

7/18/2016



July 18, 2016

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

Re: CHPRC SAF X16-037
Work Order: 399707
SDG: GEL399707

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 21, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071 - 7H
Chain of Custody: X16-037-061
Enclosures



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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF X16-037
SDG: GEL399707**

July 18, 2016

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on June 21, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
399707001	B35LY3
399707002	B35LY0

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 Volatile, General Chemistry, Metals and Radiochemistry.

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

7/18/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399707
Work Order #: 399707

GC/MS Volatile

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

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

Calibration Information

Continuing Calibration Verification Requirements

All of the requested target analytes met the calibration verification requirements.

Quality Control (QC) Information

Blank (MB) Statement

Target analytes were detected in the blank 1203575550 (MB) below the reporting limit.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

Sample	Analyte	Value
1203572275 (Non SDG 399704021PS)	2-Butanone	58* (70%-130%)
	Acetone	47* (70%-130%)
1203572276 (Non SDG 399704021PSD)	2-Butanone	50* (70%-130%)
	4-Methyl-2-pentanone	67* (70%-130%)
	Acetone	41* (70%-130%)

Metals

Determination of Metals by ICP

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

General Chemistry

Alkalinity

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

Quality Control (QC) Information

Method Blank (MB) Statement

The method blank associated with this data was slightly above the normal acceptance limits. The data for sample 1203572189 (MB) was deemed acceptable because the values for all reported samples were more than 10 times the value of the method blank.

Radiochemistry

SRISO_SEP_PRECIP_GPC: COMMON

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

Technical Information

Recounts

Samples 1203574969 (Non SDG 399704005DUP) and 399707002 (B35LY0) were recounted due to results more negative than the three sigma TPU. The second counts are reported.

TRITIUM_DIST_LSC: COMMON

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.

C14_LSC: COMMON

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

Technical Information

Recounts

Sample 399707002 (B35LY0) was recounted to verify sample results. Recount is reported.

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **X16-037-061** Page 1 of 1

Collector: **CHRIS FULTON**
CHPRC

SAF No. **X16-037**

Project Title: **100-KW Rebound Study, May 31, 2016**

Shipped To (Lab): **GEL Laboratories, LLC**

Protocol: **CERCLA**

Contact/Requester: **Karen Waters-Husted**

Sampling Origin: **Hanford Site**

Logbook No. **HNF-N-506 86/33**

Method of Shipment: **Commercial Carrier**

Priority: **30 Days**

Telephone No. **509-376-4650**

Purchase Order/Charge Code **304027**

Ice Chest No. **625-487 EWS-490**

Bill of Lading/Air Bill No. **77655754976**

Offsite Property No. **0743**

Total Activity Exemption: Yes No

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS: **PRIORITY**
 N/A
 Special Handling: N/A

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35LY3	Y	JUN 19 2016	1123	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B35LY0	N			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B35LY0	N			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B35LY0	N			4x40-mL aGs*	8260_VOA_GOMS: COMMON	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35LY0	N			1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B35LY0	N			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B35LY0	N	JUN 19 2016	1123	1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

Relinquished By CHRIS FULTON CHPRC	Print 	Sign	Date/Time JUN 19 2016 12:15	Received By Janelle Zunker CHPRC	Print	Sign	Date/Time JUN 19 2016 12:15	Matrix *
Relinquished By Janelle Zunker CHPRC	Print 	Sign	Date/Time JUN 19 2016 1300	Received By SSUH	Print	Sign	Date/Time JUN 19 2016 1300	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By SSUH	Print 	Sign	Date/Time JUN 20 2016 0750	Received By FEDEX	Print	Sign	Date/Time	
Relinquished By	Print 	Sign	Date/Time	Received By M. Krasnow ml kras	Print	Sign	Date/Time 6-21-16 0905	

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

Disposed By

FINAL SAMPLE DISPOSITION

PRINTED ON 5/19/2016 FSR ID = FSR7223 A-6004-842 (REV 2)

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>399707</u>
Received By: <u>MK</u>		Date Received: <u>6-21-16</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>CPMS</u>
Classified Radioactive II or III by RSO?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	Yes <input type="checkbox"/> No <input type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>2°C</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>150462982</u> Secondary Temperature Device Serial # (if Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in-relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7765</u> <u>5754</u> <u>9143</u> <u>8830</u> <u>01766</u> <u>9674</u> <u>19°C</u> <u>20°C</u> <u>2°C</u> <u>2°C</u> <u>no ice</u> <u>no ice</u>

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 18 July 2016

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

Volatile Analysis

Case Narrative

**GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399707
Work Order #: 399707**

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

Analytical Method: SW846 8260C

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

Analytical Batch: 1576428

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707002	B35LY0
1203572273	Method Blank (MB)
1203572274	Laboratory Control Sample (LCS)
1203572275	399704021(NonSDG) Post Spike (PS)
1203572276	399704021(NonSDG) Post Spike Duplicate (PSD)
1203575550	Method Blank (MB)
1203575551	Laboratory Control Sample (LCS)

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

Data Summary:

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

Calibration Information

Continuing Calibration Verification Requirements

All of the requested target analytes met the calibration verification requirements.

