



February 18, 2015

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

Re: CHPRC SAF W15-001
Work Order: 365860
SDG: GEL365860

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 27, 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: 300071
Chain of Custody: W15-001-110, W15-001-111, W15-001-114, W15-001-192 and W15-001-205
Enclosures



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Case Narrative

February 23, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF W15-001
SDG: GEL365860

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 27, 2015, 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:

<u>Laboratory Identification</u>	<u>Sample Description</u>
365860001	B2YWK0
365860002	B2YWK2
365860003	B2YWK1
365860004	B2YWK3
365860005	B2YWL9
365860006	B2YWL8
365860007	B2YWL6
365860008	B2YWL5
365860009	B2YWD6
365860010	B2YWJ8

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.

February 23, 2015

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, Metals and Radiochemistry.

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 Manger (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **W15-001-110**
 Page 1 of 1

Collector: **O. Flory** Telephone No. 509-376-4650
 SAF No. W15-001 Contact/Requester: Karen Waters-Husted
 Project Title: RCRA, JANUARY 2015 Sampling Origin: Hanford Site
 Shipped To (Lab): **GEL Laboratories, LLC** Logbook No. HNF-N-506 67177
 Protocol: RCRA Method of Shipment: Commercial Carrier
 Priority: 30 Days **PRIORITY** Bill of Lading/Air Bill No. 5364
 Offsite Property No. 5364
 SPECIAL INSTRUCTIONS: Hold Time: 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

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2YWK0	N	W	1-23-15	0700	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YWK0	N	W	/	/	4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B2YWK0	N	W	/	/	1x500-mL G/P	KPA_UTOT: COMMON	6 Months	HNO3 to pH <2
B2YWK2	Y	W	1-23-15	0700	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
O. Flory			JAN 23 2015	SSU-1			JAN 23 2015	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
7 of 8			JAN 26 2015 1210	L.D. Wall CHPRC			JAN 26 2015 1210	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By			JAN 26 2015 1400	Received By			JAN 26 2015 1400	
Relinquished By			1-27-15	Received By	FEDEX		1-27-15	
FINAL SAMPLE DISPOSITION			1-27-15	Disposed By			1-27-15	

February 23, 2015

CH2M Hill Plateau Remediation Company		C.O.C. # W15-001-111	
Collector: D.L. Floyd/CHPRC		Page 1 of 1	
SAF No. W15-001		Telephone No. 509-376-4650	
Project Title RCRA, JANUARY 2015		Purchase Order/Charge Code 300071	
Shipped To (Lab) GEL Laboratories, LLC		Ice Chest No. 6005-307	
Protocol RCRA		Bill of Lading/Air Bill No. 772708944723	
Priority: 30 Days		Offsite Property No. 5364	
SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
POSSIBLE SAMPLE HAZARDS/REMARKS		Hold Time	
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		Sample Analysis	

Sample No.	Filter *	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2YWK1	N	1-23-15	1213	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YWK1	N	1-23-15	1	4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B2YWK1	N	1-23-15	1	1x500-mL G/P	KPA_UTOT: COMMON	6 Months	HNO3 to pH <2
B2YWK3	Y	1-23-15	1213	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By D.L. Floyd/CHPRC	Print	Sign	Date/Time	Received By SSU-1	Print	Sign	Date/Time
			JAN 23 2015				JAN 23 2015
Relinquished By SSU-1			JAN 26 2015 1210	Received By L.D. Wall CHPRC			JAN 26 2015 1710
Relinquished By L.D. Wall CHPRC			JAN 26 2015 1400	Received By FEDEX			
Relinquished By FedEx			1.27.15/0915	Received By Janet Edwards Jacob Edwards			1.27.15 0915
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Date/Time		Date/Time		
PRINTED O 11/25/2014					A-6004-842 (REV 2)		

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CH2M Hill Plateau Remediation Company
 C.O.C. # **W15-001-114**
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: **K.C. Patterson**
 CHPRC

SAF No. **W15-001**
 Telephone No. **509-376-4650**

Project Title **RCRA, JANUARY 2015**
 Sampling Origin **Hanford Site**
 Purchase Order/Charge Code **300071**

Shipped To (Lab) **GEL Laboratories, LLC**
 Logbook No. **HNF-N-506 74/35**
 Ice Chest No. **6005-150**
 Bill of Lading/Air Bill No. **7127 0894495**

Protocol **RCRA**
 Method of Shipment **Commercial Carrier**
 Priority: **30 Days**
 Offsite Property No. **5364**

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 Hold Time **6 Months** Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2YWL9	Y	JAN 23 2015	1300	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YWL8	N			1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YWL8	N			4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B2YWL8	N			1x500-mL G/P	KPA_UTOT: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
K.C. Patterson CHPRC			JAN 23 2015 1435	SSU-1			JAN 23 2015 1435	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By			JAN 26 2015 1210	LD. Wall CHPRC			JAN 26 2015 1210	
Relinquished By			JAN 26 2015 1400	LD. Wall CHPRC			JAN 26 2015 1400	
Relinquished By			1.27.15/0915	FedEx			1.27.15 0915	
FINAL SAMPLE DISPOSITION	Disposed By Sarah Edwards						Date/Time	

