst: FID7.I	Dilution: 1
Prep Date: 03/15/2018 18:00	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 031918-MO\F7c1913.D	Aliquot: 1060 mL	Final Volume: 1 mL
	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
68334-30-5	Diesel Range Organics	TU	47.2	ug/L	47.2	189
	Motor Oil	J	56.2	ug/L	47.2	189

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

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 07:15	Matrix: WATER
Lab Sample ID: 445538011	Date Received: 03/09/2018 08:55	
Client ID: B3HLW3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747281	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 03/20/2018 02:45	Inst: FID7.I	Dilution: 1
Prep Date: 03/15/2018 18:00	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 031918-MO\F7c1916.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	TU	47.6	ug/L	47.6	190
	Motor Oil	J	57.0	ug/L	47.6	190

FID Diesel Range Organics
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 11:49	Matrix: WATER
Lab Sample ID: 445538012	Date Received: 03/09/2018 08:55	
Client ID: B3HLW2	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1747281	Method: NWTPH-Dx	SOP Ref: GL-OA-E-003
Run Date: 03/20/2018 03:24	Inst: FID7.I	Dilution: 1
Prep Date: 03/15/2018 18:00	Analyst: LXA1	Inj. Vol: 1 uL
Data File: 031918-MO\F7c1917.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	TU	47.6	ug/L	47.6	190
	Motor Oil	U	47.6	ug/L	47.6	190

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: March 21, 2018

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1747281										
QC1203989824	LCS										
Diesel Range Organics	2000			1510	ug/L		75	(70%-130%)	LXA1	03/19/18	23:32
Motor Oil	2000			1740	ug/L		87	(70%-130%)			
**o-Terphenyl	20.0			15.7	ug/L		79	(60%-140%)			
QC1203989823	MB										
Diesel Range Organics			U	50.0	ug/L					03/19/18	22:53
Motor Oil			U	50.0	ug/L						
**o-Terphenyl	20.0			15.2	ug/L		76	(60%-140%)			
QC1203989825	445538006	MS									
Diesel Range Organics	1890	TU	47.2	1380	ug/L		73	(70%-130%)		03/20/18	01:28
Motor Oil	1890	J	56.2	1560	ug/L		80	(70%-130%)			
**o-Terphenyl	18.9		13.5	14.9	ug/L		79	(60%-140%)			
QC1203989826	445538006	MSD									
Diesel Range Organics	1890	TU	47.2	T	1240	ug/L	11	66*	(0%-20%)	03/20/18	02:06
Motor Oil	1890	J	56.2	1460	ug/L	7	74	(0%-20%)			
**o-Terphenyl	18.9		13.5	13.6	ug/L		72	(60%-140%)			

Notes:

GEL LABORATORIES LLC

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QC Summary

Workorder: 445538

Page 2 of 2

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

FID Diesel Range Organics
Surrogate Recovery Report

SDG Number: GEL445538

Matrix Type: LIQUID

Sample ID	Client ID	OTP %REC
1203989823	MB for batch 1747280	76
1203989824	LCS for batch 1747280	79
445538005	B3HFN3	73
445538006	B3HFP0	72
1203989825	B3HFP0MS	79
1203989826	B3HFP0MSD	72
445538011	B3HLW3	61
445538012	B3HLW2	72

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(60%-140%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

GC Volatiles (GRO) Analysis

Case Narrative

GC Volatiles (GRO)
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL445538
Work Order #: 445538

Product: Volatile Total Petroleum Hydrocarbons by Flame Ionization Detector

Analytical Method: NWTPH-Gx

Analytical Procedure: GL-OA-E-004 REV# 26

Analytical Batch: 1746413

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538006	B3HFP0
445538011	B3HLW3
445538012	B3HLW2
1203988036	Method Blank (MB)
1203988037	Laboratory Control Sample (LCS)
1203988038	445538012(B3HLW2) Post Spike (PS)
1203988039	445538012(B3HLW2) 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.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL445538 GEL Work Order: 445538

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.

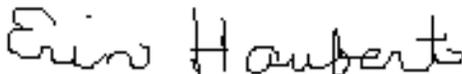
RA Indicates that sample is re-analyzed without re-extraction.

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: 03 APR 2018

Title: Data Validator

Sample Data Summary

**GC Volatiles (GRO)
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 09:26	Matrix: WATER
Lab Sample ID: 445538005	Date Received: 03/09/2018 08:55	
Client ID: B3HFN3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1746413	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Run Date: 03/21/2018 15:29	Inst: VOC4A.I	Dilution: 1
Prep Date: 03/21/2018 15:29	Analyst: RXY1	Inj. Vol: 1 uL
Data File: 032118\4X305.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

**GC Volatiles (GRO)
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 10:28	Matrix: WATER
Lab Sample ID: 445538006	Date Received: 03/09/2018 08:55	
Client ID: B3HFP0	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1746413	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Run Date: 03/21/2018 15:56	Inst: VOC4A.I	Dilution: 1
Prep Date: 03/21/2018 15:56	Analyst: RXY1	Inj. Vol: 1 uL
Data File: 032118\4X306.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

GC Volatiles (GRO)
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL445538	Date Collected: 03/08/2018 07:15	Matrix: WATER
Lab Sample ID: 445538011	Date Received: 03/09/2018 08:55	
Client ID: B3HLW3	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1746413	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Run Date: 03/21/2018 16:24	Inst: VOC4A.I	Dilution: 1
Prep Date: 03/21/2018 16:24	Analyst: RXY1	Inj. Vol: 1 uL
Data File: 032118\4X307.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