Quality Control (QC) Information

Blank (MB) Statement

Target analytes were detected in the blank 1203575550 (MB) below the reporting limit.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

Sample	Analyte	Value
1203572275 (Non SDG 399704021PS)	2-Butanone	58* (70%-130%)
	Acetone	47* (70%-130%)
1203572276 (Non SDG 399704021PSD)	2-Butanone	50* (70%-130%)
	4-Methyl-2-pentanone	67* (70%-130%)
	Acetone	41* (70%-130%)

Certification Statement

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

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399707 GEL Work Order: 399707

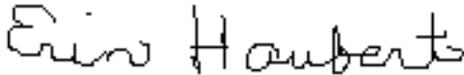
The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the sample.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Erin Haubert

Date: 15 JUL 2016

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: GEL399707	Date Collected: 06/19/2016 11:23	Matrix: WATER
Lab Sample ID: 399707002	Date Received: 06/21/2016 09:05	
Client ID: B35LY0	Client: CPRC001	Project: CPRC0X16037
Batch ID: 1576428	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 06/27/2016 13:00	Inst: VOA3.I	Dilution: 1
Prep Date: 06/27/2016 13:00	Analyst: CDS1	Purge Vol: 5 mL
Data File: 062716V3\3P108.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	1.72	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	TU	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 8, 2016

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399707

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
QC1203572274	LCS										
1,1,1-Trichloroethane	50.0			56.6	ug/L		113	(70%-130%)	CDS1	06/22/16	08:44
1,1,2-Trichloroethane	50.0			50.1	ug/L		100	(70%-130%)			
1,1-Dichloroethane	50.0			51.2	ug/L		102	(70%-130%)			
1,1-Dichloroethylene	50.0			56.5	ug/L		113	(70%-130%)			
1,2-Dichloroethane	50.0			45.1	ug/L		90	(70%-130%)			
2-Butanone	250			238	ug/L		95	(70%-130%)			
4-Methyl-2-pentanone	250			201	ug/L		80	(70%-130%)			
Acetone	250			249	ug/L		100	(70%-130%)			
Benzene	50.0			52.0	ug/L		104	(70%-130%)			
Carbon disulfide	250			277	ug/L		111	(70%-130%)			
Carbon tetrachloride	50.0			54.4	ug/L		109	(70%-130%)			
Chlorobenzene	50.0			52.2	ug/L		104	(70%-130%)			
Chloroform	50.0			50.1	ug/L		100	(70%-130%)			
Ethylbenzene	50.0			50.1	ug/L		100	(70%-130%)			
Methylene chloride	50.0			54.5	ug/L		109	(70%-130%)			
Tetrachloroethylene	50.0			55.9	ug/L		112	(70%-130%)			
Toluene	50.0			50.6	ug/L		101	(70%-130%)			
Trichloroethylene	50.0			54.8	ug/L		110	(70%-130%)			
Vinyl chloride	50.0			49.6	ug/L		99	(70%-130%)			
Xylenes (total)	150			153	ug/L		102	(70%-130%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
**1,2-Dichloroethane-d4	50.0			47.8	ug/L		96	(70%-130%)	CDS1	06/22/16	08:44
**Bromofluorobenzene	50.0			48.8	ug/L		98	(70%-130%)			
**Toluene-d8	50.0			48.6	ug/L		97	(70%-130%)			
QC1203575551	LCS										
1,1,1-Trichloroethane	50.0			50.7	ug/L		101	(70%-130%)		06/27/16	10:28
1,1,2-Trichloroethane	50.0			49.4	ug/L		99	(70%-130%)			
1,1-Dichloroethane	50.0			50.3	ug/L		101	(70%-130%)			
1,1-Dichloroethylene	50.0			51.1	ug/L		102	(70%-130%)			
1,2-Dichloroethane	50.0			46.9	ug/L		94	(70%-130%)			
2-Butanone	250			247	ug/L		99	(70%-130%)			
4-Methyl-2-pentanone	250			217	ug/L		87	(70%-130%)			
Acetone	250			246	ug/L		99	(70%-130%)			
Benzene	50.0			49.0	ug/L		98	(70%-130%)			
Carbon disulfide	250			245	ug/L		98	(70%-130%)			
Carbon tetrachloride	50.0			48.7	ug/L		97	(70%-130%)			
Chlorobenzene	50.0			50.4	ug/L		101	(70%-130%)			
Chloroform	50.0			48.2	ug/L		96	(70%-130%)			
Ethylbenzene	50.0			49.0	ug/L		98	(70%-130%)			
Methylene chloride	50.0		B	53.8	ug/L		108	(70%-130%)			
Tetrachloroethylene	50.0			49.9	ug/L		100	(70%-130%)			
Toluene	50.0			49.5	ug/L		99	(70%-130%)			
Trichloroethylene	50.0			49.7	ug/L		99	(70%-130%)			