February 23, 2015

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W15-001-192**
Page 1 of 1

Collector **K.C. Patterson**
CHPRC
W15-001

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

Project Title **RCRA, JANUARY 2015**
Sampling Origin **Hanford Site**
Purchase Order/Charge Code **300071**

Shipped To (Lab) **TestAmerica-St-Louis-SEL**
Logbook No. **HNF-N-50674135**
Ice Chest No. **6005-150**

Protocol **RCRA**
Method of Shipment **Commercial Carrier**
Bill of Lading/Air Bill No. **77270894 4951**
Offsite Property No. **5364**

Priority: **30 Days**
SPECIAL INSTRUCTIONS **PRIORITY**
Hold Time
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
* *Due to air generated during prep unable to obtain headspace of VOA's*

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2YW16	Y	JAN 23 2015	1214	1x500-mL GIP	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YW15	N	↓	↓	1x500-mL GIP	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YW15	N	↓	↓	4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
K.C. Patterson CHPRC			JAN 23 2015 1435	SSU-1			JAN 23 2015 1435	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By			JAN 26 2015 1210	L.D. Wall CHPRC			JAN 26 2015 1210	
Relinquished By			JAN 26 2015 1400		FEDEX			
Relinquished By			1.27.15/0915				1.27.15/0915	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Date/Time

February 23, 2015

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W15-001-205**
Page 1 of 1

CH2M Hill Plateau Remediation Company

Collector: **D.L. Floyd/CHPRC** Telephone No. **509-376-4650**

SAF No. **W15-001** Purchase Order/Charge Code **300071**

Project Title **RCRA, JANUARY 2015** Logbook No. **HNF-N-506 69177**

Shipped To (Lab) **GEL Laboratories, LLC** Method of Shipment **Commercial Carrier**

Protocol **RCRA** Priority: **30 Days** **PRIORITY** Bill of Lading/Air Bill No. **72708944951**

POSSIBLE SAMPLE HAZARDS/REMARKS Offsite Property No. **5364**

*** 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 Hold Time **6 Months** Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2YWD6	N	W	1-23-15	1257	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2
B2YVJ8	Y	W	1-23-15	1257	1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By D.L. Floyd/CHPRC	Print	Sign	Date/Time JAN 23 2015	Received By SSU-1	Print	Sign	Date/Time JAN 23 2015	Matrix *
Relinquished By SSU-1			Date/Time JAN 26 2015 1210	Received By L.D. Well CHPRC			Date/Time JAN 26 2015 1210	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By L.D. Well CHPRC			Date/Time JAN 26 2015 1400	Received By FEDEX			Date/Time JAN 26 2015 1400	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By FEDEX			Date/Time 1.27.15 10915	Received By Sarah Edwards			Date/Time 1.27.15/0915	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By		Date/Time		

February 23, 2015



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>305800</u>
Received By: <u>SE</u>		Date Received: <u>1.27.15</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input 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 type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<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?	<input type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<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"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) <u>3.3° & 3.8</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>130532797</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" 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"/>			Sample ID's and containers affected:
7 Are Encore containers present?	<input type="checkbox"/>		<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>			
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>77270894 4957 3.3</u> <u>77270894 4723 3.8</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

State	Certification
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 23, 2015
GC/MS Volatile
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL365860
Work Order #: 365860

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:

Sample ID	Client ID
365860001	B2YWK0
365860003	B2YWK1
365860006	B2YWL8
365860008	B2YWL5
1203254811	Method Blank (MB)
1203254812	Laboratory Control Sample (LCS)
1203254813	Laboratory Control Sample (LCS)
1203254814	365992007(B30195) Post Spike (PS)
1203254815	365992007(B30195) Post Spike Duplicate (PSD)
1203254816	365992007(B30195) Post Spike (PS)
1203254817	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

Sample 365860003 (B2YWK1) was diluted because target analyte concentrations exceeded the calibration range.

Analyte	365860
	003
1,2-Dichloroethane-d4	5X 1X
Bromofluorobenzene	5X 1X
Toluene-d8	5X 1X
cis-1,2-Dichloroethylene	5X

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:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
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 23, 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: GEL365860 GEL Work Order: 365860

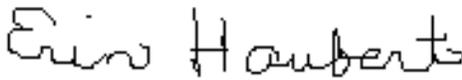
The Qualifiers in this report are defined as follows:

- 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
- 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.