**GC Volatiles (GRO)
Certificate of Analysis
Sample Summary**

SDG Number: GEL445538	Date Collected: 03/08/2018 11:49	Matrix: WATER
Lab Sample ID: 445538012	Date Received: 03/09/2018 08:55	
Client ID: B3HLW2	Client: CPRC001	Project: CPRC0S18003
Batch ID: 1746413	Method: NWTPH-Gx	SOP Ref: GL-OA-E-004
Run Date: 03/21/2018 16:52	Inst: VOC4A.I	Dilution: 1
Prep Date: 03/21/2018 16:52	Analyst: RXY1	Inj. Vol: 1 uL
Data File: 032118\4X308.D	Column: DB-MTBE	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
TPHGASOLINE 8006-61-9	Gasoline Range Organics	U	16.7	ug/L	16.7	50.0

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: March 29, 2018

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatiles GRO Organics											
Batch	1746413										
QC1203988037	LCS										
Gasoline Range Organics	500			514	ug/L		103	(70%-130%)	RXY1	03/21/18	12:47
**Bromofluorobenzene	50.0			43.9	ug/L		88	(50%-150%)			
QC1203988036	MB										
Gasoline Range Organics			U	16.7	ug/L					03/21/18	13:15
**Bromofluorobenzene	50.0			47.0	ug/L		94	(50%-150%)			
QC1203988038	445538012	PS									
Gasoline Range Organics	500	U	0.00	583	ug/L		117	(70%-130%)		03/21/18	17:48
**Bromofluorobenzene	50.0		46.5	51.8	ug/L		104	(50%-150%)			
QC1203988039	445538012	PSD									
Gasoline Range Organics	500	U	0.00	570	ug/L	2	114	(0%-20%)		03/21/18	18:16
**Bromofluorobenzene	50.0		46.5	51.8	ug/L		104	(50%-150%)			

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.

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QC Summary

Workorder: 445538

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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: GEL445538

Matrix Type: LIQUID

Sample ID	Client ID	BFB %REC
1203988037	LCS for batch 1746413	88
1203988036	MB for batch 1746413	94
445538005	B3HFN3	95
445538006	B3HFP0	91
445538011	B3HLW3	95
445538012	B3HLW2	93
1203988038	B3HLW2PS	104
1203988039	B3HLW2PSD	104

Surrogate

BFB = Bromofluorobenzene

Acceptance Limits

(50%-150%)

* 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 #: GEL445538
Work Order #: 445538

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1745920**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1746005**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1745919 and 1746004

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538007	B3HH18
445538008	B3HH24
445538009	B3HH25
445538010	B3HH19
1203987009	Method Blank (MB) ICP
1203987010	Laboratory Control Sample (LCS)
1203987013	445538007(B3HH18L) Serial Dilution (SD)
1203987011	445538007(B3HH18S) Matrix Spike (MS)
1203987012	445538007(B3HH18SD) Matrix Spike Duplicate (MSD)
1203987156	Method Blank (MB) ICP-MS
1203987157	Laboratory Control Sample (LCS)
1203987160	445538007(B3HH18L) Serial Dilution (SD)
1203987158	445538007(B3HH18S) Matrix Spike (MS)
1203987159	445538007(B3HH18SD) 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**ICSA/ICSAB Statement**

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

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: GEL445538 GEL Work Order: 445538

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.

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

Review/Validation

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

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

Signature:**Name: Nik-Cole Elmore****Date: 04 APR 2018****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL445538

CONTRACT: CPRC0S18003

METHOD TYPE: SW846

SAMPLE ID: 445538007

BASIS: As Received

DATE COLLECTED 08-MAR-18

CLIENT ID: B3HH18

LEVEL: Low

DATE RECEIVED 09-MAR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	03/19/18 22:19	180319-3	1746005
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-39-3	Barium	0.670	ug/L	U	0.67	2	2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-70-2	Calcium	110	ug/L	B	50	200	200	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7439-95-4	Magnesium	110	ug/L	U	110	300	300	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7439-98-7	Molybdenum	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7440-09-7	Potassium	50	ug/L	U	50	150	150	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-23-5	Sodium	100	ug/L	U	100	300	300	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7440-24-6	Strontium	2	ug/L	U	2	10	10	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-61-1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	03/19/18 18:32	180319-2	1746005
7440-62-2	Vanadium	1	ug/L	U	1	5	5	1	P	TXT1	04/03/18 15:45	040318-1	1745920
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	03/19/18 18:32	180319-2	1746005

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1745920	1745919	SW846 3005A	50	mL	50	mL	03/09/18	JXM8
1746005	1746004	SW846 3005A	50	mL	50	mL	03/09/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P	SW846 3005A/6010D
MS	SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL445538

CONTRACT: CPRC0S18003

METHOD TYPE: SW846

SAMPLE ID: 445538008

BASIS: As Received

DATE COLLECTED 08-MAR-18

CLIENT ID: B3HH24

LEVEL: Low

DATE RECEIVED 09-MAR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	03/19/18 22:42	180319-3	1746005
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-39-3	Barium	0.670	ug/L	U	0.67	2	2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-70-2	Calcium	50	ug/L	U	50	200	200	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7439-95-4	Magnesium	110	ug/L	U	110	300	300	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7439-98-7	Molybdenum	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7440-09-7	Potassium	50	ug/L	U	50	150	150	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-23-5	Sodium	100	ug/L	U	100	300	300	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7440-24-6	Strontium	2	ug/L	U	2	10	10	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-61-1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	03/19/18 18:55	180319-2	1746005
7440-62-2	Vanadium	1	ug/L	U	1	5	5	1	P	TXT1	04/03/18 15:55	040318-1	1745920
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	03/19/18 18:55	180319-2	1746005

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1745920	1745919	SW846 3005A	50	mL	50	mL	03/09/18	JXM8
1746005	1746004	SW846 3005A	50	mL	50	mL	03/09/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P	SW846 3005A/6010D
MS	SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL445538