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
Vinyl chloride	50.0			48.7	ug/L		97	(70%-130%)	CDS1	06/27/16	10:28
Xylenes (total)	150			146	ug/L		97	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			48.1	ug/L		96	(70%-130%)			
**Bromofluorobenzene	50.0			51.4	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			49.9	ug/L		100	(70%-130%)			
QC1203572273 MB											
1,1,1-Trichloroethane			U	0.300	ug/L					06/22/16	09:51
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						
Methylene chloride			U	1.60	ug/L						
Tetrachloroethylene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
Toluene			U	0.300	ug/L				CDS1	06/22/16	09:51
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			47.8	ug/L		96	(70%-130%)			
**Bromofluorobenzene	50.0			46.6	ug/L		93	(70%-130%)			
**Toluene-d8	50.0			49.6	ug/L		99	(70%-130%)			
QC1203575550	MB										
1,1,1-Trichloroethane			U	0.300	ug/L					06/27/16	11:29
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Ethylbenzene			U	0.300	ug/L						

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
Methylene chloride			J	2.44	ug/L				CDS1	06/27/16	11:29
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			51.5	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			49.6	ug/L		99	(70%-130%)			
**Toluene-d8	50.0			51.6	ug/L		103	(70%-130%)			
QC1203572275 399704021 PS											
1,1,1-Trichloroethane	50.0	U	0.00	48.4	ug/L		97	(70%-130%)		06/22/16	19:00
1,1,2-Trichloroethane	50.0	U	0.00	49.0	ug/L		98	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	45.1	ug/L		90	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	44.7	ug/L		89	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	42.3	ug/L		85	(70%-130%)			
2-Butanone	250	TU	0.00 T	145	ug/L		58 *	(70%-130%)			
4-Methyl-2-pentanone	250	TU	0.00	193	ug/L		77	(70%-130%)			
Acetone	250	TU	0.00 T	117	ug/L		47 *	(70%-130%)			
Benzene	50.0	U	0.00	45.8	ug/L		92	(70%-130%)			
Carbon disulfide	250	U	0.00	227	ug/L		91	(70%-130%)			
Carbon tetrachloride	50.0	J	1.05	47.9	ug/L		94	(70%-130%)			
Chlorobenzene	50.0	U	0.00	47.2	ug/L		94	(70%-130%)			

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
Chloroform	50.0	J	0.500	46.1	ug/L		91	(70%-130%)	CDS1	06/22/16	19:00
Ethylbenzene	50.0	U	0.00	45.1	ug/L		90	(70%-130%)			
Methylene chloride	50.0	U	0.00	48.3	ug/L		97	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	51.3	ug/L		103	(70%-130%)			
Toluene	50.0	U	0.00	45.8	ug/L		92	(70%-130%)			
Trichloroethylene	50.0	U	0.00	47.5	ug/L		95	(70%-130%)			
Vinyl chloride	50.0	U	0.00	43.4	ug/L		87	(70%-130%)			
Xylenes (total)	150	U	0.00	137	ug/L		91	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		50.1	49.0	ug/L		98	(70%-130%)			
**Bromofluorobenzene	50.0		44.2	49.6	ug/L		99	(70%-130%)			
**Toluene-d8	50.0		51.2	49.4	ug/L		99	(70%-130%)			
QC1203572276 399704021 PSD											
1,1,1-Trichloroethane	50.0	U	0.00	47.5	ug/L	2	95	(0%-20%)		06/22/16	19:30
1,1,2-Trichloroethane	50.0	U	0.00	45.3	ug/L	8	91	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	42.7	ug/L	5	85	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	41.9	ug/L	7	84	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	40.7	ug/L	4	81	(0%-20%)			
2-Butanone	250	TU	0.00	T	124	ug/L	15	50*	(0%-20%)		
4-Methyl-2-pentanone	250	TU	0.00	T	167	ug/L	15	67*	(0%-20%)		
Acetone	250	TU	0.00	T	102	ug/L	13	41*	(0%-20%)		
Benzene	50.0	U	0.00	43.9	ug/L	4	88	(0%-20%)			
Carbon disulfide	250	U	0.00	214	ug/L	6	86	(0%-20%)			