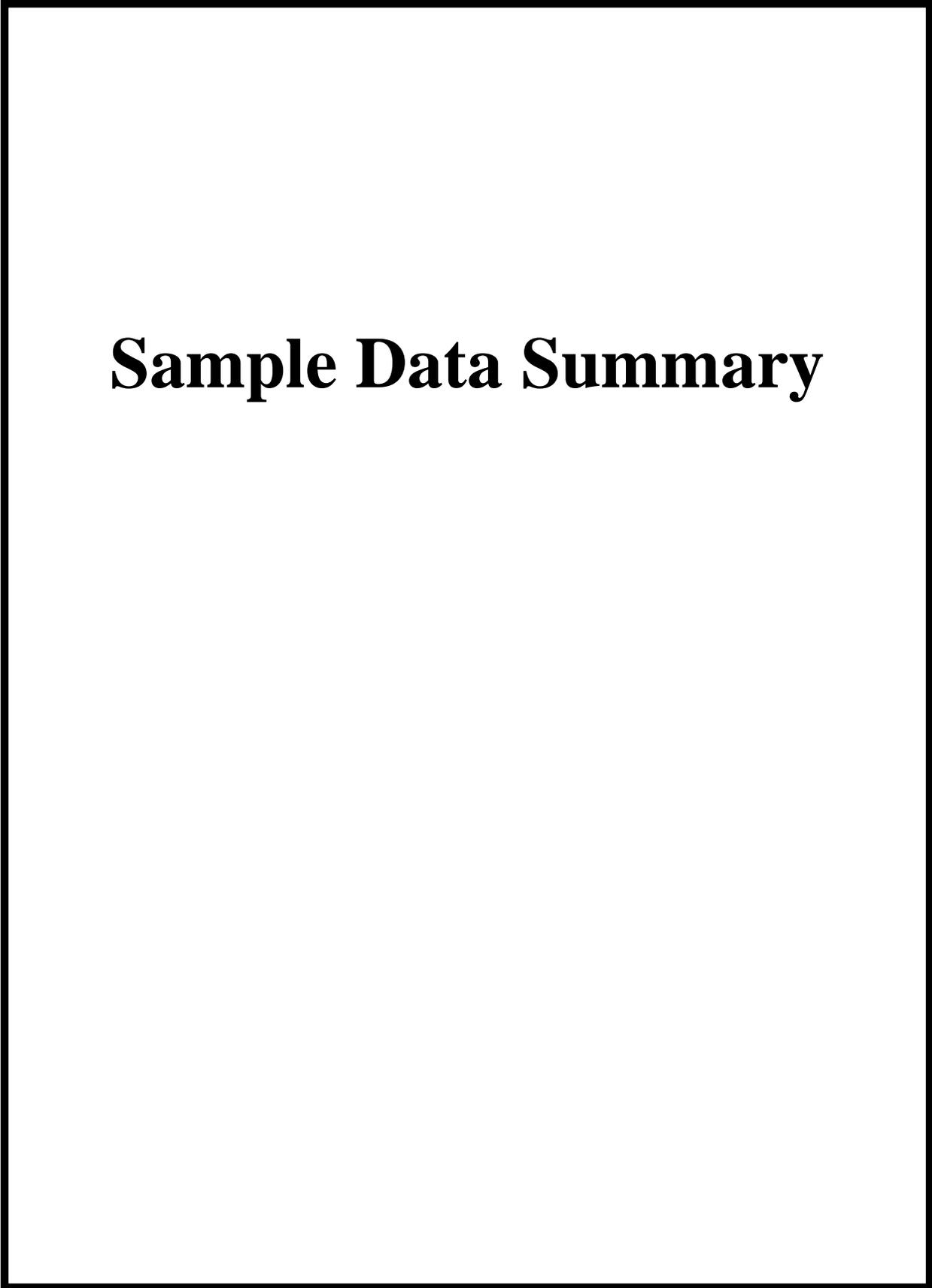
The following data validator verified the information presented in this data report:

Signature: 

Name: Erin Haubert

Date: 20 FEB 2015

Title: Data Validator



Sample Data Summary

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 W15-001**

Report Date: February 18, 2015

Client Sample ID:	B2YWK0	Project:	CPRC0W15001
Sample ID:	365860001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 07:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>										
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1 01/30/15	1340	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				
1,4-Dichlorobenzene 106-46-7	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		17.5	1.60	5.00	ug/L	1				
Propionitrile 107-12-0	U	0.00	3.00	10.0	ug/L	1				
Tetrachloroethylene 127-18-4	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 W15-001**

Report Date: February 18, 2015

Client Sample ID: B2YWK0 Project: CPRC0W15001
 Sample ID: 365860001 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
Tetrahydrofuran	U	0.00	1.50	50.0	ug/L	1					
109-99-9											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	U	0.00	0.300	5.00	ug/L	1					
79-01-6											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
cis-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-59-2											
n-Butyl alcohol	U	0.00	83.3	250	ug/L	1					
71-36-3											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											

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 + GW 01 "As Received"	49.6 ug/L	50.0	99.2	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	53.8 ug/L	50.0	108	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	47.2 ug/L	50.0	94.4	(80%-120%)

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 W15-001**

Report Date: February 18, 2015

Client Sample ID:	B2YWK1	Project:	CPRC0W15001
Sample ID:	365860003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:13		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>										
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1 01/30/15	1410	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				
1,4-Dichlorobenzene 106-46-7	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	U	0.00	1.60	5.00	ug/L	1				
Propionitrile 107-12-0	U	0.00	3.00	10.0	ug/L	1				
Tetrachloroethylene 127-18-4	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 W15-001**

