



February 12, 2018

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

Re: CHPRC SAF W18-001
Work Order: 441737
SDG: GEL441737

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 17, 2018 and January 19, 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,


Kaitlyn Stone for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: W18-001-003, W18-001-090, W18-001-097, W18-001-098, W18-001-126 and W18-001-128

Enclosures



SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0584 Rev. Number: 0 Date Initiated: 03/28/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	W18-001	
LABORATORY:	GEL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	4	
SAMPLE NUMBERS:	B3FRV2, B3FTD8, B3FV84, B3FV86	
SAMPLE MATRIX:	WATER	
SDG NUM(S):	GEL441737	
<u>ISSUE BACKGROUND</u>		
CLASS:	Chain of Custody Issue (Field)	
TYPE:	Personnel in Custody of Sample Did Not Relinquish	
DESCRIPTION:	COC W18-001-003, SAMPLE B3FV84 & B3FTD8; COC W18-001-090, SAMPLE B3FV86 & B3FRV2; Personnel in custody of sample did not relinquish.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	DOCUMENT AND CLOSE	
FINAL RESOLUTION:	DOCUMENT AND CLOSE	
SUBMITTED BY:		
CALIXTO, SE	_____	02/21/2018 _____
ACCEPTED BY:		
KILLAND, KE	_____	03/28/2018 _____

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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W18-001
SDG: GEL441737**

February 12, 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 January 17, 2018 and January 19, 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:

<u>Laboratory Identification</u>	<u>Sample Description</u>
441737001	B3FV84
441737002	B3FTD8
441737003	B3FV86
441737004	B3FRV6
441737005	B3FRV2
441737006	B3FRV4
441737007	B3FVF8
441737008	B3FR62
441737009	B3FVH0
441737010	B3FVF9
441737011	B3FR60
441737012	B3FT90
441737013	B3FVH4
441737014	B3FVH5
441737015	B3FVH6
441737016	B3FT92
441737017	B3FRC3
441737018	B3FRC4
441737019	B3FRC5
441737020	B3FR97
441737021	B3FRD0
441737022	B3FTW5

441737023 B3FRD1
441737024 B3FRC9

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: GC/MS Semivolatile, General Chemistry and Metals.

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



Kaitlyn Stone for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL441737
Work Order #: 441737

GC/MS Semivolatile

Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203954146 (LCS)	Several	See applicable report

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203954147MS and 1203954148MSD (Non SDG 441785001)	Several	See applicable report

The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair. The failures may be attributed to an error in the extraction process.

Sample	Analyte	Value
1203954147MS and 1203954148MSD (Non SDG 441785001)	Several	See applicable report

Technical Information

Sample Re-extraction/Re-analysis

The initial analysis for sample 441737012 (B3FT90) was outside of the DFTPP TUNE window. The sample was re-analyzed within a new DFTPP TUNE window. The data results are reported from the re-analysis. Sample 441737011 (B3FR60) was re-analyzed because the original analysis recovered one surrogate marginally low. The re-analysis met surrogate acceptance criteria and the data was reported.

Miscellaneous Information

Manual Integrations

Sample (See Below) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

Sample	Analyte	Value
1203954146 (LCS)	4-Nitrophenol	Result 12.2ug/L

Metals**Determination of Metals by ICP**

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

Calibration Information**CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 441737001 (B3FV84), 441737002 (B3FTD8), 441737008 (B3FR62), 441737011 (B3FR60), 441737012 (B3FT90) and 441737016 (B3FT92).

Quality Control (QC) Information**Method Blank (MB) Statement**

The samples in this SDG contained analytes at concentrations more than ten times the negative value reported in the method blank, therefore the data was not adversely affected.

Sample	Analyte	Value
1203954167 (MB)	Sodium	See applicable report

Determination of Metals by ICP-MS

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

Quality Control (QC) Information**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was used in place of matrix QC due to limited sample volume.

Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

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

General Chemistry**Carbon, Total Organic**

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

Quality Control (QC) Information**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was used in place of matrix QC due to limited sample volume. 441737003 (B3FV86), 441737004 (B3FRV6), 441737005 (B3FRV2), 441737006 (B3FRV4), 441737007 (B3FVF8), 441737009 (B3FVH0) and 441737010 (B3FVF9).

Carbon, Total Organic

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

Quality Control (QC) Information**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was used in place of matrix QC due to limited sample volume.

Carbon, Total Organic

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

Carbon, Total Organic

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

Total Organic Halogens (TOX)

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

Total Organic Halogens (TOX)

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

Breakthrough effect

The breakthrough effect was observed. Since the reported replicates values are less than 10ug/L the data is reported. 441737005 (B3FRV2).

Total Organic Halogens (TOX)

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 Re-analysis

Samples 441737010 (B3FVF9) and 441737012 (B3FT90) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Total Organic Halogens (TOX)

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

Total Organic Halogens (TOX)

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.

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

92 lbs

AD: 1/14/18

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **W18-001-097**
Page 1 of 24

Collector: **Larry Resane #CHPRC** Telephone No.: 509-376-4650
 SAF No.: **W18-001** Purchase Order/Charge Code: 300071
 Project Title: **RCRA, JANUARY 2018** Sampling Origin: **Hanford Site**
 Shipped To (Lab): **GEL Laboratories, LLC** Logbook No.: **HNF-N-506 96/180** Ice Chest No.: **5625-747**
 Protocol: **RCRA** Method of Shipment: **Commercial Carrier** Bill of Lading/Air Bill No.: **771226421842**
 Priority: **30 Days** Offsite Property No.: **8958**

SPECIAL INSTRUCTIONS

N/A

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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FVF8	N	W	1-15-18	0918	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FVF8	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FR62	Y	W			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B3FVH0	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FVH0	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FVF9	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FVF9	N	W	1-15-18	0918	1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Received By: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 15 2018 1105**

Received By: **SSU-1** Signature: *[Signature]* Date/Time: **JAN 15 2018 1347**

Received By: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 16 2018 0800**

Received By: **SSU-1** Signature: *[Signature]* Date/Time: **JAN 16 2018 1400**

Received By: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 16 2018 1400**

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: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 15 2018 1105**

Relinquished By: **SSU-1** Signature: *[Signature]* Date/Time: **JAN 15 2018 1347**

Relinquished By: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 16 2018 0800**

Relinquished By: **SSU-1** Signature: *[Signature]* Date/Time: **JAN 16 2018 1400**

Relinquished By: **Larry Resane #CHPRC** Signature: *[Signature]* Date/Time: **JAN 16 2018 1400**

FINAL SAMPLE DISPOSITION Disposed Method (e.g., Return to customer, per lab procedure, used in process):
 Disposed By: **FEDEX** Signature: *[Signature]* Date/Time: **JAN 15 2018 1105**

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2MHill Plateau Remediation Company

C.O.C.# W18-001-097

Page 2 of 2

Telephone No.: 509-376-4650

Purchase Order/Charge Code: 300071

Contact/Requester: Karen Waters-Husted

Sampling Origin: Hanford Site

Collector: Larry Rosano
ICAPRC

SAF No.: W18-001

Logbook No.: HNF-N-506 96/80

Project Title: RCRA, JANUARY 2018

Method of Shipment Commercial Carrier

Shipped To (Lab): GEL Laboratories, LLC

Priority: 30 Days

Bill of Lading/Air Bill No.: 771226421842

Offsite Property No.: 8958

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
B3FR60	N	1-15-18	0918	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3FR60	N	↓	↓	4x1-L aG	8270_PHENOLIC_GC: COMMON	7/40 Days	Cool <=6C
B3FR60	N	↓	↓	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FR60	N	1-15-18	0918	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C

Relinquished By: Larry Rosano ICAPRC	Signature	JAN 15 2018 1105	Date/Time	Received By: [Signature] ICAPRC	Signature	JAN 15 2018 1105	Date/Time
Relinquished By: Roger Hieck Jr. ICAPRC	Signature	JAN 15 2018 1347	Date/Time	Received By: [Signature] SSU-1	Signature	JAN 15 2018 1347	Date/Time
Relinquished By: [Signature] ICAPRC	Signature	JAN 16 2018 0800	Date/Time	Received By: [Signature] ICAPRC	Signature	JAN 16 2018 0800	Date/Time
Relinquished By: [Signature] ICAPRC	Signature	JAN 16 2018 1400	Date/Time	Received By: [Signature] FEDEX	Signature		Date/Time

Disposal Method (e.g., Return to customer, per lab procedure, used in process):

Disposed By: [Signature]

Date/Time:

Matrix *

S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air

DS = Drum Solids
DL = Drum Liquid
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
W18-001-098
Page 1 of 14

Telephone No.: 509-376-4650
Purchase Order/Charge Code: 300071
Ice Chest No.: *686*
Bill of Lading/Air Bill No.: *771226421279*
Offsite Property No.: *8958*

Contact/Requester: Karen Waters-Husted
Sampling Origin: Hanford Site
Logbook No.: *HNF-N-506 96/80*
Method of Shipment: Commercial Carrier
Priority: 30 Days

Collector: *Larry Rosano*
SAF No.: W18-001
Project Title: RCRA, JANUARY 2018
Shipped To (Lab): *GEL Laboratories, LLC*
Protocol: RCRA