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1576428										
Carbon tetrachloride	50.0	J	1.05	46.0	ug/L	4	90	(0%-20%)	CDS1	06/22/16	19:30
Chlorobenzene	50.0	U	0.00	44.4	ug/L	6	89	(0%-20%)			
Chloroform	50.0	J	0.500	44.9	ug/L	3	89	(0%-20%)			
Ethylbenzene	50.0	U	0.00	42.7	ug/L	5	85	(0%-20%)			
Methylene chloride	50.0	U	0.00	48.2	ug/L	0	96	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	47.7	ug/L	7	95	(0%-20%)			
Toluene	50.0	U	0.00	43.0	ug/L	6	86	(0%-20%)			
Trichloroethylene	50.0	U	0.00	45.9	ug/L	4	92	(0%-20%)			
Vinyl chloride	50.0	U	0.00	43.9	ug/L	1	88	(0%-20%)			
Xylenes (total)	150	U	0.00	132	ug/L	4	88	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		50.1	46.3	ug/L		93	(70%-130%)			
**Bromofluorobenzene	50.0		44.2	46.0	ug/L		92	(70%-130%)			
**Toluene-d8	50.0		51.2	48.9	ug/L		98	(70%-130%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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: GEL399707

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203572274	LCS for batch 1576428	96	97	98
1203572273	MB for batch 1576428	96	99	93
1203572275	B35D79PS	98	99	99
1203572276	B35D79PSD	93	98	92
1203575551	LCS for batch 1576428	96	100	103
1203575550	MB for batch 1576428	103	103	99
399707002	B35LY0	115	108	99

Surrogate**Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4 (70%-130%)
TOL = Toluene-d8 (70%-130%)
BFB = Bromofluorobenzene (70%-130%)

* 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 #: GEL399707
Work Order #: 399707

Product: Determination of Metals by ICP**Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1575992**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batch:** 1575991

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707001	B35LY3
399707002	B35LY0
1203571179	Method Blank (MB)ICP
1203571180	Laboratory Control Sample (LCS)
1203571183	399704003(NonSDGL) Serial Dilution (SD)
1203571181	399704003(NonSDGS) Matrix Spike (MS)
1203571182	399704003(NonSDGSD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Certification Statement

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399707 GEL Work Order: 399707

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 14 JUL 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399707

CONTRACT: CPRC0X16037

METHOD TYPE: SW846

SAMPLE ID: 399707001

BASIS: As Received

DATE COLLECTED 19-JUN-16

CLIENT ID: B35LY3

LEVEL: Low

DATE RECEIVED 21-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	4.84	ug/L	B	3.5	10	10	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	06/27/16 08:58	062716-2	1575992
7440-39-3	Barium	39	ug/L		1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-70-2	Calcium	59800	ug/L		50	200	200	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-47-3	Chromium	5.07	ug/L		1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-48-4	Cobalt	1.34	ug/L	B	1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-50-8	Copper	4.27	ug/L	B	3	10	10	1	P	HSC	06/24/16 16:20	062416-1	1575992
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/24/16 16:20	062416-1	1575992
7439-95-4	Magnesium	14200	ug/L		110	300	300	1	P	HSC	06/24/16 16:20	062416-1	1575992
7439-96-5	Manganese	23.1	ug/L		2	10	10	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-02-0	Nickel	130	ug/L		1.5	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-09-7	Potassium	6940	ug/L		50	150	150	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-23-5	Sodium	27800	ug/L		100	300	300	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-62-2	Vanadium	4.84	ug/L	B	1	5	5	1	P	HSC	06/24/16 16:20	062416-1	1575992
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	06/27/16 08:58	062716-2	1575992

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1575992	1575991	SW846 3005A	50	mL	50	mL	06/23/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL399707

