GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
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gel.com

January 19, 2018

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

Re: CHPRC SAF F13-034
Work Order: 440960
SDG: GEL440960

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 05, 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,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 304233 - 9C
Chain of Custody: F13-034-074 and F13-034-076
Enclosures

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR18-0599
Rev. Number: 0
Date Initiated: 03/30/2018

SAMPLE EVENT INFORMATION

SAF NUM(S): F13-034

LABORATORY: GEL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1

SAMPLE NUMBERS: B3H9F1

SAMPLE MATRIX: OTHER SOLID

SDG NUM(S): GEL440960

ISSUE BACKGROUND

CLASS: Laboratory Issue

TYPE: Chain of Custody Issue

DESCRIPTION: COC F13-034-076, SAMPLE B3H9F1; write over in the fourth received by box

RESOLUTION

PROPOSED RESOLUTION: DOCUMENT AND CLOSE

FINAL RESOLUTION: DOCUMENT AND CLOSE

SUBMITTED BY:

KESSINGER, AL 03/05/2018

ACCEPTED BY:

KILLAND, KE 03/30/2018

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F13-034
SDG: GEL440960

January 19, 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 05, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
440960001	B3H9F1
440960002	B3H9D9

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.

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

Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL440960
Work Order #: 440960

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.

Technical Information

Sample Dilutions/Methanol Dilutions
Samples 1203950034 (B3H9F1PS), 1203950035 (B3H9F1PSD), 440960001 (B3H9F1) and 440960002 (B3H9D9) were analyzed using a methanol dilution extraction procedure because target analyte concentrations exceeded the calibration range.

Analyte	440960	
	001	002
Several	50000X	100000X

Miscellaneous Information

Additional Comments
QC samples 1203950034 (B3H9F1PS) and 1203950035 (B3H9F1PSD) were re-analyzed and reported because the first analyses fell outside the twelve hour tune window.

Radiochemistry

Dry Weight

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

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	14 lbs CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 440960		F13-034-076	PAGE 1 OF 1
COLLECTOR: Malcom Chunn CHPRC	COMPANY CONTACT: SUMNER, LC	TELEPHONE NO.: 376-3922	PROJECT COORDINATOR: SUMNER, LC	REQUIRED TAT 15 Days
SAMPLING LOCATION: 200W P&T GAC Container #20-0167	PROJECT DESIGNATION: 200 West Pump & Treat - Loaded Granular Activated Ccarbon (GAC) for Re		SAF NO.: F13-034	ORIGINAL
ICE CHEST NO.: GWS-712	FIELD LOGBOOK NO.: HNF-N-491-16	ACTUAL SAMPLE DEPTH: N/A	PURCHASE ORDER/CHARGE CODE: 304233	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 8909		BILL OF LADING/AIR BILL NO.: 7711 2239 7879	

MATRIX*
A=Air
DL=Drum
Liquids
DS=Drum
Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

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

SPECIAL HANDLING AND/OR STORAGE
N/A

PRESERVATION	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	40mL	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B3H9F1	N/A	OTHER SOLID	DEC 2 7 2017	0900	✓	✓ KS 12/27/17	✓ KS 12/27/17

03/30/2018

CHAIN OF POSSESSION: RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES: RECEIVED BY/STORED IN	DATE/TIME
Malcom Chunn CHPRC MRC	DEC 2 7 2017 0935	SSU-1	DEC 2 7 2017 0935
SSU-1	JAN 0 2 2018 1040	Jeff Lucas /CHPRC	JAN 0 2 2018 1040
Jeff Lucas /CHPRC	JAN 0 2 2018 1400	FEDEX	
Fedex		Chakeria Taylor	02/5/18 12:45

SPECIAL INSTRUCTIONS
TRVL-18-065
(1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Vinyl chloride};
(2) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; SE79_SEP_IE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-230, Thorium-232};
(3) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Protactinium-231, Thorium-234}; PUISO_PLATE_AEA: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; NP237_LLE_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; ALPHA_GPC: COMMON {Gross alpha}; BETA_GPC: COMMON {Gross beta};

REV. 1

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 12/14/2017 FSR ID = FSR55609 TRVL NUM = TRVL-18-065 A-6003-618 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 440960		F13-034-074	PAGE 1 OF 1
COLLECTOR: Malcom Chunn CHPRC	COMPANY CONTACT: SUMNER, LC	TELEPHONE NO.: 376-3922	PROJECT COORDINATOR: SUMNER, LC	REQUIRED TAT: 15 Days
SAMPLING LOCATION: 200W P&T GAC Container #20-0165	PROJECT DESIGNATION: 200 West Pump & Treat - Loaded Granular Activated Ccarbon (GAC) for Re		SAF NO.: F13-034	ORIGINAL
ICE CHEST NO.: GWS-712	FIELD LOGBOOK NO.: HNF-N-491-16	ACTUAL SAMPLE DEPTH: N/A	PURCHASE ORDER/CHARGE CODE: 304233	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 8909		BILL OF LADING/AIR BILL NO.: 7711 2239 7879	

