

February 24, 2015



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[www.gel.com](http://www.gel.com)

February 18, 2015

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

Re: CHPRC SAF X15-004  
Work Order: 366005  
SDG: GEL366005

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 29, 2015. 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  
Project Manager

Purchase Order: 300071ES20 - 7H  
Chain of Custody: X15-004-102  
Enclosures



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# Case Narrative

February 24, 2015

General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF X15-004  
SDG: GEL366005

February 18, 2015

**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 29, 2015, for analysis. The sample was 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 sample:

<b>Laboratory Identification</b>	<b>Sample Description</b>
366005001	B30HP4

**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.

This package, to the best of my knowledge, 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.

February 24, 2015  
*Heather Shaffer*

Heather Shaffer  
Project Manager

# **Chain of Custody and Supporting Documentation**

7815

February 24, 2015

CH2M Hill Plateau Remediation Company		C.O.C.# <b>X15-004-102</b>	
Collector K.C. Patterson/CHPRC		Telephone No. 376-4650	
SAF No. X15-004		Purchase Order/Charge Code 300071	
Project Title GW Sitewide Surv, FY15		Ice Chest No. <i>609-303</i>	
Shipped To (Lab) GEL Laboratories, LLC		Bill of Lading/Air Bill No. <i>777 4509 0550</i>	
Protocol SURV		Offsite Property No.	
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		Hold Time SPECIAL INSTRUCTIONS Batch with A, I, S, and W SAFs.	
Priority: <b>30 Days</b> <b>PRIORITY</b>		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Contact/Requester WATERS-HUSTED, K		Holding Time 14 Days	
Sampling Origin HANFORD SITE		Sample Analysis HCl or H2SO4 to pH <2/Cool <=6C	
Logbook No. HNF-N-506 <i>70/22</i>			
Method of Shipment Commercial Carrier			
No/Type Container 4x40-mL aGs*			
Sample No.	Filter	Date	Time
B30HP4	N	1/28/15	1137

Relinquished By K.C. Patterson/CHPRC	Print	Sign	Received By P.M. Hall CHPRC	Print	Sign	Date/Time JAN 28 2015
Relinquished By P.M. Hall CHPRC	Print	Sign	Received By FEDEX	Print	Sign	Date/Time JAN 28 2015
Relinquished By <i>Feb Ex</i>	Print	Sign	Received By M. Kinslow M.H. Kinslow	Print	Sign	Date/Time 1-29-15 0855
Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time

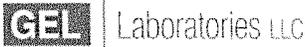
Matrix *	S	=	Soil	DS	=	Drum Solids
	SE	=	Sediment	DL	=	Drum Liquids
	SO	=	Solid	T	=	Tissue
	SL	=	Sludge	WI	=	Wipe
	W	=	Water	L	=	Liquid
	O	=	Oil	V	=	Vegetation
	A	=	Air	X	=	Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
PRINTED O 1/21/2015			

A-6004-842 (REV 2)

February 24, 2015



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>H 1/29/15 3600 366005</u>
Received By: <u>mk</u>		Date Received: <u>1-29-15</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>ice bags</u> Blue ice Dry ice None Other (describe) <u>d.i.c</u> all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>13053276</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 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:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If Yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7727 4509 0550</u>

Comments (Use Continuation Form if needed):

# **Data Review Qualifier Definitions**

## Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	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	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	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).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is $\geq$ MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	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).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	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.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	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.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

## Project Specific Qualifier Definitions for GEL Client Code: **CPRC**

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
UX	Manual	Gamma Spectroscopy--Uncertain identification	Y	Radiological		

# Laboratory Certifications

**List of current GEL Certifications as of 18 February 2015**

<b>State</b>	<b>Certification</b>
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
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	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12

# **Volatile Analysis**

# Case Narrative

**February 24, 2015**  
**GC/MS Volatile**  
**Technical Case Narrative**  
**CH2M Hill Plateau Remediation Company (CPRC)**  
**SDG #: GEL366005**  
**Work Order #: 366005**

**Method/Analysis Information**

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

Analytical Method: SW846 8260C

Analytical Batch Number: 1454155

**Sample Analysis**

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

<b>Sample ID</b>	<b>Client ID</b>
366005001	B30HP4
1203254811	Method Blank (MB)
1203254812	Laboratory Control Sample (LCS)
1203254814	365992007(B30195) Post Spike (PS)
1203254815	365992007(B30195) Post Spike Duplicate (PSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

**Calibration Information**

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

**Initial Calibration**

All initial calibration requirements have been met for this sample delivery group (SDG).