CONTRACT: CPRC0X16037

METHOD TYPE: SW846

SAMPLE ID: 399707002

BASIS: As Received

DATE COLLECTED 19-JUN-16

CLIENT ID: B35LY0

LEVEL: Low

DATE RECEIVED 21-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	5.36	ug/L	B	3.5	10	10	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	06/27/16 09:01	062716-2	1575992
7440-39-3	Barium	38.8	ug/L		1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-70-2	Calcium	59700	ug/L		50	200	200	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-47-3	Chromium	68.7	ug/L		1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-48-4	Cobalt	1.47	ug/L	B	1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-50-8	Copper	6.41	ug/L	B	3	10	10	1	P	HSC	06/24/16 16:23	062416-1	1575992
7439-89-6	Iron	289	ug/L		30	100	100	1	P	HSC	06/24/16 16:23	062416-1	1575992
7439-95-4	Magnesium	14200	ug/L		110	300	300	1	P	HSC	06/24/16 16:23	062416-1	1575992
7439-96-5	Manganese	23.4	ug/L		2	10	10	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-02-0	Nickel	136	ug/L		1.5	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-09-7	Potassium	6970	ug/L		50	150	150	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-23-5	Sodium	27800	ug/L		100	300	300	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-62-2	Vanadium	6.03	ug/L		1	5	5	1	P	HSC	06/24/16 16:23	062416-1	1575992
7440-66-6	Zinc	15.8	ug/L		3.3	10	10	1	P	HSC	06/27/16 09:01	062716-2	1575992

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1575992	1575991	SW846 3005A	50	mL	50	mL	06/23/16	SXW1

***Analytical Methods:**

P SW846 3005A/6010C

Quality Control Summary

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

QC Summary

Report Date: July 14, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399707

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1575992										
QC1203571180	LCS										
Antimony	500			521	ug/L		104	(80%-120%)	HSC	06/24/16	15:39
Arsenic	500			521	ug/L		104	(80%-120%)		06/27/16	08:55
Barium	500			512	ug/L		102	(80%-120%)		06/24/16	15:39
Cadmium	500			509	ug/L		102	(80%-120%)			
Calcium	5000			5260	ug/L		105	(80%-120%)			
Chromium	500			505	ug/L		101	(80%-120%)			
Cobalt	500			512	ug/L		102	(80%-120%)			
Copper	500			508	ug/L		102	(80%-120%)			
Iron	5000			5010	ug/L		100	(80%-120%)			
Magnesium	5000			5280	ug/L		106	(80%-120%)			
Manganese	500			503	ug/L		101	(80%-120%)			
Nickel	500			509	ug/L		102	(80%-120%)			
Potassium	5000			4910	ug/L		98.3	(80%-120%)			
Silver	500			498	ug/L		99.6	(80%-120%)			
Sodium	5000			5070	ug/L		101	(80%-120%)			
Vanadium	500			505	ug/L		101	(80%-120%)			
Zinc	500			504	ug/L		101	(80%-120%)		06/27/16	08:55
QC1203571179	MB										
Antimony			U	3.50	ug/L					06/24/16	15:37
Arsenic			U	5.00	ug/L					06/27/16	08:52

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1575992										
Barium			U	1.00	ug/L					06/24/16	15:37
Cadmium			U	1.00	ug/L				HSC		
Calcium			U	50.0	ug/L						
Chromium			U	1.00	ug/L						
Cobalt			U	1.00	ug/L						
Copper			U	3.00	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Manganese			U	2.00	ug/L						
Nickel			U	1.50	ug/L						
Potassium			U	50.0	ug/L						
Silver			U	1.00	ug/L						
Sodium			U	100	ug/L						
Vanadium			U	1.00	ug/L						
Zinc			U	3.30	ug/L					06/27/16	08:52
QC1203571181 399704003 MS											
Antimony	500	U	3.50	528	ug/L		105	(75%-125%)		06/24/16	15:45
Arsenic	500		3.41	539	ug/L		107	(75%-125%)		06/27/16	09:07
Barium	500		63.9	571	ug/L		101	(75%-125%)		06/24/16	15:45
Cadmium	500	U	1.00	496	ug/L		99.3	(75%-125%)			
Calcium	5000		76100	81000	ug/L		N/A	(75%-125%)			
Chromium	500		15.9	506	ug/L		98.1	(75%-125%)			
Cobalt	500	U	1.00	498	ug/L		99.4	(75%-125%)			