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

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

SPECIAL HANDLING AND/OR STORAGE
N/A

PRESERVATION	Cool~4C	None	None
HOLDING TIME	14 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	40mL	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B3H9D9	N/A	OTHER SOLID	DEC 27 2017	0911	✓	✓ KS 12/27/17	✓ KS 12/27/17

03/30/2018

CHAIN OF POSSESSION: RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES: RECEIVED BY/STORED IN	DATE/TIME
Malcom Chunn CHPRC	DEC 27 2017 0935	SSU-1	DEC 27 2017 0935
SSU-1	JAN 02 2018 1040	Jeff Lucas /CHPRC	JAN 02 2018 1040
Jeff Lucas /CHPRC	JAN 02 2018 1400	FEDEX	
FedEx		Chakens Tarplin	01/05/18 12:45

SPECIAL INSTRUCTIONS
TRVL-18-065
(1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Vinyl chloride};
(2) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; SE79_SEP_IE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-230, Thorium-232};
(3) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Protactinium-231, Thorium-234}; PUISO_PLATE_AEA: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; NP237_LLE_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; ALPHA_GPC: COMMON {Gross alpha}; BETA_GPC: COMMON {Gross beta};

REV. 1

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 12/14/2017 FSR ID = FSR55608 TRVL NUM = TRVL-18-065 A-6003-618 (REV 3)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

HS

Client: CPRC	SDG/AR/COC/Work Order: 440960
Received By: C. Tarplin	Date Received: 01/05/18
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 771122397879

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 CPM/ mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	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?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 2°C
4	Daily check performed and passed on IR temperature gun?	✓			**Temperature Device Serial #:** IR3-16 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		✓		Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	✓			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?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DMEH Date 1/8/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 16−JAN−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 (0rganics 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 >/= 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 >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 19 January 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

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL440960
Work Order #: 440960

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 5035A/8260C
Analytical Procedure: GL-OA-E-038 REV# 26
Analytical Batch: 1730733

Preparation Method: SW846 5035A
Preparation Procedure: GL-OA-E-039 REV# 12
Preparation Batch: 1730731

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

GEL Sample ID#	Client Sample Identification
440960001	B3H9F1
440960002	B3H9D9
1203950032	Method Blank (MB)
1203950033	Laboratory Control Sample (LCS)
1203950034	440960001(B3H9F1) Post Spike (PS)
1203950035	440960001(B3H9F1) Post Spike Duplicate (PSD)
1203951013	High Blank (HB)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

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

Technical Information

Sample Dilutions/Methanol Dilutions
Samples 1203950034 (B3H9F1PS), 1203950035 (B3H9F1PSD), 440960001 (B3H9F1) and 440960002 (B3H9D9) were analyzed using a methanol dilution extraction procedure because target analyte concentrations exceeded the calibration range.

Analyte	440960	
	001	002
Several	50000X	100000X

Miscellaneous Information

Additional Comments
QC samples 1203950034 (B3H9F1PS) and 1203950035 (B3H9F1PSD) were re-analyzed and reported because the first analyses fell outside the twelve hour tune window.

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: GEL440960 GEL Work Order: 440960

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of 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

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: Erin Haubert **Name: Erin Haubert**

Date: 18 JAN 2018 **Title: Data Validator**

Sample Data Summary

Volatile

Certificate of Analysis

Sample Summary

SDG Number:	**GEL440960**	**Date Collected:**	**12/27/2017 09:00**	**Matrix:**	**OTHERSOLID**
Lab Sample ID:	**440960001**	**Date Received:**	**01/05/2018 12:45**	**%Moisture:**	**1.8**
		Client:	**CPRC001**	**Project:**	**CPRC0F13034**
Client ID:	**B3H9F1**	**Method:**	**SW846 5035A/8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1730733**	**Inst:**	**VOA3.I**	**Dilution:**	**50000**
Run Date:	**01/10/2018 19:26**	**Analyst:**	**JP1**	**Purge Vol:**	**5 mL**
Prep Date:	**01/10/2018 13:26**	**Aliquot:**	**5.1 g**	**Final Volume:**	**7 mL**
Data File:	**011018V3\3Q320.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	4080000	ug/kg	21000	140000	5.00
67-66-3	Chloroform	D	153000	ug/kg	21000	140000	5.00
75-01-4	Vinyl chloride	DU	21000	ug/kg	21000	140000	10.0