**Continuing Calibration Verification Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

**Quality Control (QC) Information**

**Blank (MB) Statement**

The blank analyzed with this SDG met the acceptance criteria.

**Surrogate Recoveries**

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

**QC Sample Designation**

Sample 365992007 (B30195) was designated for spike analysis.

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate 1203254814 (Non SDG 365992007PS) and 1203254815 (Non SDG 365992007PSD) recoveries were not all within the acceptance limits.

**Relative Percent Difference (RPD) Statement**

The RPDs between the matrix spike pair met the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses in all client and quality control samples met the required acceptance criteria.

**Technical Information**

**Holding Time Specifications**

All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Sample Dilutions/Methanol Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-extraction/Re-analysis**

Re-analyses were not required for samples in this SDG.

**Miscellaneous Information**

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1379261.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) were not required for this SDG.

**Additional Comments**

Additional comments were not required for this SDG.

**Residual Chlorine**

Residual Chlorine was not detected in any of the samples in this SDG.

**System Configuration**

The Volatile-GC/MS analysis was performed on the following instrument configuration:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>	<b>P &amp; T Trap</b>
VOA2.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890N/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

**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.

February 24, 2015

**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: GEL366005 GEL Work Order: 366005

**The Qualifiers in this report are defined as follows:**

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

T Spike and/or spike duplicate sample recovery is outside control limits.

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

DL Indicates that sample is diluted.

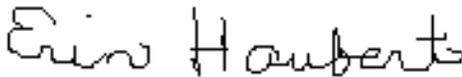
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

**Review/Validation**

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

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

Signature: 

Name: Erin Haubert

Date: 23 FEB 2015

Title: Data Validator

# Sample Data Summary

~~February 24, 2015~~  
**GEL LABORATORIES LLC**

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

**Certificate of Analysis**

Company : CH2MHill Plateau Remediation  
 Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-004**

Report Date: February 18, 2015

Client Sample ID:	B30HP4	Project:	CPRC0X15004
Sample ID:	366005001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 11:37		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>											
<i>8260VOA_GCMS: COMMON "As Received"</i>											
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1	01/30/15	1541	1454155	1
1,1,2-Trichloroethane 79-00-5	U	0.00	0.300	5.00	ug/L	1					
1,1-Dichloroethane 75-34-3	U	0.00	0.300	10.0	ug/L	1					
1,1-Dichloroethylene 75-35-4	U	0.00	0.300	10.0	ug/L	1					
1,2-Dichloroethane 107-06-2	U	0.00	0.300	5.00	ug/L	1					
2-Butanone 78-93-3	TU	0.00	3.00	10.0	ug/L	1					
4-Methyl-2-pentanone 108-10-1	U	0.00	3.00	10.0	ug/L	1					
Acetone 67-64-1	TU	0.00	3.00	20.0	ug/L	1					
Benzene 71-43-2	U	0.00	0.300	5.00	ug/L	1					
Carbon disulfide 75-15-0	U	0.00	1.60	10.0	ug/L	1					
Carbon tetrachloride 56-23-5	U	0.00	0.300	5.00	ug/L	1					
Chlorobenzene 108-90-7	U	0.00	0.300	5.00	ug/L	1					
Chloroform 67-66-3	U	0.00	0.300	5.00	ug/L	1					
Ethylbenzene 100-41-4	U	0.00	0.300	5.00	ug/L	1					
Methylene chloride 75-09-2	J	4.05	1.60	5.00	ug/L	1					
Tetrachloroethylene 127-18-4	U	0.00	0.300	5.00	ug/L	1					
Toluene 108-88-3	U	0.00	0.300	5.00	ug/L	1					
Trichloroethylene 79-01-6	U	0.00	0.300	5.00	ug/L	1					

## Certificate of Analysis

Company : CH2MHill Plateau Remediation  
 Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-004**

Report Date: February 18, 2015

Client Sample ID: B30HP4      Project: CPRC0X15004  
 Sample ID: 366005001      Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Volatile Organics</b>											
<i>8260VOA_GCMS: COMMON "As Received"</i>											
Vinyl chloride 75-01-4	U	0.00	0.300	10.0	ug/L	1					
Xylenes (total) 1330-20-7	U	0.00	0.300	10.0	ug/L	1					