CONTRACT: CPCR0S18003

METHOD TYPE: SW846

SAMPLE ID: 445538009

BASIS: As Received

DATE COLLECTED 08-MAR-18

CLIENT ID: B3HH25

LEVEL: Low

DATE RECEIVED 09-MAR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	03/19/18 22:45	180319-3	1746005
7440-38-2	Arsenic	7.03	ug/L		2	5	5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-39-3	Barium	35.4	ug/L		0.67	2	2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-70-2	Calcium	29700	ug/L		50	200	200	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7440-47-3	Chromium	4.93	ug/L	B	3	10	10	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-50-8	Copper	0.767	ug/L	B	0.3	1	1	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7439-95-4	Magnesium	6700	ug/L		110	300	300	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7439-98-7	Molybdenum	6.72	ug/L		0.2	0.5	0.5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-02-0	Nickel	0.809	ug/L	B	0.6	2	2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7440-09-7	Potassium	4550	ug/L		50	150	150	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-23-5	Sodium	81400	ug/L		100	300	300	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7440-24-6	Strontium	186	ug/L		2	10	10	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-61-1	Uranium	2.18	ug/L		0.067	0.2	0.2	1	MS	BAJ	03/19/18 18:58	180319-2	1746005
7440-62-2	Vanadium	16.5	ug/L		1	5	5	1	P	TXT1	04/03/18 15:58	040318-1	1745920
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	03/19/18 18:58	180319-2	1746005

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1745920	1745919	SW846 3005A	50	mL	50	mL	03/09/18	JXM8
1746005	1746004	SW846 3005A	50	mL	50	mL	03/09/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P	SW846 3005A/6010D
MS	SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL445538

CONTRACT: CPRC0S18003

METHOD TYPE: SW846

SAMPLE ID: 445538010

BASIS: As Received

DATE COLLECTED 08-MAR-18

CLIENT ID: B3HH19

LEVEL: Low

DATE RECEIVED 09-MAR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	03/19/18 22:48	180319-3	1746005
7440-38-2	Arsenic	7.19	ug/L		2	5	5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-39-3	Barium	36.2	ug/L		0.67	2	2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-70-2	Calcium	29200	ug/L		50	200	200	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7440-47-3	Chromium	5.19	ug/L	B	3	10	10	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-50-8	Copper	0.312	ug/L	B	0.3	1	1	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7439-89-6	Iron	31.1	ug/L	B	30	100	100	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7439-95-4	Magnesium	6600	ug/L		110	300	300	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7439-98-7	Molybdenum	6.99	ug/L		0.2	0.5	0.5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-02-0	Nickel	0.869	ug/L	B	0.6	2	2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7723-14-0	Phosphorous	60	ug/L	U	60	150	150	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7440-09-7	Potassium	4530	ug/L		50	150	150	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-23-5	Sodium	78400	ug/L		100	300	300	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7440-24-6	Strontium	189	ug/L		2	10	10	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-61-1	Uranium	2.22	ug/L		0.067	0.2	0.2	1	MS	BAJ	03/19/18 19:02	180319-2	1746005
7440-62-2	Vanadium	15.5	ug/L		1	5	5	1	P	TXT1	04/03/18 16:01	040318-1	1745920
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	03/19/18 19:02	180319-2	1746005

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1745920	1745919	SW846 3005A	50	mL	50	mL	03/09/18	JXM8
1746005	1746004	SW846 3005A	50	mL	50	mL	03/09/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

P	SW846 3005A/6010D
MS	SW846 3005A/6020B

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: April 4, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
QC1203987157	LCS										
Aluminum	2000			2130	ug/L		106	(80%-120%)	BAJ	03/19/18	18:29
Antimony	50.0			48.9	ug/L		97.8	(80%-120%)		03/19/18	22:15
Arsenic	50.0			51.5	ug/L		103	(80%-120%)		03/19/18	18:29
Barium	50.0			49.4	ug/L		98.7	(80%-120%)			
Beryllium	50.0			57.1	ug/L		114	(80%-120%)			
Cadmium	50.0			49.5	ug/L		99.1	(80%-120%)			
Chromium	50.0			49.8	ug/L		99.5	(80%-120%)			
Cobalt	50.0			50.2	ug/L		100	(80%-120%)			
Copper	50.0			51.0	ug/L		102	(80%-120%)			
Lead	50.0			49.9	ug/L		99.7	(80%-120%)			
Manganese	50.0			48.2	ug/L		96.4	(80%-120%)			
Molybdenum	50.0			49.8	ug/L		99.5	(80%-120%)			
Nickel	50.0			52.3	ug/L		105	(80%-120%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
Selenium	50.0			50.4	ug/L		101	(80%-120%)	BAJ	03/19/18	18:29
Silver	50.0			52.3	ug/L		105	(80%-120%)			
Strontium	50.0			50.2	ug/L		100	(80%-120%)			
Thallium	50.0			46.2	ug/L		92.5	(80%-120%)			
Thorium	50.0			45.5	ug/L		91	(80%-120%)			
Tin	50.0			49.3	ug/L		98.6	(80%-120%)			
Uranium	50.0			47.3	ug/L		94.6	(80%-120%)			
Zinc	50.0			49.9	ug/L		99.7	(80%-120%)			
QC1203987156	MB										
Aluminum			U	19.3	ug/L					03/19/18	18:26
Antimony			U	1.00	ug/L					03/19/18	22:12
Arsenic			U	2.00	ug/L					03/19/18	18:26
Barium			U	0.670	ug/L						
Beryllium			U	0.200	ug/L						
Cadmium			U	0.300	ug/L						
Chromium			U	3.00	ug/L						

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
Cobalt			U	0.300	ug/L				BAJ	03/19/18	18:26
Copper			U	0.300	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L						
Nickel			U	0.600	ug/L						
Selenium			U	2.00	ug/L						
Silver			U	0.300	ug/L						
Strontium			U	2.00	ug/L						
Thallium			U	0.600	ug/L						
Thorium			U	0.700	ug/L						
Tin			U	1.00	ug/L						
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L						
QC1203987158 445538007 MS											
Aluminum	2000	U	19.3	1960	ug/L		97.7	(75%-125%)		03/19/18	18:35