SPECIAL INSTRUCTIONS

N/A
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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FT90	N	W	<i>1-15-18</i>	<i>1031</i>	1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B3FT90	N	W			4x1-L aG	8270_PHENOLIC_GC: COMMON	7/40 Days	Cool <=6C
B3FT90	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FT90	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FVH4	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FVH4	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FVH5	N	W	<i>1-15-18</i>	<i>1031</i>	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C

Relinquished By: <i>Larry Rosano</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 15 2018 1105</i>	Received By: <i>Roger Friesz Jr.</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 15 2018 1105</i>	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By: <i>Roger Friesz Jr.</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 15 2018 1347</i>	Received By: <i>SSU-1</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 15 2018 1347</i>	DS = Drum Solids DL = Drum Liquid T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By: <i>SSU-1</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 16 2018 0800</i>	Received By: <i>Lesly Wall</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 16 2018 0800</i>	
Relinquished By: <i>Lesly Wall</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 16 2018 1400</i>	Received By: <i>FEDEX</i> Signature: <i>[Signature]</i> Date/Time: <i>JAN 16 2018 1400</i>	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Date/Time:

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2MHill Plateau Remediation Company

Collector: Larry Rosane
W18-001

SAF No.: W18-001

Project Title: RCRA, JANUARY 2018

Shipped To (Lab): GEL Laboratories, LLC

Protocol: RCRA

Contact/Requester: Karen Waters-Husted
Telephone No.: 509-376-4650

Sampling Origin: Hanford Site
Purchase Order/Charge Code: 300071

Logbook No.: HNF-N-506
Ice Chest No.: GWS-686

Method of Shipment: Commercial Carrier
Bill of Lading/Air Bill No.: 7712 26421279

Priority: 30 Days
Offsite Property No.: 8958

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	* W	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FVH5	N	W	1-15-18	1021	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FVH6	N	W	↓	↓	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FVH6	N	W	↓	↓	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FT92	Y	W	1-15-18	1031	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By: Larry Rosane Print First and Last Name: Larry Rosane Signature: [Signature] Date/Time: JAN 15 2018 1105	Received By: Roger Friesz Jr. Print First and Last Name: Roger Friesz Jr. Signature: [Signature] Date/Time: JAN 15 2018 1105
Relinquished By: Roger Friesz Jr. Print First and Last Name: Roger Friesz Jr. Signature: [Signature] Date/Time: JAN 15 2018 1347	Received By: SSU-1 Print First and Last Name: SSU-1 Signature: [Signature] Date/Time: JAN 15 2018 1347
Relinquished By: SSU-1 Print First and Last Name: SSU-1 Signature: [Signature] Date/Time: JAN 16 2018 0800	Received By: Leahy Wall Print First and Last Name: Leahy Wall Signature: [Signature] Date/Time: JAN 16 2018 0800
Relinquished By: Leahy Wall Print First and Last Name: Leahy Wall Signature: [Signature] Date/Time: JAN 16 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: [Signature] Date/Time:

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

Printed On 11/29/2017 FSR ID = FSR54165 A-6004-842 (REV 3)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

441737

C.O.C.#
W18-001-128
Page 1 of 2

Collector: Juan Aguilar / CHPRC
SAF No.: W18-001
Project Title: RCRA, JANUARY 2018
Shipped To (Lab): GEL Laboratories, LLC
Protocol: RCRA

Contact/Requester: Karen Waters-Husted
Sampling Origin: Hanford Site
Logbook No.: HNF-N-506 - 98/24
Method of Shipment: Commercial Carrier
Priority: 30 Days

Telephone No.: 509-376-4650
Purchase Order/Charge Code: 300071
Ice Chest No.: GWS-746
Bill of Lading/Air Bill No.: 771226421669
Offsite Property No.: 8958

SPECIAL INSTRUCTIONS
N/A

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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3FRD0	N	W	1-15-18	1340	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FRD0	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FTW5	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FTW5	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FRD1	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C
B3FRD1	N	W			1x250-mL aG	9060_TOX: COMMON	28 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3FRC9	N	W	1-15-18	1340	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2 / Cool <=6C

Relinquished By: Juan Aguilar / CHPRC
 Signature: [Signature] Date/Time: JAN 15 2018 1420

Received By: SSU-1
 Signature: [Signature] Date/Time: JAN 15 2018 1420

Relinquished By: SSU-1
 Signature: [Signature] Date/Time: JAN 16 2018 0800

Received By: Leahy Wall / CHPRC
 Signature: [Signature] Date/Time: JAN 16 2018 0800

Relinquished By: Leahy Wall / CHPRC
 Signature: [Signature] Date/Time: JAN 16 2018 1400

Received By: FEDEX
 Signature: [Signature] Date/Time: 1-19-18 1035

Relinquished By: [Signature]
 Signature: [Signature] Date/Time: 1-19-18 1035

Disposal Method (e.g., Return to customer, per lab procedure, used in process):

Disposed By: [Signature] Date/Time: [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

CH2MHill Plateau Remediation Company		C.O.C.# W18-001-128 Page 2 of 2	
441737		Telephone No.: 509-376-4650	
Collector: Juan Aguilar /CHPRC	Contact/Requester: Karen Waters-Husted	Purchase Order/Charge Code: 300071	
SAF No.: W18-001	Sampling Origin: Hanford Site	Ice Chest No.: GWS-746	
Project Title: RCRA, JANUARY 2018	Logbook No.: HNF-N-506-98/24	Bill of Lading/Air Bill No.: 7712 2642 1669	
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment: Commercial Carrier	Offsite Property No.: 8958	
Protocol: RCRA	Priority: 30 Days		
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. B3FRC9	Filter * N	No/Type Container 1x250-mL aG	9060_TOC: COMMON
Date 1-15-18	Time 1340	Sample Analysis	
Holding Time 28 Days		Preservative HCl or H2SO4 to pH <2 / COOL <=6C	

Relinquished By: Juan Aguilar /CHPRC	Signature	JAN 15 2018 1420	Date/Time	Received By: SSU #1	Signature	JAN 15 2018 1420	Date/Time	Matrix *
Relinquished By: SSU-1	Signature	JAN 16 2018 0800	Date/Time	Received By: Leahy Wall /CHPRC	Signature	JAN 16 2018 0800	Date/Time	S = Soil
Relinquished By: Leahy Wall /CHPRC	Signature	JAN 16 2018 1400	Date/Time	Received By: FEDEX	Signature		Date/Time	SE = Sediment
Relinquished By:	Signature	FEDEX	Date/Time	Received By: S BOONE	Signature	1-19-18	Date/Time	SO = Solid
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:		Date/Time:		SL = Sludge



SAMPLE RECEIPT & REVIEW FORM

H5

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>441737</u>			
Received By: <u>C. TARPLIN</u>		Date Received: <u>1/17/18</u>			
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7712 2642 1452</u> <u>7712 1704 5134</u> <u>7712 3041 4659</u> <u>7712 2924 2535</u>			
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.			
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____			
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <u>CPM</u> mR/Hr Classified as: <u>Rad 1</u> Rad 2 Rad 3			
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____			
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>2°C</u>
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR4-17</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials MTA Date 1/18/18 Page 1 of 1

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556-8171

Report Date: 12-FEB-18

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 12 February 2018

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	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 Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL441737
Work Order #: 441737**

Product: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

Analytical Method: SW846 3510C/8270D

Analytical Procedure: GL-OA-E-009 REV# 39

Analytical Batch: 1732366

Preparation Method: SW846 3510C

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

Preparation Batch: 1732363

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441737011	B3FR60
441737012	B3FT90
441737020	B3FR97
1203954145	Method Blank (MB)
1203954146	Laboratory Control Sample (LCS)
1203954147	441785001(NonSDG) Matrix Spike (MS)
1203954148	441785001(NonSDG) 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

Laboratory Control Sample (LCS) Recovery

The LCS and/or LCSD (See Below) spike recoveries were not within the acceptance limits. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

Sample	Analyte	Value
1203954146 (LCS)	Several	See applicable report

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

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

1203954147MS and 1203954148MSD (Non SDG 441785001)	Several	See applicable report
--	---------	-----------------------

The RPD values between the MS and MSD, (See Below), were not within the acceptance limits due to the large difference between the individual recoveries in each MS and MSD analyte pair. The failures may be attributed to an error in the extraction process.

Sample	Analyte	Value
1203954147MS and 1203954148MSD (Non SDG 441785001)	Several	See applicable report

Technical Information

Sample Re-extraction/Re-analysis

The initial analysis for sample 441737012 (B3FT90) was outside of the DFTPP TUNE window. The sample was re-analyzed within a new DFTPP TUNE window. The data results are reported from the re-analysis. Sample 441737011 (B3FR60) was re-analyzed because the original analysis recovered one surrogate marginally low. The re-analysis met surrogate acceptance criteria and the data was reported.