**The following Analytical Methods were performed**

Method	Description	Analyst	Comments
1	SW846 8260C		

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	8260VOA_GCMS: COMMON "As Received"	50.8 ug/L	50.0	102	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON "As Received"	52.8 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON "As Received"	48.0 ug/L	50.0	96.1	(80%-120%)

# Quality Control Summary

**February 24, 2015**  
**GEL LABORATORIES LLC**

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

**QC Summary**

Report Date: February 18, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 366005

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1454155										
QC1203254812	LCS										
1,1,1-Trichloroethane	50.0			52.4	ug/L		105	(70%-130%)	CDS1	01/30/15	07:03
1,1,2-Trichloroethane	50.0			48.8	ug/L		97.5	(70%-130%)			
1,1-Dichloroethane	50.0			50.2	ug/L		100	(70%-130%)			
1,1-Dichloroethylene	50.0			50.5	ug/L		101	(70%-130%)			
1,2-Dichloroethane	50.0			47.4	ug/L		94.7	(70%-130%)			
2-Butanone	250			283	ug/L		113	(70%-130%)			
4-Methyl-2-pentanone	250			270	ug/L		108	(70%-130%)			
Acetone	250			290	ug/L		116	(70%-130%)			
Benzene	50.0			49.8	ug/L		99.5	(70%-130%)			
Carbon disulfide	250			263	ug/L		105	(70%-130%)			
Carbon tetrachloride	50.0			52.1	ug/L		104	(70%-130%)			
Chlorobenzene	50.0			49.0	ug/L		98	(70%-130%)			
Chloroform	50.0			48.8	ug/L		97.5	(70%-130%)			
Ethylbenzene	50.0			51.7	ug/L		103	(70%-130%)			
Methylene chloride	50.0			45.1	ug/L		90.2	(70%-130%)			
Tetrachloroethylene	50.0			50.3	ug/L		101	(70%-130%)			
Toluene	50.0			48.8	ug/L		97.7	(70%-130%)			
Trichloroethylene	50.0			49.5	ug/L		98.9	(70%-130%)			
Vinyl chloride	50.0			43.2	ug/L		86.5	(70%-130%)			
Xylenes (total)	150			154	ug/L		103	(70%-130%)			

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**QC Summary**

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1454155										
**1,2-Dichloroethane-d4	50.0			52.2	ug/L		104	(77%-123%)	CDS1	01/30/15	07:03
**Bromofluorobenzene	50.0			49.7	ug/L		99.5	(80%-120%)			
**Toluene-d8	50.0			49.2	ug/L		98.4	(80%-120%)			
QC1203254811	MB										
1,1,1-Trichloroethane			U	0.300	ug/L					01/30/15	10:08
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						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						