Report Date: February 18, 2015

Client Sample ID: B2YWK1 Project: CPRC0W15001
 Sample ID: 365860003 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
Tetrahydrofuran	U	0.00	1.50	50.0	ug/L	1					
109-99-9											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	J	1.60	0.300	5.00	ug/L	1					
79-01-6											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
n-Butyl alcohol	U	0.00	83.3	250	ug/L	1					
71-36-3											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											
cis-1,2-Dichloroethylene	D	182	1.50	10.0	ug/L	5	CDS1	01/30/15	1612	1454155	2
156-59-2											

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 8260C	
2	SW846 8260C	

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	8260VOA_GCMS: COMMON + GW 01 "As Received"	50.1 ug/L	50.0	100	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	53.1 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	47.8 ug/L	50.0	95.6	(80%-120%)
1,2-Dichloroethane-d4	8260VOA_GCMS: COMMON + GW 01 "As Received"	251 ug/L	50.0	101	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	257 ug/L	50.0	103	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	240 ug/L	50.0	95.8	(80%-120%)

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 W15-001**

Report Date: February 18, 2015

Client Sample ID:	B2YWL8	Project:	CPRC0W15001
Sample ID:	365860006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 13:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1	01/30/15	1440	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					
1,4-Dichlorobenzene 106-46-7	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	U	0.00	1.60	5.00	ug/L	1					
Propionitrile 107-12-0	U	0.00	3.00	10.0	ug/L	1					
Tetrachloroethylene 127-18-4	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 W15-001**

Report Date: February 18, 2015

Client Sample ID: B2YWL8 Project: CPRC0W15001
 Sample ID: 365860006 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
Tetrahydrofuran	U	0.00	1.50	50.0	ug/L	1					
109-99-9											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	U	0.00	0.300	5.00	ug/L	1					
79-01-6											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
cis-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-59-2											
n-Butyl alcohol	U	0.00	83.3	250	ug/L	1					
71-36-3											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											

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 + GW 01 "As Received"	49.9 ug/L	50.0	99.7	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	52.6 ug/L	50.0	105	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	46.5 ug/L	50.0	93.0	(80%-120%)

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 W15-001**

Report Date: February 18, 2015

Client Sample ID:	B2YWL5	Project:	CPRC0W15001
Sample ID:	365860008	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:14		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
1,1,1-Trichloroethane 71-55-6	U	0.00	0.300	5.00	ug/L	1	CDS1	01/30/15	1511	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					
1,4-Dichlorobenzene 106-46-7	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	U	0.00	1.60	5.00	ug/L	1					
Propionitrile 107-12-0	U	0.00	3.00	10.0	ug/L	1					
Tetrachloroethylene 127-18-4	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 W15-001**

Report Date: February 18, 2015

Client Sample ID: B2YWL5 Project: CPRC0W15001
 Sample ID: 365860008 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260VOA_GCMS: COMMON + GW 01 "As Received"</i>											
Tetrahydrofuran	U	0.00	1.50	50.0	ug/L	1					
109-99-9											
Toluene	U	0.00	0.300	5.00	ug/L	1					
108-88-3											
Trichloroethylene	U	0.00	0.300	5.00	ug/L	1					
79-01-6											
Vinyl chloride	U	0.00	0.300	10.0	ug/L	1					
75-01-4											
Xylenes (total)	U	0.00	0.300	10.0	ug/L	1					
1330-20-7											
cis-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-59-2											
n-Butyl alcohol	U	0.00	83.3	250	ug/L	1					
71-36-3											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											

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 + GW 01 "As Received"	49.9 ug/L	50.0	99.8	(77%-123%)
Bromofluorobenzene	8260VOA_GCMS: COMMON + GW 01 "As Received"	53.0 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260VOA_GCMS: COMMON + GW 01 "As Received"	48.0 ug/L	50.0	95.9	(80%-120%)

Quality Control Summary

February 23, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 18, 2015

Page 1 of 7

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365860

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
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%)			
1,4-Dichlorobenzene	50.0			48.9	ug/L		97.7	(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%)			

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Xylenes (total)	150			154	ug/L		103	(70%-130%)	CDS1	01/30/15	07:03
cis-1,2-Dichloroethylene	50.0			50.6	ug/L		101	(70%-130%)			
n-Butyl alcohol	5000			5420	ug/L		108	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			50.2	ug/L		100	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.2	ug/L		104	(77%-123%)			
**Bromofluorobenzene	50.0			49.7	ug/L		99.5	(80%-120%)			
**Toluene-d8	50.0			49.2	ug/L		98.4	(80%-120%)			
QC1203254813	LCS										
Propionitrile	250			220	ug/L		87.9	(70%-130%)		01/30/15	08:38
Tetrahydrofuran	250			221	ug/L		88.3	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			49.4	ug/L		98.8	(77%-123%)			
**Bromofluorobenzene	50.0			51.7	ug/L		103	(80%-120%)			
**Toluene-d8	50.0			46.7	ug/L		93.3	(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						
1,4-Dichlorobenzene			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						