Miscellaneous Information

Manual Integrations

Sample (See Below) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

Sample	Analyte	Value
1203954146 (LCS)	4-Nitrophenol	Result 12.2ug/L

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: GEL441737 GEL Work Order: 441737

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: **Barbara Bailey**

Date: **12 FEB 2018**

Title: **Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL441737
Lab Sample ID: 441737011

Client ID: B3FR60
Batch ID: 1732366
Run Date: 01/19/2018 10:51
Prep Date: 01/18/2018 10:05
Data File: s011918.B\s4a1904.D

Date Collected: 01/15/2018 09:18
Date Received: 01/17/2018 11:00
Client: CPRC001
Method: SW846 3510C/8270D
Inst: MSD4.I
Analyst: JMB3
Aliquot: 1030 mL
Column: DB-5ms

Matrix: WATER

Project: CPRC0W18001
SOP Ref: GL-OA-E-009
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.91	ug/L	2.91	9.71
95-95-4	2,4,5-Trichlorophenol	U	2.91	ug/L	2.91	9.71
88-06-2	2,4,6-Trichlorophenol	U	2.91	ug/L	2.91	9.71
120-83-2	2,4-Dichlorophenol	U	2.91	ug/L	2.91	9.71
105-67-9	2,4-Dimethylphenol	U	2.91	ug/L	2.91	9.71
51-28-5	2,4-Dinitrophenol	U	4.85	ug/L	4.85	19.4
87-65-0	2,6-Dichlorophenol	U	2.91	ug/L	2.91	9.71
95-57-8	2-Chlorophenol	U	2.91	ug/L	2.91	9.71
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.91	ug/L	2.91	9.71
88-75-5	2-Nitrophenol	U	2.91	ug/L	2.91	9.71
59-50-7	4-Chloro-3-methylphenol	U	2.91	ug/L	2.91	9.71
100-02-7	4-Nitrophenol	U	2.91	ug/L	2.91	9.71
88-85-7	Dinoseb	U	2.91	ug/L	2.91	9.71
87-86-5	Pentachlorophenol	U	2.91	ug/L	2.91	9.71
108-95-2	Phenol	U	2.91	ug/L	2.91	9.71
65794-96-9	m,p-Cresols	U	3.59	ug/L	3.59	9.71
95-48-7	o-Cresol	U	2.91	ug/L	2.91	9.71

Semi-Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL441737
Lab Sample ID: 441737012

Client ID: B3FT90
Batch ID: 1732366
Run Date: 01/18/2018 22:46
Prep Date: 01/18/2018 10:05
Data File: s011818.B\s4a1831.D

Date Collected: 01/15/2018 10:21
Date Received: 01/17/2018 11:00
Client: CPRC001
Method: SW846 3510C/8270D
Inst: MSD4.I
Analyst: JMB3
Aliquot: 1030 mL
Column: DB-5ms

Matrix: WATER
Project: CPRC0W18001
SOP Ref: GL-OA-E-009
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.91	ug/L	2.91	9.71
95-95-4	2,4,5-Trichlorophenol	U	2.91	ug/L	2.91	9.71
88-06-2	2,4,6-Trichlorophenol	U	2.91	ug/L	2.91	9.71
120-83-2	2,4-Dichlorophenol	U	2.91	ug/L	2.91	9.71
105-67-9	2,4-Dimethylphenol	U	2.91	ug/L	2.91	9.71
51-28-5	2,4-Dinitrophenol	U	4.85	ug/L	4.85	19.4
87-65-0	2,6-Dichlorophenol	U	2.91	ug/L	2.91	9.71
95-57-8	2-Chlorophenol	U	2.91	ug/L	2.91	9.71
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.91	ug/L	2.91	9.71
88-75-5	2-Nitrophenol	U	2.91	ug/L	2.91	9.71
59-50-7	4-Chloro-3-methylphenol	U	2.91	ug/L	2.91	9.71
100-02-7	4-Nitrophenol	U	2.91	ug/L	2.91	9.71
88-85-7	Dinoseb	U	2.91	ug/L	2.91	9.71
87-86-5	Pentachlorophenol	U	2.91	ug/L	2.91	9.71
108-95-2	Phenol	U	2.91	ug/L	2.91	9.71
65794-96-9	m,p-Cresols	U	3.59	ug/L	3.59	9.71
95-48-7	o-Cresol	U	2.91	ug/L	2.91	9.71

Semi-Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL441737
Lab Sample ID: 441737020

Client ID: B3FR97
Batch ID: 1732366
Run Date: 01/18/2018 23:14
Prep Date: 01/18/2018 10:05
Data File: s011818.B\s4a1832.D

Date Collected: 01/15/2018 12:41
Date Received: 01/17/2018 11:00
Client: CPRC001
Method: SW846 3510C/8270D
Inst: MSD4.I
Analyst: JMB3
Aliquot: 1030 mL
Column: DB-5ms

Matrix: WATER

Project: CPRC0W18001
SOP Ref: GL-OA-E-009
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
58-90-2	2,3,4,6-Tetrachlorophenol	U	2.91	ug/L	2.91	9.71
95-95-4	2,4,5-Trichlorophenol	U	2.91	ug/L	2.91	9.71
88-06-2	2,4,6-Trichlorophenol	U	2.91	ug/L	2.91	9.71
120-83-2	2,4-Dichlorophenol	U	2.91	ug/L	2.91	9.71
105-67-9	2,4-Dimethylphenol	U	2.91	ug/L	2.91	9.71
51-28-5	2,4-Dinitrophenol	U	4.85	ug/L	4.85	19.4
87-65-0	2,6-Dichlorophenol	U	2.91	ug/L	2.91	9.71
95-57-8	2-Chlorophenol	U	2.91	ug/L	2.91	9.71
534-52-1	2-Methyl-4,6-dinitrophenol	U	2.91	ug/L	2.91	9.71
88-75-5	2-Nitrophenol	U	2.91	ug/L	2.91	9.71
59-50-7	4-Chloro-3-methylphenol	U	2.91	ug/L	2.91	9.71
100-02-7	4-Nitrophenol	U	2.91	ug/L	2.91	9.71
88-85-7	Dinoseb	U	2.91	ug/L	2.91	9.71
87-86-5	Pentachlorophenol	U	2.91	ug/L	2.91	9.71
108-95-2	Phenol	U	2.91	ug/L	2.91	9.71
65794-96-9	m,p-Cresols	U	3.59	ug/L	3.59	9.71
95-48-7	o-Cresol	U	2.91	ug/L	2.91	9.71

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: January 19, 2018

Page 1 of 7

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 441737

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
QC1203954146	LCS										
2,3,4,6-Tetrachlorophenol	50.0			36.5	ug/L		73	(70%-130%)	JMB3	01/18/18	15:47
2,4,5-Trichlorophenol	50.0			36.3	ug/L		73	(70%-130%)			
2,4,6-Trichlorophenol	50.0			35.7	ug/L		71	(70%-130%)			
2,4-Dichlorophenol	50.0			35.8	ug/L		72	(70%-130%)			
2,4-Dimethylphenol	50.0			29.2	ug/L		58 *	(70%-130%)			
2,4-Dinitrophenol	50.0			31.3	ug/L		63 *	(70%-130%)			
2,6-Dichlorophenol	50.0			51.6	ug/L		103	(70%-130%)			
2-Chlorophenol	50.0			31.7	ug/L		63 *	(70%-130%)			
2-Methyl-4,6-dinitrophenol	50.0			38.7	ug/L		77	(70%-130%)			
2-Nitrophenol	50.0			35.6	ug/L		71	(70%-130%)			
4-Chloro-3-methylphenol	50.0			34.0	ug/L		68 *	(70%-130%)			
4-Nitrophenol	50.0			12.2	ug/L		24 *	(70%-130%)			
Pentachlorophenol	50.0			44.2	ug/L		88	(70%-130%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 441737

Page 2 of 7

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
Phenol	50.0			12.6	ug/L		25 *	(70%-130%)	JMB3	01/18/18	15:47
m,p-Cresols	50.0			29.0	ug/L		58 *	(70%-130%)			
o-Cresol	50.0			28.7	ug/L		57 *	(70%-130%)			
**2,4,6-Tribromophenol	100			80.1	ug/L		80	(32%-124%)			
**2-Fluorobiphenyl	50.0			34.3	ug/L		69	(32%-112%)			
**2-Fluorophenol	100			42.1	ug/L		42	(15%-88%)			
**Nitrobenzene-d5	50.0			35.0	ug/L		70	(36%-115%)			
**Phenol-d5	100			24.0	ug/L		24	(15%-91%)			
**p-Terphenyl-d14	50.0			46.2	ug/L		92	(36%-121%)			
QC1203954145 MB											
2,3,4,6-Tetrachlorophenol			U	3.00	ug/L					01/18/18	15:19
2,4,5-Trichlorophenol			U	3.00	ug/L						
2,4,6-Trichlorophenol			U	3.00	ug/L						
2,4-Dichlorophenol			U	3.00	ug/L						
2,4-Dimethylphenol			U	3.00	ug/L						
2,4-Dinitrophenol			U	5.00	ug/L						

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
2,6-Dichlorophenol			U	3.00	ug/L				JMB3	01/18/18	15:19
2-Chlorophenol			U	3.00	ug/L						
2-Methyl-4,6-dinitrophenol			U	3.00	ug/L						
2-Nitrophenol			U	3.00	ug/L						
4-Chloro-3-methylphenol			U	3.00	ug/L						
4-Nitrophenol			U	3.00	ug/L						
Dinoseb			U	3.00	ug/L						
Pentachlorophenol			U	3.00	ug/L						
Phenol			U	3.00	ug/L						
m,p-Cresols			U	3.70	ug/L						
o-Cresol			U	3.00	ug/L						
**2,4,6-Tribromophenol	100			65.9	ug/L		66	(32%-124%)			
**2-Fluorobiphenyl	50.0			29.4	ug/L		59	(32%-112%)			
**2-Fluorophenol	100			39.5	ug/L		40	(15%-88%)			
**Nitrobenzene-d5	50.0			31.9	ug/L		64	(36%-115%)			