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<b>Parmname</b>	<b>NOM</b>	<b>Sample</b>	<b>Qual</b>	<b>QC</b>	<b>Units</b>	<b>RPD%</b>	<b>REC%</b>	<b>Range</b>	<b>Anlst</b>	<b>Date</b>	<b>Time</b>
<b>Volatile-GC/MS</b>											
Batch	1454155										
Vinyl chloride			U	0.300	ug/L				CDS1	01/30/15	10:08
Xylenes (total)			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			50.7	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0			51.3	ug/L		103	(80%-120%)			
**Toluene-d8	50.0			46.5	ug/L		93.1	(80%-120%)			
QC1203254814 365992007 PS											
1,1,1-Trichloroethane	50.0	U	0.00	55.3	ug/L		111	(70%-130%)		01/30/15	16:42
1,1,2-Trichloroethane	50.0	U	0.00	52.8	ug/L		106	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	54.5	ug/L		109	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	54.0	ug/L		108	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	53.3	ug/L		107	(70%-130%)			
2-Butanone	250	TU	0.00	176	ug/L		70.6	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00	261	ug/L		105	(70%-130%)			
Acetone	250	TU	0.00	T 125	ug/L		50.2*	(70%-130%)			
Benzene	50.0	U	0.00	53.2	ug/L		106	(70%-130%)			
Carbon disulfide	250	U	0.00	284	ug/L		114	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00	55.8	ug/L		112	(70%-130%)			
Chlorobenzene	50.0	U	0.00	52.7	ug/L		105	(70%-130%)			
Chloroform	50.0	U	0.00	53.9	ug/L		108	(70%-130%)			
Ethylbenzene	50.0	U	0.00	54.8	ug/L		110	(70%-130%)			
Methylene chloride	50.0	U	0.00	49.1	ug/L		98.2	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	51.0	ug/L		102	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1454155										
Toluene	50.0	U	0.00	50.4	ug/L		101	(70%-130%)	CDS1	01/30/15	16:42
Trichloroethylene	50.0	U	0.00	53.5	ug/L		107	(70%-130%)			
Vinyl chloride	50.0	U	0.00	54.5	ug/L		109	(70%-130%)			
Xylenes (total)	150	U	0.00	164	ug/L		109	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		50.5	50.5	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0		52.8	49.8	ug/L		99.7	(80%-120%)			
**Toluene-d8	50.0		45.8	47.6	ug/L		95.3	(80%-120%)			
QC1203254815 365992007 PSD											
1,1,1-Trichloroethane	50.0	U	0.00	55.6	ug/L	0.631	111	(0%-20%)		01/30/15	17:12
1,1,2-Trichloroethane	50.0	U	0.00	50.8	ug/L	4.00	102	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	53.4	ug/L	2.00	107	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	53.7	ug/L	0.427	107	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	53.1	ug/L	0.226	106	(0%-20%)			
2-Butanone	250	TU	0.00 T	163	ug/L	7.98	65.1 *	(0%-20%)			
4-Methyl-2-pentanone	250	U	0.00	249	ug/L	5.03	99.5	(0%-20%)			
Acetone	250	TU	0.00 T	120	ug/L	4.78	47.8 *	(0%-20%)			
Benzene	50.0	U	0.00	52.0	ug/L	2.19	104	(0%-20%)			
Carbon disulfide	250	U	0.00	272	ug/L	4.30	109	(0%-20%)			
Carbon tetrachloride	50.0	U	0.00	56.0	ug/L	0.465	112	(0%-20%)			
Chlorobenzene	50.0	U	0.00	51.5	ug/L	2.42	103	(0%-20%)			
Chloroform	50.0	U	0.00	53.4	ug/L	0.802	107	(0%-20%)			
Ethylbenzene	50.0	U	0.00	53.1	ug/L	3.13	106	(0%-20%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1454155										
Methylene chloride	50.0	U	0.00	48.4	ug/L	1.37	96.9	(0%-20%)	CDS1	01/30/15	17:12
Tetrachloroethylene	50.0	U	0.00	49.9	ug/L	2.14	99.9	(0%-20%)			
Toluene	50.0	U	0.00	49.6	ug/L	1.70	99.1	(0%-20%)			
Trichloroethylene	50.0	U	0.00	52.5	ug/L	1.98	105	(0%-20%)			
Vinyl chloride	50.0	U	0.00	54.8	ug/L	0.677	110	(0%-20%)			
Xylenes (total)	150	U	0.00	158	ug/L	3.85	105	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		50.5	50.5	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0		52.8	50.1	ug/L		100	(80%-120%)			
**Toluene-d8	50.0		45.8	47.7	ug/L		95.4	(80%-120%)			

**Notes:**

The Qualifiers in this report are defined as follows:

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

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

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

# Miscellaneous

**DATA EXCEPTION REPORT**

<b>Mo.Day Yr.</b> 05-FEB-15	<b>Division:</b> Federal	<b>Quality Criteria:</b> SOP	<b>Type:</b> Process
<b>Instrument Type:</b> VOA GC/MS	<b>Test / Method:</b> 8260C	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> CPRC001
<b>Batch ID:</b> 1454155	<b>Sample Numbers:</b> See Below		
<p><b>Potentially affected work order(s)(SDG): 365758(GEL365758),365858(GEL365858),365860(GEL365860),365992(GEL365992),366005(GEL366005)</b></p> <p><b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for PS/PSD</p>			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
<p>1. The recovery for Acetone was outside of acceptance limits in the MS and in the MSD performed on sample 365992007.</p> <p>2. The recovery for 2-Butanone was outside of acceptance limits in the MSD performed on sample 365992007. The recovery was within limits in the MS but near the lower control limit.</p>		<p>1,2. Narrate and report data. The calculated relative percent differences between the MS and MSD were within acceptance limits for all client requested compounds.</p>	

**Originator's Name:**

Crystal Stacey      05-FEB-15

**Data Validator/Group Leader:**

Kelle Bellamy      18-FEB-15