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QC Summary

Workorder: 445538

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Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch	1746005											
Antimony	50.0	U	1.00		47.5	ug/L		94.7	(75%-125%)	BAJ	03/19/18	22:22
Arsenic	50.0	U	2.00		51.4	ug/L		99.5	(75%-125%)		03/19/18	18:35
Barium	50.0	U	0.670		47.7	ug/L		95.2	(75%-125%)			
Beryllium	50.0	U	0.200		55.5	ug/L		111	(75%-125%)			
Cadmium	50.0	U	0.300		49.7	ug/L		99.3	(75%-125%)			
Chromium	50.0	U	3.00		47.0	ug/L		92	(75%-125%)			
Cobalt	50.0	U	0.300		48.5	ug/L		96.9	(75%-125%)			
Copper	50.0	U	0.300		48.7	ug/L		97.4	(75%-125%)			
Lead	50.0	U	0.500		48.5	ug/L		96.8	(75%-125%)			
Manganese	50.0	U	1.00		46.5	ug/L		92.8	(75%-125%)			
Molybdenum	50.0	U	0.200		50.2	ug/L		100	(75%-125%)			
Nickel	50.0	U	0.600		50.2	ug/L		99.7	(75%-125%)			
Selenium	50.0	U	2.00		50.9	ug/L		102	(75%-125%)			
Silver	50.0	U	0.300		50.6	ug/L		101	(75%-125%)			
Strontium	50.0	U	2.00		48.8	ug/L		97.6	(75%-125%)			

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QC Summary

Workorder: 445538

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Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch	1746005											
Thallium	50.0	U	0.600		44.9	ug/L		89.7	(75%-125%)	BAJ	03/19/18	18:35
Thorium	50.0	U	0.700		44.7	ug/L		89.2	(75%-125%)			
Tin	50.0	U	1.00		50.3	ug/L		100	(75%-125%)			
Uranium	50.0	U	0.067		46.2	ug/L		92.3	(75%-125%)			
Zinc	50.0	U	3.30		50.7	ug/L		98.8	(75%-125%)			
QC1203987159 445538007 MSD												
Aluminum	2000	U	19.3		1950	ug/L	0.342	97.3	(0%-20%)		03/19/18	18:39
Antimony	50.0	U	1.00		46.5	ug/L	2.09	92.7	(0%-20%)		03/19/18	22:25
Arsenic	50.0	U	2.00		49.2	ug/L	4.32	95.2	(0%-20%)		03/19/18	18:39
Barium	50.0	U	0.670		47.1	ug/L	1.18	94.1	(0%-20%)			
Beryllium	50.0	U	0.200		55.6	ug/L	0.151	111	(0%-20%)			
Cadmium	50.0	U	0.300		47.9	ug/L	3.69	95.7	(0%-20%)			
Chromium	50.0	U	3.00		48.4	ug/L	2.92	94.8	(0%-20%)			
Cobalt	50.0	U	0.300		48.5	ug/L	0.0536	96.9	(0%-20%)			
Copper	50.0	U	0.300		48.2	ug/L	1.07	96.4	(0%-20%)			
Lead	50.0	U	0.500		47.5	ug/L	2.08	94.8	(0%-20%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
Manganese	50.0	U	1.00		49.3	ug/L	5.86	98.4	(0%-20%)	BAJ	03/19/18 18:39
Molybdenum	50.0	U	0.200		47.9	ug/L	4.76	95.5	(0%-20%)		
Nickel	50.0	U	0.600		51.3	ug/L	2.05	102	(0%-20%)		
Selenium	50.0	U	2.00		48.2	ug/L	5.5	96.4	(0%-20%)		
Silver	50.0	U	0.300		48.6	ug/L	4.06	97.2	(0%-20%)		
Strontium	50.0	U	2.00		47.0	ug/L	3.86	93.9	(0%-20%)		
Thallium	50.0	U	0.600		44.1	ug/L	1.78	88.1	(0%-20%)		
Thorium	50.0	U	0.700		44.0	ug/L	1.71	87.7	(0%-20%)		
Tin	50.0	U	1.00		46.5	ug/L	7.84	92.7	(0%-20%)		
Uranium	50.0	U	0.067		45.2	ug/L	2.03	90.5	(0%-20%)		
Zinc	50.0	U	3.30		46.7	ug/L	8.04	90.9	(0%-20%)		
QC1203987160 445538007 SDILT											
Aluminum		U	2.82	DU	96.5	ug/L	N/A	(0%-20%)			03/19/18 18:45
Antimony		U	0.167	DU	5.00	ug/L	N/A	(0%-20%)			03/19/18 22:32
Arsenic		U	1.61	DU	10.0	ug/L	N/A	(0%-20%)			03/19/18 18:45
Barium		U	0.044	DU	3.35	ug/L	N/A	(0%-20%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
Beryllium	U	0.003	DU	1.00	ug/L	N/A		(0%-20%)	BAJ	03/19/18	18:45
Cadmium	U	0.013	DU	1.50	ug/L	N/A		(0%-20%)			
Chromium	U	0.950	DU	15.0	ug/L	N/A		(0%-20%)			
Cobalt	U	0.021	DU	1.50	ug/L	N/A		(0%-20%)			
Copper	U	0.048	DU	1.50	ug/L	N/A		(0%-20%)			
Lead	U	0.109	DU	2.50	ug/L	N/A		(0%-20%)			
Manganese	U	0.118	DU	5.00	ug/L	N/A		(0%-20%)			
Molybdenum	U	0.143	DU	1.00	ug/L	N/A		(0%-20%)			
Nickel	U	0.407	DU	3.00	ug/L	N/A		(0%-20%)			
Selenium	U	-0.027	DU	10.0	ug/L	N/A		(0%-20%)			
Silver	U	0.002	DU	1.50	ug/L	N/A		(0%-20%)			
Strontium	U	0.039	DU	10.0	ug/L	N/A		(0%-20%)			
Thallium	U	0.028	DU	3.00	ug/L	N/A		(0%-20%)			
Thorium	U	0.123	DU	3.50	ug/L	N/A		(0%-20%)			
Tin	U	0.168	DU	5.00	ug/L	N/A		(0%-20%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1746005										
Uranium	U	0.011	DU	0.335	ug/L	N/A		(0%-20%)	BAJ	03/19/18	18:45
Zinc	U	1.27	DU	16.5	ug/L	N/A		(0%-20%)			
Metals Analysis-ICP											
Batch	1745920										
QC1203987010	LCS										
Boron	500			522	ug/L		104	(80%-120%)	TXT1	04/03/18	15:43
Calcium	5000			5490	ug/L		110	(80%-120%)			
Iron	5000			5490	ug/L		110	(80%-120%)			
Magnesium	5000			5480	ug/L		110	(80%-120%)			
Phosphorous	500			534	ug/L		107	(80%-120%)			
Potassium	5000			5270	ug/L		105	(80%-120%)			
Sodium	5000			5220	ug/L		104	(80%-120%)			
Vanadium	500			524	ug/L		105	(80%-120%)			
QC1203987009	MB										
Boron			U	15.0	ug/L					04/03/18	15:40
Calcium			U	50.0	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1745920										
Phosphorous			U	60.0	ug/L				TXT1	04/03/18	15:40
Potassium			U	50.0	ug/L						
Sodium			U	100	ug/L						
Vanadium			U	1.00	ug/L						
QC1203987011 445538007 MS											
Boron	500	U	15.0	480	ug/L		95.2	(75%-125%)		04/03/18	15:48
Calcium	5000	B	110	4940	ug/L		96.5	(75%-125%)			
Iron	5000	U	30.0	4990	ug/L		99.7	(75%-125%)			
Magnesium	5000	U	110	4950	ug/L		98.5	(75%-125%)			
Phosphorous	500	U	60.0	482	ug/L		86.1	(75%-125%)			
Potassium	5000	U	50.0	4840	ug/L		96.9	(75%-125%)			
Sodium	5000	U	100	4800	ug/L		95	(75%-125%)			
Vanadium	500	U	1.00	482	ug/L		96.3	(75%-125%)			
QC1203987012 445538007 MSD											
Boron	500	U	15.0	490	ug/L	2.03	97.2	(0%-20%)		04/03/18	15:50
Calcium	5000	B	110	5050	ug/L	2.38	98.9	(0%-20%)			
Iron	5000	U	30.0	5100	ug/L	2.12	102	(0%-20%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1745920										
Magnesium	5000	U	110	5100	ug/L	3.03	102	(0%-20%)	TXT1	04/03/18	15:50
Phosphorous	500	U	60.0	491	ug/L	1.8	87.8	(0%-20%)			
Potassium	5000	U	50.0	4930	ug/L	1.85	98.7	(0%-20%)			
Sodium	5000	U	100	4880	ug/L	1.85	96.8	(0%-20%)			
Vanadium	500	U	1.00	493	ug/L	2.35	98.6	(0%-20%)			
QC1203987013 445538007 SDILT											
Boron		U	3.61 DU	75.0	ug/L	N/A		(0%-20%)		04/03/18	15:52
Calcium		B	110 BD	57.6	ug/L	161		(0%-20%)			
Iron		U	6.31 DU	150	ug/L	N/A		(0%-20%)			
Magnesium		U	21.1 DU	550	ug/L	N/A		(0%-20%)			
Phosphorous		U	52.2 DU	300	ug/L	N/A		(0%-20%)			
Potassium		U	-29.5 BD	-69.8	ug/L	N/A		(0%-20%)			
Sodium		U	44.5 DU	500	ug/L	N/A		(0%-20%)			
Vanadium		U	0.0636 DU	5.00	ug/L	N/A		(0%-20%)			