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Benzene			U	0.300	ug/L				CDS1	01/30/15	10:08
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						
Propionitrile			U	3.00	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Tetrahydrofuran			U	1.50	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						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
n-Butyl alcohol			U	83.3	ug/L						
trans-1,2-Dichloroethylene			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

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QC Summary

Workorder: **365860**

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
1,1,2-Trichloroethane	50.0	U	0.00	52.8	ug/L		106	(70%-130%)	CDS1	01/30/15	16:42
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%)			
1,4-Dichlorobenzene	50.0	U	0.00	50.9	ug/L		102	(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%)			
Toluene	50.0	U	0.00	50.4	ug/L		101	(70%-130%)			
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%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	55.5	ug/L		111	(70%-130%)			

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
n-Butyl alcohol	5000	U	0.00	6070	ug/L		121	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	54.9	ug/L		110	(70%-130%)	CDS1	01/30/15	16:42
**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%)			
QC1203254816 365992007 PS											
Propionitrile	250	U	0.00	236	ug/L		94.5	(70%-130%)		01/30/15	17:42
Tetrahydrofuran	250	U	0.00	230	ug/L		92	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		50.5	50.5	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0		52.8	53.9	ug/L		108	(80%-120%)			
**Toluene-d8	50.0		45.8	47.7	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%)			
1,4-Dichlorobenzene	50.0	U	0.00	50.6	ug/L	0.690	101	(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%)			

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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	1454155										
Chlorobenzene	50.0	U	0.00	51.5	ug/L	2.42	103	(0%-20%)	CDS1	01/30/15	17:12
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%)			
Methylene chloride	50.0	U	0.00	48.4	ug/L	1.37	96.9	(0%-20%)			
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%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	54.0	ug/L	2.87	108	(0%-20%)			
n-Butyl alcohol	5000	U	0.00	5630	ug/L	7.61	113	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	53.3	ug/L	2.88	107	(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%)			
QC1203254817 365992007 PSD											
Propionitrile	250	U	0.00	244	ug/L	3.41	97.8	(0%-20%)		01/30/15	18:12
Tetrahydrofuran	250	U	0.00	239	ug/L	3.76	95.5	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		50.5	50.8	ug/L		102	(77%-123%)			
**Bromofluorobenzene	50.0		52.8	53.5	ug/L		107	(80%-120%)			
**Toluene-d8	50.0		45.8	47.3	ug/L		94.6	(80%-120%)			

Notes:

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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The Qualifiers in this report are defined as follows:

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 05-FEB-15	Division: Federal	Quality Criteria: SOP	Type: Process
Instrument Type: VOA GC/MS	Test / Method: 8260C	Matrix Type: Liquid	Client Code: CPRC001
Batch ID: 1454155	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 365758(GEL365758),365858(GEL365858),365860(GEL365860),365992(GEL365992),366005(GEL366005)</p> <p>Application Issues: Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for PS/PSD</p>			
Specification and Requirements Exception Description:		DER Disposition:	
<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

Metals Analysis

Case Narrative

February 23, 2015

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL365860

Work Order #: 365860

Sample ID	Client ID
365860001	B2YWK0
365860002	B2YWK2
365860003	B2YWK1
365860004	B2YWK3
365860005	B2YWL9
365860006	B2YWL8
365860007	B2YWL6
365860008	B2YWL5
365860009	B2YWD6
365860010	B2YWJ8
1203252659	Method Blank (MB)ICP
1203252660	Laboratory Control Sample (LCS)
1203252663	365860001(B2YWK0L) Serial Dilution (SD)
1203252661	365860001(B2YWK0S) Matrix Spike (MS)
1203252662	365860001(B2YWK0SD) Matrix Spike Duplicate (MSD)

Sample Analysis

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

Method/Analysis Information

Analytical Batch:	1453349
Prep Batch :	1453348
Standard Operating Procedures:	GL-MA-E-013 REV# 23 and GL-MA-E-006 REV# 11
Analytical Method:	SW846 3005A/6010C
Prep Method :	SW846 3005A

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The CRDL/PQL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following sample was selected as the quality control (QC) sample for this SDG: 365860001 (B2YWK0).

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) obtained from the designated matrix spike duplicate (MSD) is evaluated based on acceptance criteria of 20%. The RPD values between qualifying analyte results in the MS and MSD were within the acceptance limits.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. 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. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were not diluted and prepared according to the cited SOP.