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QC Summary

Workorder: 441737

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
**Phenol-d5	100			22.5	ug/L		23	(15%-91%)	JMB3	01/18/18	15:19
**p-Terphenyl-d14	50.0			44.7	ug/L		89	(36%-121%)			
QC1203954147 441785001 MS											
2,3,4,6-Tetrachlorophenol	100	U	3.00	36.5	ug/L		37	(29%-127%)		01/18/18	20:19
2,4,5-Trichlorophenol	100	U	3.00	47.3	ug/L		47	(32%-124%)			
2,4,6-Trichlorophenol	100	U	3.00	41.3	ug/L		41	(33%-124%)			
2,4-Dichlorophenol	100	U	3.00	52.8	ug/L		53	(31%-121%)			
2,4-Dimethylphenol	100	U	3.00	50.3	ug/L		50	(28%-112%)			
2,4-Dinitrophenol	100	U	5.00	J 30.2	ug/L		30	(15%-140%)			
2,6-Dichlorophenol	100	U	3.00	66.5	ug/L		67	(32%-127%)			
2-Chlorophenol	100	U	3.00	53.4	ug/L		53	(27%-116%)			
2-Methyl-4,6-dinitrophenol	100	U	3.00	25.1	ug/L		25	(15%-142%)			
2-Nitrophenol	100	U	3.00	52.3	ug/L		52	(35%-121%)			
4-Chloro-3-methylphenol	100	U	3.00	60.0	ug/L		60	(28%-130%)			
4-Nitrophenol	100	U	3.00	35.6	ug/L		36	(15%-88%)			
Pentachlorophenol	100	U	3.00	34.4	ug/L		34	(15%-135%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
Phenol	100	U	3.00	40.6	ug/L		41	(15%-80%)	JMB3	01/18/18	20:19
m,p-Cresols	100	U	3.70	72.5	ug/L		72	(31%-118%)			
o-Cresol	100	U	3.00	63.0	ug/L		63	(32%-108%)			
**2,4,6-Tribromophenol	200		30.3	92.4	ug/L		46	(32%-124%)			
**2-Fluorobiphenyl	100		13.2	49.6	ug/L		50	(32%-112%)			
**2-Fluorophenol	200		20.3	92.0	ug/L		46	(15%-88%)			
**Nitrobenzene-d5	100		15.3	54.9	ug/L		55	(36%-115%)			
**Phenol-d5	200		14.1	77.0	ug/L		38	(15%-91%)			
**p-Terphenyl-d14	100		19.2	63.3	ug/L		63	(36%-121%)			
QC1203954148 441785001 MSD											
2,3,4,6-Tetrachlorophenol	100	U	3.00	63.4	ug/L	54*	63	(0%-20%)		01/18/18	20:47
2,4,5-Trichlorophenol	100	U	3.00	69.3	ug/L	38*	69	(0%-20%)			
2,4,6-Trichlorophenol	100	U	3.00	64.9	ug/L	44*	65	(0%-20%)			
2,4-Dichlorophenol	100	U	3.00	70.2	ug/L	28*	70	(0%-20%)			
2,4-Dimethylphenol	100	U	3.00	56.0	ug/L	11	56	(0%-20%)			
2,4-Dinitrophenol	100	U	5.00	52.9	ug/L	55*	53	(0%-20%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
2,6-Dichlorophenol	100	U	3.00	101	ug/L	41*	101	(0%-20%)	JMB3	01/18/18	20:47
2-Chlorophenol	100	U	3.00	68.3	ug/L	24*	68	(0%-20%)			
2-Methyl-4,6-dinitrophenol	100	U	3.00	59.0	ug/L	81*	59	(0%-20%)			
2-Nitrophenol	100	U	3.00	74.9	ug/L	36*	75	(0%-20%)			
4-Chloro-3-methylphenol	100	U	3.00	70.1	ug/L	16	70	(0%-20%)			
4-Nitrophenol	100	U	3.00	42.8	ug/L	18	43	(0%-20%)			
Pentachlorophenol	100	U	3.00	71.7	ug/L	70*	72	(0%-20%)			
Phenol	100	U	3.00	44.8	ug/L	10	45	(0%-20%)			
m,p-Cresols	100	U	3.70	77.2	ug/L	6	77	(0%-20%)			
o-Cresol	100	U	3.00	68.4	ug/L	8	68	(0%-20%)			
**2,4,6-Tribromophenol	200		30.3	147	ug/L		74	(32%-124%)			
**2-Fluorobiphenyl	100		13.2	63.5	ug/L		64	(32%-112%)			
**2-Fluorophenol	200		20.3	115	ug/L		58	(15%-88%)			
**Nitrobenzene-d5	100		15.3	68.9	ug/L		69	(36%-115%)			
**Phenol-d5	200		14.1	86.2	ug/L		43	(15%-91%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatile-GC/MS											
Batch	1732366										
**p-Terphenyl-d14	100	19.2		76.4	ug/L		76	(36%-121%)	JMB3	01/18/18	20:47

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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

Surrogate Recovery Report

SDG Number: GEL441737

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203954145	MB for batch 1732363	40	23	64	59	66	89
1203954146	LCS for batch 1732363	42	24	70	69	80	92
1203954147	Qrtly NFS Sew MS	46	38	55	50	46	63
1203954148	Qrtly NFS Sew MSD	58	43	69	64	74	76
441737012	B3FT90	50	28	78	76	32	102
441737020	B3FR97	45	26	76	75	36	100
441737011	B3FR60	38	22	66	68	74	92

Surrogate

Acceptance Limits

2FP	= 2-Fluorophenol	(15%-88%)
PHL	= Phenol-d5	(15%-91%)
NBZ	= Nitrobenzene-d5	(36%-115%)
FBP	= 2-Fluorobiphenyl	(32%-112%)
TBP	= 2,4,6-Tribromophenol	(32%-124%)
TPH	= p-Terphenyl-d14	(36%-121%)

* 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 #: GEL441737
Work Order #: 441737

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1732375**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1732410**Product: Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer****Analytical Method:** 7470_HG_CVAA**Analytical Procedure:** GL-MA-E-010 REV# 36**Analytical Batch:** 1732525**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1732374 and 1732407**Preparation Method:** SW846 7470A Prep**Preparation Procedure:** GL-MA-E-010 REV# 36**Preparation Batch:** 1732524

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441737001	B3FV84
441737002	B3FTD8
441737008	B3FR62
441737011	B3FR60
441737012	B3FT90
441737016	B3FT92
1203954167	Method Blank (MB) ICP
1203954168	Laboratory Control Sample (LCS)
1203954179	Laboratory Control Sample Duplicate (LCSD)
1203954171	441737001(B3FV84L) Serial Dilution (SD)
1203954253	Method Blank (MB) ICP-MS
1203954254	Laboratory Control Sample (LCS)
1203954255	Laboratory Control Sample Duplicate (LCSD)
1203954256	441737001(B3FV84L) Serial Dilution (SD)
1203954533	Method Blank (MB) CVAA
1203954534	Laboratory Control Sample (LCS)
1203954540	441737001(B3FV84L) Serial Dilution (SD)
1203954538	441737001(B3FV84D) Sample Duplicate (DUP)
1203954539	441737001(B3FV84S) Matrix Spike (MS)

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

Data Summary:

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

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 441737001 (B3FV84), 441737002 (B3FTD8), 441737008 (B3FR62), 441737011 (B3FR60), 441737012 (B3FT90) and 441737016 (B3FT92)-ICP.

ICSA/ICSAB Statement

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

Quality Control (QC) Information

Method Blank (MB) Statement

The samples in this SDG contained analytes at concentrations more than ten times the negative value reported in the method blank, therefore the data was not adversely affected.

Sample	Analyte	Value
1203954167 (MB)	Sodium	See applicable report

Laboratory Control Sample Duplicate (LCSD)

An LCSD was used in place of matrix QC due to limited sample volume. ICP-MS.