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

GEL LABORATORIES LLC

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).										
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
E	Reported value is estimated due to interferences. See comment in narrative.										
M	Duplicate precision not met.										
N	Spike Sample recovery is outside control limits.										
S	Reported value determined by the Method of Standard Additions (MSA)										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
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 #: GEL445538
Work Order #: 445538**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batch:** 1745808

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538001	B3HH13
445538002	B3HFN5
445538003	B3HH33
445538004	B3HH34
1203986834	Method Blank (MB)
1203986835	Laboratory Control Sample (LCS)
1203986836	445538004(B3HH34) Sample Duplicate (DUP)
1203986837	445538004(B3HH34) Post Spike (PS)

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

Data Summary:

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

Technical Information**Sample Dilutions**

The following samples 1203986836 (B3HH34DUP), 1203986837 (B3HH34PS), 445538001 (B3HH13), 445538002 (B3HFN5) and 445538004 (B3HH34) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	445538		
	001	002	004
Chloride	20X	10X	5X
Nitrate	20X	10X	1X
Sulfate	20X	10X	5X

Miscellaneous Information**Manual Integrations**

Samples 1203986836 (B3HH34DUP), 1203986837 (B3HH34PS), 445538001 (B3HH13), 445538002 (B3HFN5),

445538003 (B3HH33) and 445538004 (B3HH34) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: n-Hexane Extractable Material
Analytical Method: EPA 1664A/1664B
Analytical Procedure: GL-GC-E-094 REV# 16
Analytical Batch: 1746080

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538006	B3HFP0
445538007	B3HH18
445538010	B3HH19
1203987351	Method Blank (MB)
1203987352	Laboratory Control Sample (LCS)
1203987353	Laboratory Control Sample Duplicate (LCSD)
1203987354	445538005(B3HFN3) Sample Duplicate (DUP)
1203987355	445538005(B3HFN3) Matrix Spike (MS)