7/18/2016

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1575992										
Copper	500	B	4.31	510	ug/L		101	(75%-125%)	HSC	06/24/16	15:45
Iron	5000	U	30.0	4930	ug/L		98.6	(75%-125%)			
Magnesium	5000		21700	27000	ug/L		N/A	(75%-125%)			
Manganese	500	U	2.00	492	ug/L		98.4	(75%-125%)			
Nickel	500	B	1.70	493	ug/L		98.3	(75%-125%)			
Potassium	5000		5860	10800	ug/L		98.5	(75%-125%)			
Silver	500	U	1.00	491	ug/L		98.1	(75%-125%)			
Sodium	5000		28700	33400	ug/L		N/A	(75%-125%)			
Vanadium	500		13.8	514	ug/L		100	(75%-125%)			
Zinc	500		-5.68	496	ug/L		99.2	(75%-125%)		06/27/16	09:07
QC1203571182 399704003 MSD											
Antimony	500	U	3.50	518	ug/L	1.88	103	(0%-20%)		06/24/16	15:48
Arsenic	500		3.41	523	ug/L	3.18	104	(0%-20%)		06/27/16	09:10
Barium	500		63.9	570	ug/L	0.216	101	(0%-20%)		06/24/16	15:48
Cadmium	500	U	1.00	498	ug/L	0.294	99.5	(0%-20%)			
Calcium	5000		76100	82100	ug/L	1.32	N/A	(0%-20%)			
Chromium	500		15.9	508	ug/L	0.262	98.3	(0%-20%)			
Cobalt	500	U	1.00	490	ug/L	1.65	97.8	(0%-20%)			
Copper	500	B	4.31	511	ug/L	0.272	101	(0%-20%)			
Iron	5000	U	30.0	4900	ug/L	0.537	98	(0%-20%)			
Magnesium	5000		21700	27000	ug/L	0.0407	N/A	(0%-20%)			
Manganese	500	U	2.00	490	ug/L	0.328	98.1	(0%-20%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1575992										
Nickel	500	B	1.70	485	ug/L	1.73	96.6	(0%-20%)	HSC	06/24/16	15:48
Potassium	5000		5860	11000	ug/L	2.17	103	(0%-20%)			
Silver	500	U	1.00	491	ug/L	0.0469	98.1	(0%-20%)			
Sodium	5000		28700	33700	ug/L	1.06	N/A	(0%-20%)			
Vanadium	500		13.8	519	ug/L	1.04	101	(0%-20%)			
Zinc	500		-5.68	482	ug/L	2.88	96.4	(0%-20%)		06/27/16	09:10
QC1203571183	399704003	SDILT									
Antimony		U	1.13 DU	17.5	ug/L	N/A		(0%-10%)		06/24/16	15:51
Arsenic			3.41 DU	25.0	ug/L	N/A		(0%-10%)		06/27/16	09:13
Barium			63.9 D	12.9	ug/L	1.06		(0%-10%)		06/24/16	15:51
Cadmium		U	0.179 DU	5.00	ug/L	N/A		(0%-10%)			
Calcium			76100 D	15300	ug/L	.483		(0%-10%)			
Chromium			15.9 BD	3.17	ug/L	.00631		(0%-10%)			
Cobalt		U	0.773 DU	5.00	ug/L	N/A		(0%-10%)			
Copper		B	4.31 DU	15.0	ug/L	N/A		(0%-10%)			
Iron		U	2.38 DU	150	ug/L	N/A		(0%-10%)			
Magnesium			21700 D	4560	ug/L	4.88		(0%-10%)			
Manganese		U	-0.251 DU	10.0	ug/L	N/A		(0%-10%)			
Nickel		B	1.70 DU	7.50	ug/L	N/A		(0%-10%)			
Potassium			5860 D	1110	ug/L	5.21		(0%-10%)			
Silver		U	0.217 DU	5.00	ug/L	N/A		(0%-10%)			
Sodium			28700 D	5780	ug/L	.857		(0%-10%)			

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QC Summary

Workorder: 399707

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1575992										
Vanadium		13.8	BD	2.92	ug/L	6.02		(0%-10%)	HSC	06/24/16	15:51
Zinc		-5.68	DU	16.5	ug/L	N/A		(0%-10%)		06/27/16	09:13

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
 CH2M Hill Plateau Remediation Company (CPRC)
 SDG #: GEL399707
 Work Order #: 399707**

Product: Alkalinity**Analytical Method:** 2320_ALKALINITY**Analytical Procedure:** GL-GC-E-033 REV# 12**Analytical Batch:** 1576390

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707002	B35LY0
1203572189	Method Blank (MB)
1203572190	Laboratory Control Sample (LCS)
1203572191	399217001(B35LW7) Sample Duplicate (DUP)
1203572192	399279001(NonSDG) Sample Duplicate (DUP)

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

Data Summary:

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

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

The method blank associated with this data was slightly above the normal acceptance limits. The data for sample 1203572189 (MB) was deemed acceptable because the values for all reported samples were more than 10 times the value of the method blank.