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL441737 GEL Work Order: 441737

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: 05 FEB 2018****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID: 441737001

BASIS: As Received

DATE COLLECTED 16-JAN-18

CLIENT ID: B3FV84

LEVEL: Low

DATE RECEIVED 17-JAN-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	01/24/18 20:43	180124-3	1732410
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	01/25/18 15:15	180125-8	1732410
7440-38-2	Arsenic	10	ug/L		2	5	5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-39-3	Barium	36.5	ug/L		0.67	2	2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	01/18/18 18:07	011818-1	1732375
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-70-2	Calcium	35000	ug/L		50	200	200	1	P	HSC	01/18/18 18:07	011818-1	1732375
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	01/18/18 18:07	011818-1	1732375
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7439-95-4	Magnesium	11600	ug/L		110	300	300	1	P	HSC	01/18/18 18:07	011818-1	1732375
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	01/19/18 11:57	011918W1-9	1732525
7439-98-7	Molybdenum	3.32	ug/L		0.2	0.5	0.5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-02-0	Nickel	1.41	ug/L	B	0.6	2	2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-09-7	Potassium	6590	ug/L		50	150	150	1	P	HSC	01/18/18 18:07	011818-1	1732375
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-23-5	Sodium	23700	ug/L		100	300	300	1	P	HSC	01/23/18 16:32	012318A-2	1732375
7440-24-6	Strontium	243	ug/L		2	10	10	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-61-1	Uranium	2.38	ug/L		0.067	0.2	0.2	1	MS	BAJ	01/24/18 20:43	180124-3	1732410
7440-62-2	Vanadium	24.1	ug/L		1	5	5	1	P	HSC	01/18/18 18:07	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	01/25/18 13:03	180125-4	1732410

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8
1732410	1732407	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

1732525	1732524	SW846 7470A Prep	20	mL	20	mL	01/18/18	AXS5
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***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B
AV SW846 7470A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID: 441737002

BASIS: As Received

DATE COLLECTED 16-JAN-18

CLIENT ID: B3FTD8

LEVEL: Low

DATE RECEIVED 17-JAN-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	01/24/18 20:50	180124-3	1732410
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	01/25/18 15:18	180125-8	1732410
7440-38-2	Arsenic	9.9	ug/L		2	5	5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-39-3	Barium	37.7	ug/L		0.67	2	2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-41-7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	01/18/18 18:13	011818-1	1732375
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-70-2	Calcium	35100	ug/L		50	200	200	1	P	HSC	01/18/18 18:13	011818-1	1732375
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	01/18/18 18:13	011818-1	1732375
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7439-95-4	Magnesium	11600	ug/L		110	300	300	1	P	HSC	01/18/18 18:13	011818-1	1732375
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTMI	01/19/18 12:09	011918W1-9	1732525
7439-98-7	Molybdenum	3.46	ug/L		0.2	0.5	0.5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-02-0	Nickel	1.31	ug/L	B	0.6	2	2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-09-7	Potassium	6490	ug/L		50	150	150	1	P	HSC	01/18/18 18:13	011818-1	1732375
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-23-5	Sodium	23900	ug/L		100	300	300	1	P	HSC	01/23/18 16:39	012318A-2	1732375
7440-24-6	Strontium	249	ug/L		2	10	10	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-29-1	Thorium	0.70	ug/L	U	0.7	2	2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-31-5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-61-1	Uranium	2.47	ug/L		0.067	0.2	0.2	1	MS	BAJ	01/24/18 20:50	180124-3	1732410
7440-62-2	Vanadium	24.2	ug/L		1	5	5	1	P	HSC	01/18/18 18:13	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	BAJ	01/25/18 13:06	180125-4	1732410

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8
1732410	1732407	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

1732525	1732524	SW846 7470A Prep	20	mL	20	mL	01/18/18	AXS5
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***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B
AV SW846 7470A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID: 441737008

BASIS: As Received

DATE COLLECTED 15-JAN-18

CLIENT ID: B3FR62

LEVEL: Low

DATE RECEIVED 17-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	7.87	ug/L	B	3.5	10	10	1	P	HSC	01/23/18 16:42	012318A-2	1732375
7440-38-2	Arsenic	8.78	ug/L	B	5	30	30	1	P	HSC	01/23/18 16:42	012318A-2	1732375
7440-39-3	Barium	40.5	ug/L		1	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-70-2	Calcium	34300	ug/L		50	200	200	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-47-3	Chromium	4.79	ug/L	B	1	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	01/23/18 16:42	012318A-2	1732375
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	01/18/18 18:16	011818-1	1732375
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	01/18/18 18:16	011818-1	1732375
7439-95-4	Magnesium	10400	ug/L		110	300	300	1	P	HSC	01/18/18 18:16	011818-1	1732375
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-02-0	Nickel	2.81	ug/L	B	1.5	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-09-7	Potassium	5040	ug/L		50	150	150	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-23-5	Sodium	21900	ug/L		100	300	300	1	P	HSC	01/23/18 16:42	012318A-2	1732375
7440-62-2	Vanadium	16.7	ug/L		1	5	5	1	P	HSC	01/18/18 18:16	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	01/23/18 16:42	012318A-2	1732375

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID: 441737011

BASIS: As Received

DATE COLLECTED 15-JAN-18

CLIENT ID: B3FR60

LEVEL: Low

DATE RECEIVED 17-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	01/23/18 16:45	012318A-2	1732375
7440-38-2	Arsenic	5.87	ug/L	B	5	30	30	1	P	HSC	01/23/18 16:45	012318A-2	1732375
7440-39-3	Barium	38	ug/L		1	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-70-2	Calcium	33100	ug/L		50	200	200	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-47-3	Chromium	11.7	ug/L		1	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	01/23/18 16:45	012318A-2	1732375
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	01/18/18 18:19	011818-1	1732375
7439-89-6	Iron	52.7	ug/L	B	30	100	100	1	P	HSC	01/18/18 18:19	011818-1	1732375
7439-95-4	Magnesium	10100	ug/L		110	300	300	1	P	HSC	01/18/18 18:19	011818-1	1732375
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-02-0	Nickel	5.06	ug/L		1.5	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-09-7	Potassium	4760	ug/L		50	150	150	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-23-5	Sodium	20700	ug/L		100	300	300	1	P	HSC	01/23/18 16:45	012318A-2	1732375
7440-61-1	Uranium	5.05	ug/L		0.067	0.2	15	1	MS	BAJ	01/24/18 20:53	180124-3	1732410
7440-62-2	Vanadium	16.5	ug/L		1	5	5	1	P	HSC	01/18/18 18:19	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	01/23/18 16:45	012318A-2	1732375

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8
1732410	1732407	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID:441737012

BASIS: As Received

DATE COLLECTED 15-JAN-18

CLIENT ID: B3FT90

LEVEL: Low

DATE RECEIVED 17-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	01/23/18 16:48	012318A-2	1732375
7440-38-2	Arsenic	10.1	ug/L	B	5	30	30	1	P	HSC	01/23/18 16:48	012318A-2	1732375
7440-39-3	Barium	45.7	ug/L		1	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-70-2	Calcium	43200	ug/L		50	200	200	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-47-3	Chromium	8.48	ug/L		1	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	01/23/18 16:48	012318A-2	1732375
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	01/18/18 18:22	011818-1	1732375
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	01/18/18 18:22	011818-1	1732375
7439-95-4	Magnesium	13100	ug/L		110	300	300	1	P	HSC	01/18/18 18:22	011818-1	1732375
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-02-0	Nickel	3.9	ug/L	B	1.5	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-09-7	Potassium	6160	ug/L		50	150	150	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-23-5	Sodium	25900	ug/L		100	300	300	1	P	HSC	01/23/18 16:48	012318A-2	1732375
7440-61-1	Uranium	10.7	ug/L		0.067	0.2	15	1	MS	BAJ	01/24/18 20:57	180124-3	1732410
7440-62-2	Vanadium	16.2	ug/L		1	5	5	1	P	HSC	01/18/18 18:22	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	01/23/18 16:48	012318A-2	1732375

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8
1732410	1732407	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL441737

CONTRACT: CPRCOW18001

METHOD TYPE: SW846

SAMPLE ID:441737016

BASIS: As Received

DATE COLLECTED 15-JAN-18

CLIENT ID: B3FT92

LEVEL: Low

DATE RECEIVED 17-JAN-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	5.03	ug/L	B	3.5	10	10	1	P	HSC	01/23/18 16:51	012318A-2	1732375
7440-38-2	Arsenic	8.96	ug/L	B	5	30	30	1	P	HSC	01/23/18 16:51	012318A-2	1732375
7440-39-3	Barium	48.2	ug/L		1	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-70-2	Calcium	44400	ug/L		50	200	200	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-47-3	Chromium	3.48	ug/L	B	1	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	01/23/18 16:51	012318A-2	1732375
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	01/18/18 18:25	011818-1	1732375
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	01/18/18 18:25	011818-1	1732375
7439-95-4	Magnesium	13500	ug/L		110	300	300	1	P	HSC	01/18/18 18:25	011818-1	1732375
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-02-0	Nickel	2.22	ug/L	B	1.5	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-09-7	Potassium	6300	ug/L		50	150	150	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-23-5	Sodium	26000	ug/L		100	300	300	1	P	HSC	01/23/18 16:51	012318A-2	1732375
7440-62-2	Vanadium	16.7	ug/L		1	5	5	1	P	HSC	01/18/18 18:25	011818-1	1732375
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	01/23/18 16:51	012318A-2	1732375

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1732375	1732374	SW846 3005A	50	mL	50	mL	01/17/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: February 5, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 441737