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

Data Summary:

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

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 13**Analytical Batch:** 1745547

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538007	B3HH18
445538010	B3HH19
1203986246	Laboratory Control Sample (LCS)
1203986247	445538010(B3HH19) 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: GEL445538 GEL Work Order: 445538

The Qualifiers in this report are defined as follows:

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

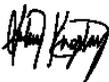
D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature:**Name: Aubrey Kingsbury****Date: 27 MAR 2018****Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID: B3HFN5 Project: CPRC0S18003
 Sample ID: 445538002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 08-MAR-18 09:26
 Receive Date: 09-MAR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON + GW 02 "As Received"												
Bromide	B	135	67.0	250	ug/L		1	LXA2	03/09/18	1036	1745808	1
Fluoride		522	33.0	500	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Phosphorus in phosphate	B	69.2	67.0	500	ug/L		1					
Chloride	D	20900	670	2000	ug/L		10	LXA2	03/09/18	1536	1745808	2
Nitrate-N	D	5580	330	1000	ug/L		10					
Sulfate	D	91300	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	9056_ANIONS_IC		
2	9056_ANIONS_IC		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID: B3HH33 Project: CPRC0S18003
 Sample ID: 445538003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 08-MAR-18 07:30
 Receive Date: 09-MAR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON + GW 02 "As Received"												
Bromide	U	67.0	67.0	250	ug/L		1	LXA2	03/09/18	1106	1745808	1
Chloride	U	67.0	67.0	200	ug/L		1					
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	B	36.7	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Phosphorus in phosphate	U	67.0	67.0	500	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	9056_ANIONS_IC		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID:	B3HH34	Project:	CPRC0S18003
Sample ID:	445538004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-MAR-18 09:51		
Receive Date:	09-MAR-18		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON + GW 02 "As Received"												
Bromide	B	93.2	67.0	250	ug/L		1	LXA2	03/09/18	1136	1745808	1
Fluoride		929	33.0	500	ug/L		1					
Nitrate-N		3070	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Phosphorus in phosphate	B	128	67.0	500	ug/L		1					
Chloride	D	12500	335	1000	ug/L		5	LXA2	03/09/18	1605	1745808	2
Sulfate	D	66900	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID: B3HFN3 Project: CPRC0S18003
 Sample ID: 445538005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 08-MAR-18 09:26
 Receive Date: 09-MAR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Oil & Grease Analysis												
1664A_OILGREASE: COMMON "As Received"												
Oil and Grease	U	1.35	1.35	4.81	mg/L			DXB7	03/12/18	0634	1746080	1
Titration and Ion Analysis												
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3		137000	1450	4000	ug/L			RXB5	03/14/18	1548	1745547	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1664A/1664B		
2	2320_ALKALINITY		

Notes:

Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID:	B3HFP0	Project:	CPRC0S18003
Sample ID:	445538006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	08-MAR-18 10:28		
Receive Date:	09-MAR-18		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Oil & Grease Analysis												
1664A_OILGREASE: COMMON "As Received"												
Oil and Grease	U	1.35	1.35	4.81	mg/L			DXB7	03/12/18	0634	1746080	1

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1664A/1664B		

Notes:Column headers are defined as follows:

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

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID: B3HH18 Project: CPRC0S18003
 Sample ID: 445538007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 08-MAR-18 07:15
 Receive Date: 09-MAR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Oil & Grease Analysis												
1664A_OILGREASE: COMMON "As Received"												
Oil and Grease	U	1.37	1.37	4.90	mg/L			DXB7	03/12/18	0634	1746080	1
Titration and Ion Analysis												
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3	U	1450	1450	4000	ug/L			RXB5	03/14/18	1552	1745547	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 1664A/1664B		
2	2320_ALKALINITY		

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: March 27, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF S18-003

Client Sample ID: B3HH19 Project: CPRC0S18003
 Sample ID: 445538010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 08-MAR-18 11:49
 Receive Date: 09-MAR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Oil & Grease Analysis												
1664A_OILGREASE: COMMON "As Received"												
Oil and Grease	U	1.35	1.35	4.81	mg/L			DXB7	03/12/18	0634	1746080	1
Titration and Ion Analysis												
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"												
Alkalinity, Total as CaCO3		134000	1450	4000	ug/L			RXB5	03/14/18	1554	1745547	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 1664A/1664B	
2	2320_ALKALINITY	

Notes:

Column headers are defined as follows:

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

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: March 27, 2018

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1745808										
QC1203986836	445538004	DUP									
Bromide	B	93.2	B	102	ug/L	8.92	^	(+/-250)	LXA2	03/09/18	12:06
Chloride	D	12500	D	12500	ug/L	0.0321		(0%-20%)		03/09/18	16:35
Fluoride		929		927	ug/L	0.172	^	(+/-500)		03/09/18	12:06
Nitrate-N		3070		3060	ug/L	0.117		(0%-20%)			
Nitrite-N	U	33.0	U	33.0	ug/L	N/A					
Phosphorus in phosphate	B	128	B	131	ug/L	2.24	^	(+/-500)			
Sulfate	D	66900	D	66900	ug/L	0.0777		(0%-20%)		03/09/18	16:35
QC1203986835	LCS										
Bromide	1250			1240	ug/L			99.3	(80%-120%)	03/09/18	13:36
Chloride	5000			4720	ug/L			94.4	(80%-120%)		
Fluoride	2500			2530	ug/L			101	(80%-120%)		
Nitrate-N	2500			2390	ug/L			95.7	(80%-120%)		
Nitrite-N	2500			2420	ug/L			96.8	(80%-120%)		
Phosphorus in phosphate	1250			1290	ug/L			103	(80%-120%)		