Certification Statement

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

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL399707 GEL Work Order: 399707

The Qualifiers in this report are defined as follows:

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.

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

Review/Validation

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

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

Signature: 

Name: Aubrey Kingsbury

Date: 27 JUN 2016

Title: Analyst I

Sample Data Summary

7/18/2016

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: June 27, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF X16-037

Client Sample ID: B35LY0 Project: CPRC0X16037
Sample ID: 399707002 Client ID: CPRC001
Matrix: WATER
Collect Date: 19-JUN-16 11:23
Receive Date: 21-JUN-16
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3	C	135000	725	1000	ug/L		KLP1	06/23/16	1525	1576390	1
Bicarbonate alkalinity (CaCO3)	C	135000	725	1000	ug/L						
Carbonate alkalinity (CaCO3)	U	725	725	1000	ug/L						
Hydroxide alkalinity as CaCO3	U	725	725	1000	ug/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 27, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 399707

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1576390										
QC1203572191	399217001	DUP									
Alkalinity, Total as CaCO3	C	141000		142000	ug/L	1.08		(0%-20%)	KLP1	06/23/16	13:59
Bicarbonate alkalinity (CaCO3)	C	141000		142000	ug/L	1.08		(0%-20%)			
Carbonate alkalinity (CaCO3)	U	725	U	725	ug/L	N/A					
Hydroxide alkalinity as CaCO3	U	725	U	725	ug/L	N/A					
QC1203572192	399279001	DUP									
Alkalinity, Total as CaCO3	C	110000		108000	ug/L	1.87		(0%-20%)		06/23/16	14:09
Bicarbonate alkalinity (CaCO3)	C	110000		108000	ug/L	1.87		(0%-20%)			
Carbonate alkalinity (CaCO3)	U	725	U	725	ug/L	N/A					
Hydroxide alkalinity as CaCO3	U	725	U	725	ug/L	N/A					
QC1203572190	LCS										
Alkalinity, Total as CaCO3		50000		52100	ug/L		104	(80%-120%)		06/23/16	13:46
QC1203572189	MB										
Alkalinity, Total as CaCO3				2040	ug/L					06/23/16	13:44
Bicarbonate alkalinity (CaCO3)				2040	ug/L						
Carbonate alkalinity (CaCO3)			U	725	ug/L						
Hydroxide alkalinity as CaCO3			U	725	ug/L						

Notes:

The Qualifiers in this report are defined as follows:

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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 399707

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
N	Spike Sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

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

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

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

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

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

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL399707
Work Order #: 399707

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 17

Analytical Batch: 1577470

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707002	B35LY0
1203574968	Method Blank (MB)
1203574969	399704005(NonSDG) Sample Duplicate (DUP)
1203574970	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Recounts

Samples 1203574969 (Non SDG 399704005DUP) and 399707002 (B35LY0) were recounted due to results more negative than the three sigma TPU. The second counts are reported.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 21

Analytical Batch: 1576839

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707002	B35LY0
1203573300	Method Blank (MB)
1203573301	399283007(NonSDG) Sample Duplicate (DUP)
1203573302	399283007(NonSDG) Matrix Spike (MS)
1203573303	Laboratory Control Sample (LCS)

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

Data Summary:

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

Product: C14_LSC: COMMON

Analytical Method: C14_LSC

Analytical Procedure: GL-RAD-A-003 REV# 15

Analytical Batch: 1576854

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
399707002	B35LY0
1203573364	Method Blank (MB)
1203573365	399283007(NonSDG) Sample Duplicate (DUP)
1203573367	399283007(NonSDG) Matrix Spike (MS)
1203573369	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information**Recounts**

Sample 399707002 (B35LY0) was recounted to verify sample results. Recount is reported.