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
QC1203954254	LCS										
Aluminum	2000			2010	ug/L		101	(80%-120%)	BAJ	01/24/18	20:37
Antimony	50.0			48.3	ug/L		96.6	(80%-120%)		01/25/18	15:12
Arsenic	50.0			51.7	ug/L		103	(80%-120%)		01/24/18	20:37
Barium	50.0			48.4	ug/L		96.8	(80%-120%)			
Beryllium	50.0			59.3	ug/L		119	(80%-120%)			
Cadmium	50.0			50.3	ug/L		101	(80%-120%)			
Chromium	50.0			48.2	ug/L		96.4	(80%-120%)			
Cobalt	50.0			49.3	ug/L		98.5	(80%-120%)			
Copper	50.0			47.3	ug/L		94.6	(80%-120%)			
Lead	50.0			50.1	ug/L		100	(80%-120%)			
Manganese	50.0			53.9	ug/L		108	(80%-120%)			
Molybdenum	50.0			51.2	ug/L		102	(80%-120%)			
Nickel	50.0			48.1	ug/L		96.2	(80%-120%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
Selenium	50.0			50.7	ug/L		101	(80%-120%)	BAJ	01/24/18	20:37
Silver	50.0			51.9	ug/L		104	(80%-120%)			
Strontium	50.0			50.0	ug/L		100	(80%-120%)			
Thallium	50.0			48.1	ug/L		96.1	(80%-120%)			
Thorium	50.0			49.0	ug/L		98	(80%-120%)			
Tin	50.0			51.2	ug/L		102	(80%-120%)			
Uranium	50.0			49.1	ug/L		98.2	(80%-120%)			
Zinc	50.0			49.6	ug/L		99.2	(80%-120%)		01/25/18	12:59
QC1203954255	LCSD										
Aluminum	2000			2030	ug/L	1.06	102	(0%-20%)		01/24/18	20:40
Antimony	50.0			50.0	ug/L	3.42	99.9	(0%-20%)		01/25/18	15:14
Arsenic	50.0			50.9	ug/L	1.5	102	(0%-20%)		01/24/18	20:40
Barium	50.0			47.3	ug/L	2.2	94.7	(0%-20%)			
Beryllium	50.0			59.3	ug/L	0.0236	119	(0%-20%)			
Cadmium	50.0			51.4	ug/L	2.22	103	(0%-20%)			
Chromium	50.0			48.8	ug/L	1.31	97.7	(0%-20%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
Cobalt	50.0			48.7	ug/L	1.06	97.5	(0%-20%)	BAJ	01/24/18	20:40
Copper	50.0			48.1	ug/L	1.61	96.1	(0%-20%)			
Lead	50.0			49.9	ug/L	0.502	99.8	(0%-20%)			
Manganese	50.0			53.4	ug/L	0.962	107	(0%-20%)			
Molybdenum	50.0			50.3	ug/L	1.89	101	(0%-20%)			
Nickel	50.0			48.6	ug/L	1.03	97.2	(0%-20%)			
Selenium	50.0			53.1	ug/L	4.62	106	(0%-20%)			
Silver	50.0			52.2	ug/L	0.582	104	(0%-20%)			
Strontium	50.0			50.7	ug/L	1.44	101	(0%-20%)			
Thallium	50.0			47.6	ug/L	0.936	95.3	(0%-20%)			
Thorium	50.0			48.8	ug/L	0.294	97.7	(0%-20%)			
Tin	50.0			48.3	ug/L	5.76	96.6	(0%-20%)			
Uranium	50.0			49.3	ug/L	0.408	98.6	(0%-20%)			
Zinc	50.0			51.1	ug/L	3.01	102	(0%-20%)		01/25/18	13:01
QC1203954253	MB										
Aluminum			U	19.3	ug/L					01/24/18	20:33

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
Antimony			U	1.00	ug/L				BAJ	01/25/18	15:11
Arsenic			U	2.00	ug/L					01/24/18	20:33
Barium			U	0.670	ug/L						
Beryllium			U	0.200	ug/L						
Cadmium			U	0.300	ug/L						
Chromium			U	3.00	ug/L						
Cobalt			U	0.300	ug/L						
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						

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
Thallium			U	0.600	ug/L				BAJ	01/24/18	20:33
Thorium			U	0.700	ug/L						
Tin			U	1.00	ug/L						
Uranium			U	0.067	ug/L						
Zinc			U	3.30	ug/L					01/25/18	12:58
QC1203954256 441737001 SDILT											
Aluminum	U	5.20	DU	96.5	ug/L	N/A		(0%-20%)		01/24/18	20:47
Antimony	U	0.449	DU	5.00	ug/L	N/A		(0%-20%)		01/25/18	15:17
Arsenic		10.0	BD	2.01	ug/L	.569		(0%-20%)		01/24/18	20:47
Barium		36.5	D	7.15	ug/L	2.09		(0%-20%)			
Beryllium	U	0.019	DU	1.00	ug/L	N/A		(0%-20%)			
Cadmium	U	0.019	DU	1.50	ug/L	N/A		(0%-20%)			
Chromium	U	2.84	DU	15.0	ug/L	N/A		(0%-20%)			
Cobalt	U	0.025	DU	1.50	ug/L	N/A		(0%-20%)			
Copper	U	0.299	DU	1.50	ug/L	N/A		(0%-20%)			
Lead	U	0.026	DU	2.50	ug/L	N/A		(0%-20%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1732410										
Manganese	U	0.352	DU	5.00	ug/L	N/A		(0%-20%)	BAJ	01/24/18	20:47
Molybdenum		3.32	D	0.594	ug/L	10.6		(0%-20%)			
Nickel	B	1.41	DU	3.00	ug/L	N/A		(0%-20%)			
Selenium	U	1.68	DU	10.0	ug/L	N/A		(0%-20%)			
Silver	U	0.011	DU	1.50	ug/L	N/A		(0%-20%)			
Strontium		243	D	46.7	ug/L	3.86		(0%-20%)			
Thallium	U	0.020	DU	3.00	ug/L	N/A		(0%-20%)			
Thorium	U	0.424	DU	3.50	ug/L	N/A		(0%-20%)			
Tin	U	0.183	DU	5.00	ug/L	N/A		(0%-20%)			
Uranium		2.38	D	0.469	ug/L	1.55		(0%-20%)			
Zinc	U	1.94	BD	4.10	ug/L	N/A		(0%-20%)		01/25/18	13:04
Metals Analysis-ICP											
Batch	1732375										
QC1203954168	LCS										
Antimony	500			487	ug/L		97.3	(80%-120%)	HSC	01/23/18	16:26
Arsenic	500			501	ug/L		100	(80%-120%)			
Barium	500			445	ug/L		89	(80%-120%)		01/18/18	18:01

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1732375										
Boron	500			458	ug/L		91.6	(80%-120%)	HSC	01/18/18	18:01
Cadmium	500			440	ug/L		87.9	(80%-120%)			
Calcium	5000			4410	ug/L		88.3	(80%-120%)			
Chromium	500			435	ug/L		87	(80%-120%)			
Cobalt	500			506	ug/L		101	(80%-120%)		01/23/18	16:26
Copper	500			451	ug/L		90.2	(80%-120%)		01/18/18	18:01
Iron	5000			4360	ug/L		87.2	(80%-120%)			
Magnesium	5000			4460	ug/L		89.2	(80%-120%)			
Manganese	500			450	ug/L		89.9	(80%-120%)			
Nickel	500			446	ug/L		89.2	(80%-120%)			
Potassium	5000			4270	ug/L		85.5	(80%-120%)			
Silver	500			448	ug/L		89.5	(80%-120%)			
Sodium	5000			5160	ug/L		103	(80%-120%)		01/23/18	16:26
Vanadium	500			448	ug/L		89.6	(80%-120%)		01/18/18	18:01
Zinc	500			474	ug/L		94.7	(80%-120%)		01/23/18	16:26

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1732375										
	QC1203954179	LCSD									
Antimony	500			477	ug/L	2.08	95.3	(0%-20%)	HSC	01/23/18	16:29
Arsenic	500			492	ug/L	1.94	98.4	(0%-20%)			
Barium	500			438	ug/L	1.52	87.6	(0%-20%)		01/18/18	18:04
Boron	500			453	ug/L	1.05	90.6	(0%-20%)			
Cadmium	500			432	ug/L	1.64	86.5	(0%-20%)			
Calcium	5000			4410	ug/L	0.0136	88.3	(0%-20%)			
Chromium	500			429	ug/L	1.46	85.8	(0%-20%)			
Cobalt	500			495	ug/L	2.14	99	(0%-20%)		01/23/18	16:29
Copper	500			445	ug/L	1.36	89	(0%-20%)		01/18/18	18:04
Iron	5000			4350	ug/L	0.197	87.1	(0%-20%)			
Magnesium	5000			4460	ug/L	0.0516	89.2	(0%-20%)			
Manganese	500			444	ug/L	1.24	88.8	(0%-20%)			
Nickel	500			440	ug/L	1.43	88	(0%-20%)			
Potassium	5000			4240	ug/L	0.733	84.9	(0%-20%)			
Silver	500			440	ug/L	1.62	88.1	(0%-20%)			

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1732375										
Sodium	5000			4650	ug/L	10.3	93.1	(0%-20%)	HSC	01/23/18	16:29
Vanadium	500			443	ug/L	1.18	88.6	(0%-20%)		01/18/18	18:04
Zinc	500			465	ug/L	1.86	93	(0%-20%)		01/23/18	16:29
QC1203954167	MB										
Antimony			U	3.50	ug/L					01/23/18	16:23
Arsenic			U	5.00	ug/L						
Barium			U	1.00	ug/L					01/18/18	17:57
Boron			U	15.0	ug/L						
Cadmium			U	1.00	ug/L						
Calcium			U	50.0	ug/L						
Chromium			U	1.00	ug/L						
Cobalt			U	1.00	ug/L					01/23/18	16:23
Copper			U	3.00	ug/L					01/18/18	17:57
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Manganese			U	2.00	ug/L						