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QC Summary

Workorder: 445538

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Paramname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1745808										
Sulfate	10000			9660	ug/L		96.6	(80%-120%)	LXA2	03/09/18	13:36
QC1203986834	MB										
Bromide			U	67.0	ug/L					03/09/18	13:06
Chloride			U	67.0	ug/L						
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	33.0	ug/L						
Phosphorus in phosphate			U	67.0	ug/L						
Sulfate			U	133	ug/L						
QC1203986837	445538004 PS										
Bromide	1.25	B	0.0932	1.32	mg/L		98	(75%-125%)		03/09/18	12:36
Chloride	5.00	D	2.49 D	7.48	mg/L		99.8	(75%-125%)		03/09/18	17:05
Fluoride	2.50		0.929	3.40	mg/L		98.8	(75%-125%)		03/09/18	12:36
Nitrate-N	2.50		3.07	5.61	mg/L		102	(75%-125%)			
Nitrite-N	2.50	U	0.00	2.37	mg/L		94.9	(75%-125%)			
Phosphorus in phosphate	1.25	B	0.128	1.38	mg/L		100	(75%-125%)			

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1745808										
Sulfate	10.0	D	13.4	D	23.9	mg/L	105	(75%-125%)	LXA2	03/09/18	17:05

Oil & Grease Analysis

Batch	1746080										
QC1203987354	445538005 DUP										
Oil and Grease		U	1.35	B	1.35	mg/L	33.3	^	(+/-4.81)	DXB7	03/12/18 06:34
QC1203987352	LCS										
Oil and Grease	40.0				33.7	mg/L	84.3		(80%-120%)		03/12/18 06:34
QC1203987353	LCSD										
Oil and Grease	40.0				32.5	mg/L	3.63		81.3	(0%-20%)	03/12/18 06:34
QC1203987351	MB										
Oil and Grease			U		1.40	mg/L					03/12/18 06:34
QC1203987355	445538005 MS										
Oil and Grease	38.5	U	1.35		31.4	mg/L	79.3		(75%-125%)		03/12/18 06:34

Titration and Ion Analysis

Batch	1745547										
QC1203986247	445538010 DUP										
Alkalinity, Total as CaCO3			134000		132000	ug/L	1.36		(0%-20%)	RXB5	03/14/18 15:57
QC1203986246	LCS										
Alkalinity, Total as CaCO3	100000				107000	ug/L	107		(80%-120%)		03/14/18 15:05

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.

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QC Summary

Workorder: 445538

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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 #: GEL445538
Work Order #: 445538

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 19

Analytical Batch: 1746700

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538006	B3HFP0
445538007	B3HH18
445538010	B3HH19
1203988677	Method Blank (MB)
1203988678	445538005(B3HFN3) Sample Duplicate (DUP)
1203988679	Laboratory Control Sample (LCS)

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

Recounts

Sample 445538006 (B3HFP0) was verified by recounting at least five days from the separation date. The recount is reported.

Product: 9310_ALPHABETA_GPC: Gross Beta

Analytical Method: 9310_ALPHABETA_GPC

Analytical Procedure: GL-RAD-A-001 REV# 19

Analytical Batch: 1746734

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538005	B3HFN3
445538006	B3HFP0
445538007	B3HH18
445538010	B3HH19
1203988765	Method Blank (MB)

1203988766	445711003(B3HHN9) Sample Duplicate (DUP)
1203988767	445711003(B3HHN9) Matrix Spike (MS)
1203988768	445711003(B3HHN9) Matrix Spike Duplicate (MSD)
1203988769	Laboratory Control Sample (LCS)

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

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203988767 (B3HHN9MS) and 1203988768 (B3HHN9MSD), aliquots were reduced to conserve sample volume.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22

Analytical Batch: 1746816

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
445538007	B3HH18
445538010	B3HH19
1203988926	Method Blank (MB)
1203988927	445538007(B3HH18) Sample Duplicate (DUP)
1203988928	445538007(B3HH18) Matrix Spike (MS)
1203988929	Laboratory Control Sample (LCS)

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

The matrix spike, 1203988928 (B3HH18MS), aliquot was reduced to conserve sample volume.

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: GEL445538 GEL Work Order: 445538

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature:**Name: Theresa Austin****Date: 30 MAR 2018****Title: Group Leader**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538005	Date Collected: 03/08/2018 09:26	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HFN3	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1746700	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 03/20/2018 14:01	Aliquot: 300 mL	Instrument: PIC1A
Data File: S1746700r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1746700		
Prep Date: 03/19/2018 10:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	0.162	pCi/L	+/-0.734	0.735	1.38	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.80	4.30	mg	88.4	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538005	Date Collected: 03/08/2018 09:26	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HFN3		Prep Basis: "As Received"
Batch ID: 1746734	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 03/27/2018 08:57	Analyst: AXH4	Instrument: PIC10C
Data File: B1746734.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1746734	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 03/26/2018 12:39		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		2.86	pCi/L	+/-1.86	1.92	2.73	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538006	Date Collected: 03/08/2018 10:28	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HFP0	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1746700	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 03/26/2018 06:53	Aliquot: 300 mL	Instrument: PIC2A
Data File: S1746700r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1746700		
Prep Date: 03/19/2018 10:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		24.3	pCi/L	+/-2.03	4.49	1.01	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.10	4.30	mg	72.1	(40%-110%)