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

A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

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 23, 2015

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365860 GEL Work Order: 365860

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature:



Name: Nik-Cole Elmore

Date: 23 FEB 2015

Title: Data Validator

Sample Data Summary

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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWK0	Project:	CPRC0W15001
Sample ID:	365860001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 07:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-2.63	+/-1.28	3.50	10.0	ug/L	1	HSC	02/09/15	1938	1453349	1
Arsenic 7440-38-2	U	-3.75	+/-1.83	5.00	30.0	ug/L	1					
Barium 7440-39-3	U	0.009	+/-0.333	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.174	+/-0.335	1.00	5.00	ug/L	1					
Calcium 7440-70-2	U	12.3	+/-16.8	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.145	+/-0.335	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.522	+/-0.349	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.499	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	1.56	+/-10.0	30.0	100	ug/L	1					
Manganese 7439-96-5	U	-0.0185	+/-0.667	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	0.696	+/-0.519	1.50	5.00	ug/L	1					
Potassium 7440-09-7	U	-49.7	+/-19.4	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.479	+/-0.347	1.00	5.00	ug/L	1					
Sodium 7440-23-5	U	4.39	+/-33.3	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.555	+/-0.351	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	1.13	+/-1.12	3.30	10.0	ug/L	1					
Magnesium 7439-95-4	U	-8.45	+/-36.7	110	300	ug/L	1	HSC	02/12/15	1509	1453349	2

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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWK2	Project:	CPRC0W15001
Sample ID:	365860002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 07:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-2.55	+/-1.27	3.50	10.0	ug/L	1	HSC	02/09/15	2009	1453349	1
Arsenic 7440-38-2	U	-3.39	+/-1.80	5.00	30.0	ug/L	1					
Barium 7440-39-3	U	-0.0135	+/-0.333	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0706	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2	U	4.62	+/-16.7	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.113	+/-0.334	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.223	+/-0.336	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.444	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	-1.25	+/-10.0	30.0	100	ug/L	1					
Manganese 7439-96-5	U	-0.159	+/-0.667	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	0.475	+/-0.509	1.50	5.00	ug/L	1					
Potassium 7440-09-7	U	-25.1	+/-17.4	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.464	+/-0.346	1.00	5.00	ug/L	1					
Sodium 7440-23-5	U	4.75	+/-33.3	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.330	+/-0.340	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-0.0046	+/-1.10	3.30	10.0	ug/L	1					
Magnesium 7439-95-4	U	-18.9	+/-36.9	110	300	ug/L	1	HSC	02/12/15	1540	1453349	2

~~February 23, 2015~~
GEL LABORATORIES LLC

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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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWK1	Project:	CPRC0W15001
Sample ID:	365860003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:13		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-2.45	+/-1.27	3.50	10.0	ug/L	1	HSC	02/09/15	2012	1453349	1
Arsenic 7440-38-2	U	-0.896	+/-1.68	5.00	30.0	ug/L	1					
Barium 7440-39-3		48.8	+/-9.76	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.126	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2		17400	+/-3470	50.0	200	ug/L	1					
Chromium 7440-47-3	B	2.09	+/-0.535	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.20	+/-0.336	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.271	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	B	47.9	+/-13.9	30.0	100	ug/L	1					
Manganese 7439-96-5		58.9	+/-11.8	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	2.55	+/-0.714	1.50	5.00	ug/L	1					
Potassium 7440-09-7		5420	+/-1080	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.949	+/-0.384	1.00	5.00	ug/L	1					
Sodium 7440-23-5		48200	+/-9640	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.823	+/-0.372	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	0.968	+/-1.12	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		5770	+/-1160	110	300	ug/L	1	HSC	02/12/15	1543	1453349	2

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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWK3	Project:	CPRC0W15001
Sample ID:	365860004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:13		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	0.431	+/-1.17	3.50	10.0	ug/L	1	HSC	02/09/15	2015	1453349	1
Arsenic 7440-38-2	U	-2.45	+/-1.74	5.00	30.0	ug/L	1					
Barium 7440-39-3		49.0	+/-9.81	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.154	+/-0.335	1.00	5.00	ug/L	1					
Calcium 7440-70-2		17700	+/-3540	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.317	+/-0.339	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.127	+/-0.334	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.326	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	B	33.1	+/-12.0	30.0	100	ug/L	1					
Manganese 7439-96-5		60.4	+/-12.1	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	2.41	+/-0.694	1.50	5.00	ug/L	1					
Potassium 7440-09-7		5430	+/-1090	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.0747	+/-0.334	1.00	5.00	ug/L	1					
Sodium 7440-23-5		47300	+/-9460	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.896	+/-0.378	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-0.297	+/-1.10	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		5770	+/-1150	110	300	ug/L	1	HSC	02/12/15	1546	1453349	2

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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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWL9	Project:	CPRC0W15001
Sample ID:	365860005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 13:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	0.784	+/-1.18	3.50	10.0	ug/L	1	HSC	02/09/15	2018	1453349	1
Arsenic 7440-38-2	U	-2.85	+/-1.76	5.00	30.0	ug/L	1					
Barium 7440-39-3		35.5	+/-7.11	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0569	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2		11700	+/-2330	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.296	+/-0.339	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.167	+/-0.335	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.238	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6		529	+/-106	30.0	100	ug/L	1					
Manganese 7439-96-5		35.9	+/-7.20	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	1.44	+/-0.577	1.50	5.00	ug/L	1					
Potassium 7440-09-7		6560	+/-1310	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.0379	+/-0.333	1.00	5.00	ug/L	1					
Sodium 7440-23-5		69500	+/-13900	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.436	+/-0.345	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	0.398	+/-1.10	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		4900	+/-981	110	300	ug/L	1	HSC	02/12/15	1549	1453349	2