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1732375										
Nickel			U	1.50	ug/L				HSC	01/18/18	17:57
Potassium			U	50.0	ug/L						
Silver			U	1.00	ug/L						
Sodium			B	-345	ug/L					01/23/18	16:23
Vanadium			U	1.00	ug/L					01/18/18	17:57
Zinc			U	3.30	ug/L					01/23/18	16:23
QC1203954171 441737001 SDILT											
Antimony	U	2.93	DU	17.5	ug/L	N/A		(0%-20%)		01/23/18	16:35
Arsenic	B	13.9	DU	25.0	ug/L	N/A		(0%-20%)			
Barium		34.1	D	6.65	ug/L	2.36		(0%-20%)		01/18/18	18:10
Boron	U	12.4	DU	75.0	ug/L	N/A		(0%-20%)			
Cadmium	U	0.446	DU	5.00	ug/L	N/A		(0%-20%)			
Calcium		35000	D	7110	ug/L	1.48		(0%-20%)			
Chromium	B	2.08	DU	5.00	ug/L	N/A		(0%-20%)			
Cobalt	U	-0.297	DU	5.00	ug/L	N/A		(0%-20%)		01/23/18	16:35
Copper	U	0.0315	DU	15.0	ug/L	N/A		(0%-20%)		01/18/18	18:10

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1732375										
Iron	U	-5.01	DU	150	ug/L	N/A		(0%-20%)	HSC	01/18/18	18:10
Magnesium		11600	D	2350	ug/L	1.4		(0%-20%)			
Manganese	U	-0.134	DU	10.0	ug/L	N/A		(0%-20%)			
Nickel	B	1.73	DU	7.50	ug/L	N/A		(0%-20%)			
Potassium		6590	D	1280	ug/L	2.65		(0%-20%)			
Silver	U	0.456	DU	5.00	ug/L	N/A		(0%-20%)			
Sodium		23700	D	4850	ug/L	2.35		(0%-20%)		01/23/18	16:35
Vanadium		24.1	D	5.61	ug/L	16.7		(0%-20%)		01/18/18	18:10
Zinc	B	-4.61	BD	3.53	ug/L	-483		(0%-20%)		01/23/18	16:35
Metals Analysis-Mercury											
Batch	1732525										
QC1203954538	441737001	DUP									
Mercury	U	0.067	U	0.067	ug/L	N/A			MTM1	01/19/18	12:02
QC1203954534	LCS										
Mercury	2.00			1.99	ug/L		99.3	(80%-120%)		01/19/18	11:55
QC1203954533	MB										
Mercury			U	0.067	ug/L					01/19/18	11:52
QC1203954539	441737001	MS									
Mercury	2.00	U	0.067	2.00	ug/L		99.9	(75%-125%)		01/19/18	12:04

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-Mercury											
Batch	1732525										
	QC1203954540 441737001 SDILT										
Mercury	U	-0.005	DU	0.335	ug/L	N/A		(0%-10%)	MTM1	01/19/18	12:05

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- 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 #: GEL441737
Work Order #: 441737**

Product: Carbon, Total Organic

Analytical Method: SW846 9060A

Analytical Procedure: GL-GC-E-093 REV# 15

Analytical Batches: 1732389, 1732396, 1733168 and 1733169

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441737003	B3FV86
441737004	B3FRV6
441737005	B3FRV2
441737006	B3FRV4
441737007	B3FVF8
441737009	B3FVH0
441737010	B3FVF9
441737011	B3FR60
441737012	B3FT90
441737013	B3FVH4
441737014	B3FVH5
441737015	B3FVH6
441737017	B3FRC3
441737018	B3FRC4
441737019	B3FRC5
441737020	B3FR97
441737021	B3FRD0
441737022	B3FTW5
441737023	B3FRD1
441737024	B3FRC9
1203954207	Method Blank (MB)
1203954208	Laboratory Control Sample (LCS)
1203954209	Laboratory Control Sample Duplicate (LCSD)
1203954220	Method Blank (MB)
1203954221	Laboratory Control Sample (LCS)
1203954222	Laboratory Control Sample Duplicate (LCSD)
1203956229	Method Blank (MB)
1203956230	Laboratory Control Sample (LCS)
1203956231	441726002(NonSDG) Sample Duplicate (DUP)
1203956233	441726002(NonSDG) Post Spike (PS)
1203956552	Method Blank (MB)
1203956553	Laboratory Control Sample (LCS)
1203956555	442065002(NonSDG) Sample Duplicate (DUP)
1203956556	442065002(NonSDG) 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.

Quality Control (QC) Information**Laboratory Control Sample Duplicate (LCSD)**

An LCSD was used in place of matrix QC due to limited sample volume. 441737003 (B3FV86), 441737004 (B3FRV6), 441737005 (B3FRV2), 441737006 (B3FRV4), 441737007 (B3FVF8), 441737009 (B3FVH0), 441737010 (B3FVF9) and All.

Product: Total Organic Halogens (TOX)

Analytical Method: 9020_TOX

Analytical Procedure: GL-GC-E-007 REV# 14

Analytical Batches: 1732416, 1732419, 1732420, 1732423 and 1734370

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441737003	B3FV86
441737004	B3FRV6
441737005	B3FRV2
441737006	B3FRV4
441737007	B3FVF8
441737009	B3FVH0
441737010	B3FVF9
441737011	B3FR60
441737012	B3FT90
441737013	B3FVH4
441737014	B3FVH5
441737015	B3FVH6
441737017	B3FRC3
441737018	B3FRC4
441737019	B3FRC5
441737020	B3FR97
441737021	B3FRD0
441737022	B3FTW5
441737023	B3FRD1
441737024	B3FRC9
1203954273	Method Blank (MB)
1203954274	Laboratory Control Sample (LCS)
1203954275	441688001(B3FR50) Sample Duplicate (DUP)
1203954277	441688001(B3FR50) Post Spike (PS)
1203954282	Method Blank (MB)
1203954283	Laboratory Control Sample (LCS)
1203954284	441688020(B3FRT7) Sample Duplicate (DUP)
1203954286	441688020(B3FRT7) Post Spike (PS)
1203954287	Method Blank (MB)
1203954288	Laboratory Control Sample (LCS)
1203954289	441737007(B3FVF8) Sample Duplicate (DUP)
1203954291	441737007(B3FVF8) Post Spike (PS)
1203954296	Method Blank (MB)
1203954297	Laboratory Control Sample (LCS)
1203954298	441511017(B3FTT8) Sample Duplicate (DUP)
1203954300	441511017(B3FTT8) Post Spike (PS)
1203959208	Method Blank (MB)
1203959209	Laboratory Control Sample (LCS)
1203959210	441737021(B3FRD0) Sample Duplicate (DUP)
1203959211	441737021(B3FRD0) 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 Re-analysis**

Samples 441737010 (B3FVF9) and 441737012 (B3FT90) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information**Additional Comments**

A pair of nitrate wash blanks is analyzed at the start of the batch. Although they are designated as ICB, they are performed for calculating purposes only. The value of the nitrate wash blanks are averaged and subtracted from all samples. Neither of these values should exceed 0.6 ug Cl. The PQL limit typically applied to ICB results does not apply in this application, since the results are used only to determine background concentrations and are subtracted from all calculated results.

Breakthrough effect

The breakthrough effect was observed. Since the reported replicates values are less than 10ug/L the data is reported. 441737005 (B3FRV2). Breakthrough effect: If the value for a sample is greater than the reporting limit (10 ug/L), the result for the second slug should not be greater than 25% of the combined value of the first and second slug. Results which do not meet these criteria are designated with a "Fail" comment in the Breakthrough effect column on the Logbook page; however, the "fail" designation is not applicable for samples with a result of less than 10 ug/L.

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 13**Analytical Batch:** 1732657

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
441737003	B3FV86
441737020	B3FR97
1203954877	Laboratory Control Sample (LCS)
1203954878	441737003(B3FV86) 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.

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL441737 GEL Work Order: 441737

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).