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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538006	Date Collected: 03/08/2018 10:28	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HFP0		Prep Basis: "As Received"
Batch ID: 1746734	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 03/27/2018 08:58	Analyst: AXH4	Instrument: PIC11C
Data File: B1746734.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1746734	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 03/26/2018 12:39		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		55.5	pCi/L	+/-5.45	10.6	2.95	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538007	Date Collected: 03/08/2018 07:15	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH18	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1746700	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 03/20/2018 14:01	Aliquot: 300 mL	Instrument: PIC1D
Data File: S1746700r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 90 min
Prep Batch: 1746700		
Prep Date: 03/19/2018 10:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	-0.111	pCi/L	+/-0.811	0.811	1.50	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.90	4.30	mg	90.7	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538007	Date Collected: 03/08/2018 07:15	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH18		Prep Basis: "As Received"
Batch ID: 1746734	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 03/27/2018 08:54	Analyst: AXH4	Instrument: PIC5A
Data File: B1746734.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1746734	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 03/26/2018 12:39		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA	U	1.24	pCi/L	+/-1.62	1.63	2.75	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538007	Date Collected: 03/08/2018 07:15	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH18	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1746816	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 03/15/2018 14:48	Aliquot: 50 mL	Instrument: LSCMOCHA
Data File: T1746816.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1746816		
Prep Date: 03/15/2018 07:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-78.8	pCi/L	+/-169	169	301	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538010	Date Collected: 03/08/2018 11:49	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH19	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1746700	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 03/20/2018 14:01	Aliquot: 300 mL	Instrument: PIC2B
Data File: S1746700r2.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 80 min
Prep Batch: 1746700		
Prep Date: 03/19/2018 10:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	-1.03	pCi/L	+/-0.737	0.737	1.62	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.60	4.30	mg	83.7	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538010	Date Collected: 03/08/2018 11:49	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH19		Prep Basis: "As Received"
Batch ID: 1746734	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 03/27/2018 08:58	Analyst: AXH4	Instrument: PIC12D
Data File: B1746734.xls	Aliquot: 125 mL	Count Time: 60 min
Prep Batch: 1746734	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 03/26/2018 12:39		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA		4.35	pCi/L	+/-2.16	2.28	3.02	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. 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: GEL445538	Client: CPRC001	Project: CPRC0S18003
Lab Sample ID: 445538010	Date Collected: 03/08/2018 11:49	Matrix: WATER
	Date Received: 03/09/2018 08:55	
Client ID: B3HH19	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1746816	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 03/15/2018 15:39	Aliquot: 50 mL	Instrument: LSCMOCHA
Data File: T1746816.xls	Prep Method: EPA 906.0 Modified	Count Time: 50 min
Prep Batch: 1746816		
Prep Date: 03/15/2018 07:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		552	pCi/L	+/-198	225	306	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: March 30, 2018
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Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 445538

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1746700								
QC1203988677	MB								
Strontium-90			U	-0.474	pCi/L			KSD1	03/20/1814:01
				Uncert: +/-0.568					
				TPU: +/-0.568					
**Strontium Carrier		4.30		4.20	mg	REC: 98	(40%-110%)		
QC1203988678	445538005	DUP							
Strontium-90		U	0.162	U	-0.336	pCi/L			03/20/1814:01
				Uncert: +/-0.734	+/-0.496	RPD: 0	N/A		
				TPU: +/-0.735	+/-0.496	RER: 1.1	(0-2)		
**Strontium Carrier		4.30	3.80	4.10	mg	REC: 95	(40%-110%)		
QC1203988679	LCS								
Strontium-90		78.3		67.8	pCi/L	REC: 87	(80%-120%)		03/20/1814:01
				Uncert: +/-3.88					
				TPU: +/-11.3					
**Strontium Carrier		4.30		4.40	mg	REC: 102	(40%-110%)		
Batch	1746734								
QC1203988765	MB								
Beta			U	0.909	pCi/L			AXH4	03/27/1808:57
				Uncert: +/-1.64					
				TPU: +/-1.65					
QC1203988766	445711003	DUP							
Beta		14.7		12.9	pCi/L				03/27/1808:57
				Uncert: +/-3.18	+/-2.91	RPD: 13	(0% - 100%)		
				TPU: +/-3.99	+/-3.59	RER: 0.675	(0-2)		
QC1203988767	445711003	MS							
Beta		1880	14.7	1850	pCi/L	REC: 98	(75%-125%)		03/27/1808:57
				Uncert: +/-3.18	+/-66.5				
				TPU: +/-3.99	+/-306				
QC1203988768	445711003	MSD							
Beta		1880	14.7	1910	pCi/L	REC: 101	(75%-125%)		03/27/1808:58
				Uncert: +/-3.18	+/-67.7	RPD: 3	(0%-20%)		
				TPU: +/-3.99	+/-315	RER: 0.265	(0-2)		
QC1203988769	LCS								
Beta		376		392	pCi/L	REC: 104	(80%-120%)		03/27/1808:58
				Uncert: +/-13.7					
				TPU: +/-64.8					
Rad Liquid Scintillation									
Batch	1746816								
QC1203988926	MB								
Tritium			U	-151	pCi/L			MXH8	03/15/1817:22
				Uncert: +/-166					
				TPU: +/-166					
QC1203988927	445538007	DUP							
Tritium		U	-78.8	U	40.8	pCi/L			03/15/1818:13

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch	1746816									
		Uncert:	+/-169	+/-175						
		TPU:	+/-169	+/-175		RPD: 0	N/A			
						RER: 0.964	(0-2)			
QC1203988928	445538007	MS								
Tritium	5140	U	-78.8	4270	pCi/L	REC: 83	(75%-125%)		03/15/1819:04	
		Uncert:	+/-169	+/-487						
		TPU:	+/-169	+/-959						
QC1203988929	LCS									
Tritium	2570			2130	pCi/L	REC: 83	(80%-120%)		03/15/1819:56	
		Uncert:		+/-252						
		TPU:		+/-483						

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- 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 analyte was detected in the associated method blank >= MDC or >5% sample activity.
- 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 >= 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
- E Reported value is estimated due to interferences. See comment in narrative.
- 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
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- S Reported value determined by the Method of Standard Additions (MSA)
- 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
- 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
- o Analyte failed to recover within LCS limits (Organics only)

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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.