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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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWL8	Project:	CPRC0W15001
Sample ID:	365860006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 13:00		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-1.09	+/-1.19	3.50	10.0	ug/L	1	HSC	02/09/15	2021	1453349	1
Arsenic 7440-38-2	U	-3.0	+/-1.77	5.00	30.0	ug/L	1					
Barium 7440-39-3		36.0	+/-7.21	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	-0.0193	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		11800	+/-2370	50.0	200	ug/L	1					
Chromium 7440-47-3	U	0.924	+/-0.381	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.342	+/-0.340	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.0432	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6		545	+/-109	30.0	100	ug/L	1					
Manganese 7439-96-5		35.9	+/-7.21	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	1.37	+/-0.570	1.50	5.00	ug/L	1					
Potassium 7440-09-7		6590	+/-1320	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.593	+/-0.354	1.00	5.00	ug/L	1					
Sodium 7440-23-5		70100	+/-14000	100	300	ug/L	1					
Vanadium 7440-62-2	U	0.432	+/-0.344	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-0.361	+/-1.10	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		4890	+/-980	110	300	ug/L	1	HSC	02/12/15	1553	1453349	2

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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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWL6	Project:	CPRC0W15001
Sample ID:	365860007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:14		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-1.2	+/-1.19	3.50	10.0	ug/L	1	HSC	02/09/15	2024	1453349	1
Arsenic 7440-38-2	U	4.94	+/-1.94	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.5	+/-10.7	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0685	+/-0.334	1.00	5.00	ug/L	1					
Calcium 7440-70-2		51600	+/-10300	50.0	200	ug/L	1					
Chromium 7440-47-3	B	3.45	+/-0.766	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.196	+/-0.336	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.808	+/-1.01	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	4.55	+/-10.0	30.0	100	ug/L	1					
Manganese 7439-96-5	U	0.286	+/-0.669	2.00	10.0	ug/L	1					
Nickel 7440-02-0	U	1.04	+/-0.541	1.50	5.00	ug/L	1					
Potassium 7440-09-7		7420	+/-1480	50.0	150	ug/L	1					
Silver 7440-22-4	U	0.103	+/-0.334	1.00	5.00	ug/L	1					
Sodium 7440-23-5		26300	+/-5260	100	300	ug/L	1					
Vanadium 7440-62-2		13.7	+/-2.77	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-1.69	+/-1.15	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		14800	+/-2950	110	300	ug/L	1	HSC	02/12/15	1556	1453349	2

~~February 23, 2015~~
GEL LABORATORIES LLC

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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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWL5	Project:	CPRC0W15001
Sample ID:	365860008	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:14		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	0.422	+/-1.17	3.50	10.0	ug/L	1	HSC	02/09/15	2028	1453349	1
Arsenic 7440-38-2	U	4.43	+/-1.89	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.9	+/-10.8	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0236	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		51200	+/-10200	50.0	200	ug/L	1					
Chromium 7440-47-3		6.24	+/-1.29	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.412	+/-0.343	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	-0.563	+/-1.01	3.00	10.0	ug/L	1					
Iron 7439-89-6	B	34.4	+/-12.1	30.0	100	ug/L	1					
Manganese 7439-96-5	U	0.499	+/-0.674	2.00	10.0	ug/L	1					
Nickel 7440-02-0	B	2.43	+/-0.698	1.50	5.00	ug/L	1					
Potassium 7440-09-7		7350	+/-1470	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.176	+/-0.335	1.00	5.00	ug/L	1					
Sodium 7440-23-5		26600	+/-5330	100	300	ug/L	1					
Vanadium 7440-62-2		13.8	+/-2.79	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-0.56	+/-1.11	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		14600	+/-2930	110	300	ug/L	1	HSC	02/12/15	1559	1453349	2

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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWD6	Project:	CPRC0W15001
Sample ID:	365860009	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:57		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-1.04	+/-1.19	3.50	10.0	ug/L	1	HSC	02/09/15	2031	1453349	1
Arsenic 7440-38-2	U	-0.11	+/-1.67	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.2	+/-10.6	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.022	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		37300	+/-7470	50.0	200	ug/L	1					
Chromium 7440-47-3	B	3.31	+/-0.741	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	-0.112	+/-0.334	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	0.354	+/-1.00	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	10.1	+/-10.2	30.0	100	ug/L	1					
Manganese 7439-96-5	U	0.128	+/-0.667	2.00	10.0	ug/L	1					
Nickel 7440-02-0		13.3	+/-2.71	1.50	5.00	ug/L	1					
Potassium 7440-09-7		3950	+/-790	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.0275	+/-0.333	1.00	5.00	ug/L	1					
Sodium 7440-23-5		19400	+/-3880	100	300	ug/L	1					
Vanadium 7440-62-2		7.49	+/-1.54	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	-0.532	+/-1.11	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		8110	+/-1620	110	300	ug/L	1	HSC	02/12/15	1602	1453349	2