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: Kristen Mizzell

Date: 09 FEB 2018

Title: Team Leader

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FV86 Project: CPRCOW18001
 Sample ID: 441737003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 16-JAN-18 10:15
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	B	338	330	1000	ug/L		1	TSM	01/20/18	1315	1732389	1
Total Organic Carbon #2	B	357	330	1000	ug/L		1					
Total Organic Carbon #3	B	356	330	1000	ug/L		1					
Total Organic Carbon #4	B	352	330	1000	ug/L		1					
Total Organic Carbon Average	B	351	330	1000	ug/L		1					
Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	B	6.90	3.33	10.0	ug/L		1	RMJ	01/22/18	2016	1732419	2
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		87600	1450	4000	ug/L			RXB5	01/18/18	1506	1732657	3
Bicarbonate alkalinity (CaCO3)		87600	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9060A		
2	9020_TOX		
3	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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FRV2 Project: CPRCOW18001
 Sample ID: 441737005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 16-JAN-18 10:15
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/20/18	1434	1732389	1
Total Organic Carbon #2	B	350	330	1000	ug/L		1					
Total Organic Carbon #3	B	354	330	1000	ug/L		1					
Total Organic Carbon #4	B	358	330	1000	ug/L		1					
Total Organic Carbon Average	B	347	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	B	8.90	3.33	10.0	ug/L		1	RMJ	01/22/18	2122	1732419	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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

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

Certificate of Analysis

Report Date: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FVF8 Project: CPRCOW18001
 Sample ID: 441737007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 09:18
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/20/18	1552	1732389	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/24/18	1813	1732420	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FVH0 Project: CPRCOW18001
 Sample ID: 441737009 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 09:18
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/20/18	1650	1732389	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/24/18	1725	1732420	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FVF9 Project: CPRCOW18001
 Sample ID: 441737010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 09:18
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/20/18	1729	1732389	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis

9020_TOX: COMMON "As Received"

Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/25/18	1544	1732420	2
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The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FR60 Project: CPRCOW18001
 Sample ID: 441737011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 09:18
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/19/18	1700	1732396	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	B	3.60	3.33	10.0	ug/L		1	RMJ	01/24/18	2028	1732420	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

Notes:

Column headers are defined as follows:

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

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Certificate of Analysis

Report Date: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FVH5 Project: CPRCOW18001
 Sample ID: 441737014 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 10:21
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/19/18	1856	1732396	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/25/18	1931	1732416	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FRC3 Project: CPRCOW18001
 Sample ID: 441737017 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 12:41
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/19/18	2014	1732396	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis

9020_TOX: COMMON "As Received"

Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/18/18	2117	1732423	2
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The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FRC5 Project: CPRCOW18001
 Sample ID: 441737019 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 12:41
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/19/18	2151	1732396	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					

Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/18/18	2301	1732423	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	9020_TOX	

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: February 9, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W18-001

Client Sample ID: B3FR97 Project: CPRCOW18001
 Sample ID: 441737020 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 15-JAN-18 12:41
 Receive Date: 17-JAN-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOX: COMMON "As Received"												
Total Organic Carbon #1	U	330	330	1000	ug/L		1	TSM	01/19/18	2230	1732396	1
Total Organic Carbon #2	U	330	330	1000	ug/L		1					
Total Organic Carbon #3	U	330	330	1000	ug/L		1					
Total Organic Carbon #4	U	330	330	1000	ug/L		1					
Total Organic Carbon Average	U	330	330	1000	ug/L		1					
Halogen Analysis												
9020_TOX: COMMON "As Received"												
Total Organic Halogens	U	3.33	3.33	10.0	ug/L		1	RMJ	01/18/18	2340	1732423	2
Titration and Ion Analysis												
2320_ALKALINITY: GW 01 "As Received"												
Alkalinity, Total as CaCO3		111000	1450	4000	ug/L			RXB5	01/18/18	1510	1732657	3
Bicarbonate alkalinity (CaCO3)		111000	1450	4000	ug/L							
Carbonate alkalinity (CaCO3)	U	1450	1450	4000	ug/L							
Hydroxide alkalinity as CaCO3	U	1450	1450	4000	ug/L							

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW846 9060A		
2	9020_TOX		
3	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

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

QC Summary

Report Date: February 9, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 441737

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1732389										
QC1203954208	LCS										
Total Organic Carbon #1	10000			10100	ug/L		101	(80%-120%)	TSM	01/20/18	04:49
Total Organic Carbon Average	10000			10100	ug/L		101	(80%-120%)			
QC1203954209	LCSD										
Total Organic Carbon #1	10000			10200	ug/L	1.31	102	(0%-20%)		01/20/18	04:59
Total Organic Carbon Average	10000			10200	ug/L	1.31	102	(0%-20%)			
QC1203954207	MB										
Total Organic Carbon #1			U	330	ug/L					01/20/18	04:39
Total Organic Carbon Average			U	330	ug/L						
Batch	1732396										
QC1203954221	LCS										
Total Organic Carbon Average	10000			9930	ug/L		99.3	(80%-120%)	TSM	01/19/18	16:40
QC1203954222	LCSD										
Total Organic Carbon Average	10000			10400	ug/L	4.48	104	(0%-20%)		01/19/18	16:50
QC1203954220	MB										
Total Organic Carbon Average			U	330	ug/L					01/19/18	16:30
Batch	1733168										
QC1203956231	441726002	DUP									
Total Organic Carbon Average		U	330	U	330	ug/L	N/A		TSM	01/25/18	23:37

GEL LABORATORIES LLC

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

QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1733168										
QC1203956230	LCS										
Total Organic Carbon Average	10000			10800	ug/L		108	(80%-120%)	TSM	01/25/18	17:21
QC1203956229	MB										
Total Organic Carbon Average			U	330	ug/L					01/25/18	17:11
QC1203956233	441726002	PS									
Total Organic Carbon Average	10.0	U	0.212	12.0	mg/L		118	(75%-125%)		01/26/18	00:16
Batch	1733169										
QC1203956555	442065002	DUP									
Total Organic Carbon Average		U	330	U	330	ug/L	N/A		TSM	01/26/18	19:57
QC1203956553	LCS										
Total Organic Carbon Average	10000			10800	ug/L		108	(80%-120%)		01/26/18	09:20
QC1203956552	MB										
Total Organic Carbon Average			U	330	ug/L					01/26/18	09:10
QC1203956556	442065002	PS									
Total Organic Carbon Average	10.0	U	0.153	11.8	mg/L		117	(75%-125%)		01/26/18	20:36
Halogen Analysis											
Batch	1732416										
QC1203954275	441688001	DUP									
Total Organic Halogens		U	3.33	U	3.33	ug/L	N/A		RMJ	01/25/18	17:13
QC1203954274	LCS										
Total Organic Halogens	100			106	ug/L		106	(80%-120%)		01/25/18	15:23
QC1203954273	MB										
Total Organic Halogens			U	3.33	ug/L					01/25/18	14:56

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Halogen Analysis											
Batch	1732416										
QC1203954277	441688001	PS									
Total Organic Halogens	100	U	0.600		105	ug/L	104	(75%-125%)	RMJ	01/25/18	18:04
Batch	1732419										
QC1203954284	441688020	DUP									
Total Organic Halogens		B	6.96	B	5.06	ug/L	31.6 ^	(+/-10.0)	RMJ	01/22/18	18:26
QC1203954283	LCS										
Total Organic Halogens	100				106	ug/L	106	(80%-120%)		01/22/18	13:33
QC1203954282	MB										
Total Organic Halogens			U		3.33	ug/L				01/22/18	13:15
QC1203954286	441688020	PS									
Total Organic Halogens	100	B	6.96		105	ug/L	98.3	(75%-125%)		01/22/18	18:47
Batch	1732420										
QC1203954289	441737007	DUP									
Total Organic Halogens		U	3.33	B	7.06	ug/L	101 ^	(+/-10.0)	RMJ	01/24/18	18:33
QC1203954288	LCS										
Total Organic Halogens	100				94.7	ug/L	94.7	(80%-120%)		01/24/18	16:48
QC1203954287	MB										
Total Organic Halogens			U		3.33	ug/L				01/24/18	16:18
QC1203954291	441737007	PS									
Total Organic Halogens	100	U	2.32		88.5	ug/L	86.2	(75%-125%)		01/24/18	18:53
Batch	1732423										
QC1203954298	441511017	DUP									
Total Organic Halogens		U	3.33	U	3.33	ug/L	N/A		RMJ	01/18/18	16:58

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Halogen Analysis											
Batch	1732423										
QC1203954297	LCS										
Total Organic Halogens	100			107	ug/L		107	(80%-120%)	RMJ	01/18/18	14:32
QC1203954296	MB										
Total Organic Halogens			U	3.33	ug/L					01/18/18	14:08
QC1203954300	441511017	PS									
Total Organic Halogens	100	U	1.54	100	ug/L		98.8	(75%-125%)		01/18/18	17:46
Batch	1734370										
QC1203959210	441737021	DUP									
Total Organic Halogens		U	3.33	U	3.33	ug/L	N/A		CXW4	01/30/18	22:38
QC1203959209	LCS										
Total Organic Halogens	100			83.5	ug/L		83.5	(80%-120%)		01/30/18	21:02
QC1203959208	MB										
Total Organic Halogens			U	3.33	ug/L					01/30/18	20:32
QC1203959211	441737021	PS									
Total Organic Halogens	100	U	0.240	99.8	ug/L		99.6	(75%-125%)		01/30/18	23:08
Titration and Ion Analysis											
Batch	1732657										
QC1203954878	441737003	DUP									
Alkalinity, Total as CaCO3			87600	90000	ug/L	2.7		(0%-20%)	RXB5	01/18/18	15:08
Bicarbonate alkalinity (CaCO3)			87600	90000	ug/L	2.7		(0%-20%)			
Carbonate alkalinity (CaCO3)		U	1450	U	1450	ug/L	N/A				
Hydroxide alkalinity as CaCO3		U	1450	U	1450	ug/L	N/A				

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QC Summary

Workorder: 441737

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1732657										
QC1203954877	LCS										
Alkalinity, Total as CaCO3	100000			107000	ug/L		107	(80%-120%)	RXB5	01/18/18	15:01

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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

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

* Indicates that a Quality Control parameter was not within specifications.

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

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