Volatile

Certificate of Analysis

Sample Summary

SDG Number:	**GEL440960**	**Date Collected:**	**12/27/2017 09:11**	**Matrix:**	**OTHERSOLID**
Lab Sample ID:	**440960002**	**Date Received:**	**01/05/2018 12:45**	**%Moisture:**	**2**
		Client:	**CPRC001**	**Project:**	**CPRC0F13034**
Client ID:	**B3H9D9**	**Method:**	**SW846 5035A/8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1730733**	**Inst:**	**VOA3.I**	**Dilution:**	**100000**
Run Date:	**01/10/2018 17:31**	**Analyst:**	**JP1**	**Purge Vol:**	**5 mL**
Prep Date:	**01/10/2018 13:27**	**Aliquot:**	**5 g**	**Final Volume:**	**7 mL**
Data File:	**011018V3\3Q317.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	6440000	ug/kg	42900	286000	5.00
67-66-3	Chloroform	DJ	217000	ug/kg	42900	286000	5.00
75-01-4	Vinyl chloride	DU	42900	ug/kg	42900	286000	10.0

Quality Control Summary

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

QC Summary

Report Date: January 18, 2018

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **440960**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1730733										
QC1203951013 HB										
Carbon tetrachloride			DU	21.0	ug/kg				JP1	01/10/18 13:49
Chloroform			DU	21.0	ug/kg					
Vinyl chloride			DU	21.0	ug/kg					
**1,2-Dichloroethane-d4	50.0			51.4	ug/L		103	(70%-130%)		
**Bromofluorobenzene	50.0			47.3	ug/L		95	(70%-130%)		
**Toluene-d8	50.0			49.1	ug/L		98	(70%-130%)		
QC1203950033 LCS										
Carbon tetrachloride	50.0			50.7	ug/kg		101	(70%-130%)		01/10/18 09:40
Chloroform	50.0			48.6	ug/kg		97	(70%-130%)		
Vinyl chloride	50.0			49.0	ug/kg		98	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			48.8	ug/L		98	(70%-130%)		
**Bromofluorobenzene	50.0			46.8	ug/L		94	(70%-130%)		
**Toluene-d8	50.0			49.9	ug/L		100	(70%-130%)		
QC1203950032 MB										
Carbon tetrachloride			U	0.300	ug/kg					01/10/18 11:46

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QC Summary

Workorder: **440960**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1730733											
Chloroform				U	0.300	ug/kg				JP1	01/10/18 11:46
Vinyl chloride				U	0.300	ug/kg					
**1,2-Dichloroethane-d4	50.0				48.7	ug/L		97	(70%-130%)		
**Bromofluorobenzene	50.0				47.0	ug/L		94	(70%-130%)		
**Toluene-d8	50.0				48.6	ug/L		97	(70%-130%)		
QC1203950034 440960001 PS											
Carbon tetrachloride	50.0	D	58.4	D	97.9	ug/L		79	(70%-130%)		01/10/18 19:58
Chloroform	50.0	D	2.19	D	49.4	ug/L		94	(70%-130%)		
Vinyl chloride	50.0	DU	0.00	D	60.1	ug/L		120	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		50.9		48.7	ug/L		97	(70%-130%)		
**Bromofluorobenzene	50.0		49.8		50.8	ug/L		102	(70%-130%)		
**Toluene-d8	50.0		47.3		47.9	ug/L		96	(70%-130%)		
QC1203950035 440960001 PSD											
Carbon tetrachloride	50.0	D	58.4	D	99.6	ug/L	2	82	(0%-20%)		01/10/18 20:30
Chloroform	50.0	D	2.19	D	48.5	ug/L	2	93	(0%-20%)		
Vinyl chloride	50.0	DU	0.00	D	63.3	ug/L	5	127	(0%-20%)		
**1,2-Dichloroethane-d4	50.0		50.9		47.9	ug/L		96	(70%-130%)		

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QC Summary

Workorder: **440960**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1730733											
**Bromofluorobenzene	50.0	49.8		50.3	ug/L		101	(70%-130%)	JP1	01/10/18	20:30
**Toluene-d8	50.0	47.3		50.0	ug/L		100	(70%-130%)			

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Volatile

Surrogate Recovery Report

SDG Number: GEL440960

Matrix Type: SOLID

Sample ID	Client ID	DCED4 %REC		TOL %REC		BFB %REC	
1203950033	LCS for batch 1730731	98		100		94	
1203950032	MB for batch 1730731	97		97		94	
1203951013	HB for batch 1730731	103	D	98	D	95	D
440960002	B3H9D9	101	D	92	D	99	D
440960001	B3H9F1	102	D	95	D	100	D
1203950034	B3H9F1PS	97	D	96	D	102	D
1203950035	B3H9F1PSD	96	D	100	D	101	D

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