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: GEL399707 GEL Work Order: 399707

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Heather McCarty

Date: 15 JUL 2016

Title: Analyst II

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399707	Client: CPRC001	Project: CPRC0X16037
Lab Sample ID: 399707002	Date Collected: 06/19/2016 11:23	Matrix: WATER
	Date Received: 06/21/2016 09:05	
Client ID: B35LY0	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1577470	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 07/07/2016 11:17	Aliquot: 300 mL	Instrument: PIC11A
Data File: S1577470r.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1577470		
Prep Date: 07/05/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	0.624	pCi/L	+/-0.847	0.853	1.45	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.80	7.37	mg	92.3	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399707	Client: CPRC001	Project: CPRC0X16037
Lab Sample ID: 399707002	Date Collected: 06/19/2016 11:23	Matrix: WATER
	Date Received: 06/21/2016 09:05	
Client ID: B35LY0	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1576839	Analyst: TXJ1	SOP Ref: GL-RAD-A-002
Run Date: 06/30/2016 17:49	Aliquot: 50 mL	Instrument: LSCRED
Data File: T1576839.xls	Prep Method: EPA 906.0 Modified	Count Time: 40 min
Prep Batch: 1576839		
Prep Date: 06/29/2016 15:40		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	248	pCi/L	+/-202	208	334	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL399707	Client: CPRC001	Project: CPRC0X16037
Lab Sample ID: 399707002	Date Collected: 06/19/2016 11:23	Matrix: WATER
	Date Received: 06/21/2016 09:05	
Client ID: B35LY0	Method: C14_LSC	Prep Basis: "As Received"
Batch ID: 1576854	Analyst: TXJ1	SOP Ref: GL-RAD-A-003
Run Date: 07/03/2016 19:40	Aliquot: 60 mL	Instrument: LSCBROWN
Data File: C1576854R.xls	Prep Method: EPA EERF C-01 Modified	Count Time: 30 min
Prep Batch: 1576854		
Prep Date: 06/30/2016 16:07		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14		843	pCi/L	+/-37.4	161	32.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

Quality Control Summary

7/18/2016

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 15, 2016

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Client : CH2MHill Plateau Remediation Company
 MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 399707

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1577470								
QC1203574968	MB								
Strontium-90			U	-0.308	pCi/L			KSD1	07/06/1613:36
				Uncert: +/-0.968					
				TPU: +/-0.969					
**Strontium Carrier		7.37		6.80	mg	REC: 92	(40%-110%)		
QC1203574969	399704005	DUP							
Strontium-90		U	0.777	U	-0.0764	pCi/L			07/07/1611:17
				Uncert: +/-0.817		RPD: 0	N/A		
				TPU: +/-0.826		RER: 1.76	(0-2)		
**Strontium Carrier		7.37	6.10	7.10	mg	REC: 96	(40%-110%)		
QC1203574970	LCS								
Strontium-90		72.9		82.0	pCi/L	REC: 112	(80%-120%)		07/06/1613:37
				Uncert: +/-4.65					
				TPU: +/-13.6					
**Strontium Carrier		7.37		7.10	mg	REC: 96	(40%-110%)		
Rad Liquid Scintillation									
Batch	1576839								
QC1203573300	MB								
Tritium			U	-159	pCi/L			TXJ1	06/30/1618:31
				Uncert: +/-185					
				TPU: +/-185					
QC1203573301	399283007	DUP							
Tritium		U	0.624	U	70.2	pCi/L			06/30/1619:13
				Uncert: +/-189		RPD: 0	N/A		
				TPU: +/-189		RER: 0.499	(0-2)		
QC1203573302	399283007	MS							
Tritium		2330	U	0.624	1890	pCi/L	REC: 81	(75%-125%)	06/30/1619:55
				Uncert: +/-189					
				TPU: +/-189					
QC1203573303	LCS								
Tritium		2330		2090	pCi/L	REC: 90	(80%-120%)		06/30/1620:37
				Uncert: +/-287					
				TPU: +/-495					
Batch	1576854								
QC1203573364	MB								
Carbon-14			U	-8.98	pCi/L			TXJ1	07/01/1613:51
				Uncert: +/-18.5					
				TPU: +/-18.5					
QC1203573365	399283007	DUP							
Carbon-14		U	0.650	U	1.82	pCi/L			07/01/1614:22
				Uncert: +/-18.9		RPD: 0	N/A		
				TPU: +/-18.9		RER: 0.0861	(0-2)		
QC1203573367	399283007	MS							
Carbon-14		1260	U	0.650	1210	pCi/L	REC: 96	(75%-125%)	07/01/1614:53

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch										
				Uncert:						
				TPU:						
QC1203573369	LCS									
Carbon-14	1260				1250	pCi/L REC: 99	(80%-120%)		07/01/16	15:25
				Uncert:						
				TPU:						

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- C Analyte has been confirmed by GC/MS analysis
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- E Reported value is estimated due to interferences. See comment in narrative.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- S Reported value determined by the Method of Standard Additions (MSA)
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

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

** Indicates analyte is a surrogate compound.

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

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

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