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 W15-001**

Report Date: February 23, 2015

Client Sample ID:	B2YWJ8	Project:	CPRC0W15001
Sample ID:	365860010	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15 12:57		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<i>6010_METALS_ICP: COMMON "As Received"</i>												
Antimony 7440-36-0	U	-0.277	+/-1.17	3.50	10.0	ug/L	1	HSC	02/09/15	2034	1453349	1
Arsenic 7440-38-2	U	1.42	+/-1.69	5.00	30.0	ug/L	1					
Barium 7440-39-3		53.1	+/-10.6	1.00	5.00	ug/L	1					
Cadmium 7440-43-9	U	0.0461	+/-0.333	1.00	5.00	ug/L	1					
Calcium 7440-70-2		37400	+/-7490	50.0	200	ug/L	1					
Chromium 7440-47-3	B	2.24	+/-0.558	1.00	5.00	ug/L	1					
Cobalt 7440-48-4	U	0.279	+/-0.338	1.00	5.00	ug/L	1					
Copper 7440-50-8	U	0.505	+/-1.01	3.00	10.0	ug/L	1					
Iron 7439-89-6	U	6.45	+/-10.1	30.0	100	ug/L	1					
Manganese 7439-96-5	U	1.06	+/-0.700	2.00	10.0	ug/L	1					
Nickel 7440-02-0		13.1	+/-2.67	1.50	5.00	ug/L	1					
Potassium 7440-09-7		4000	+/-800	50.0	150	ug/L	1					
Silver 7440-22-4	U	-0.111	+/-0.334	1.00	5.00	ug/L	1					
Sodium 7440-23-5		19800	+/-3950	100	300	ug/L	1					
Vanadium 7440-62-2		7.44	+/-1.52	1.00	5.00	ug/L	1					
Zinc 7440-66-6	U	0.768	+/-1.11	3.30	10.0	ug/L	1					
Magnesium 7439-95-4		8140	+/-1630	110	300	ug/L	1	HSC	02/12/15	1605	1453349	2

Quality Control Summary

February 23, 2015
GEL LABORATORIES LLC

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QC Summary

Report Date: February 23, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365860

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453349										
QC1203252660	LCS										
Antimony	500			499	ug/L		99.7	(80%-120%)	HSC	02/09/15	19:34
Arsenic	500			516	ug/L		103	(80%-120%)			
Barium	500			513	ug/L		103	(80%-120%)			
Cadmium	500			515	ug/L		103	(80%-120%)			
Calcium	5000			5250	ug/L		105	(80%-120%)			
Chromium	500			518	ug/L		104	(80%-120%)			
Cobalt	500			532	ug/L		106	(80%-120%)			
Copper	500			509	ug/L		102	(80%-120%)			
Iron	5000			5020	ug/L		100	(80%-120%)			
Magnesium	5000			5180	ug/L		104	(80%-120%)		02/12/15	15:06
Manganese	500			510	ug/L		102	(80%-120%)		02/09/15	19:34
Nickel	500			512	ug/L		102	(80%-120%)			
Potassium	5000			5270	ug/L		105	(80%-120%)			
Silver	500			499	ug/L		99.7	(80%-120%)			
Sodium	5000			5030	ug/L		101	(80%-120%)			
Vanadium	500			528	ug/L		106	(80%-120%)			
Zinc	500			501	ug/L		100	(80%-120%)			
QC1203252659	MB										
Antimony			U	ND	ug/L					02/09/15	19:31
Arsenic			U	ND	ug/L						

February 23, 2015
GEL LABORATORIES LLC

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453349										
Barium			U	ND	ug/L						
Cadmium			U	ND	ug/L				HSC	02/09/15	19:31
Calcium			U	ND	ug/L						
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Iron			U	ND	ug/L						
Magnesium			U	ND	ug/L					02/12/15	15:03
Manganese			U	ND	ug/L					02/09/15	19:31
Nickel			U	ND	ug/L						
Potassium			U	ND	ug/L						
Silver			U	ND	ug/L						
Sodium			U	ND	ug/L						
Vanadium			U	ND	ug/L						
Zinc			U	ND	ug/L						
QC1203252661 365860001 MS											
Antimony	500	U	ND	512	ug/L		102	(75%-125%)		02/09/15	19:41
Arsenic	500	U	ND	524	ug/L		105	(75%-125%)			
Barium	500	U	ND	522	ug/L		104	(75%-125%)			
Cadmium	500	U	ND	522	ug/L		104	(75%-125%)			
Calcium	5000	U	ND	5310	ug/L		106	(75%-125%)			
Chromium	500	U	ND	530	ug/L		106	(75%-125%)			
Cobalt	500	U	ND	541	ug/L		108	(75%-125%)			

February 23, 2015

GEL LABORATORIES LLC

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QC Summary

Workorder: 365860

Page 3 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453349										
Copper	500	U	ND	520	ug/L		104	(75%-125%)	HSC	02/09/15	19:41
Iron	5000	U	ND	5180	ug/L		104	(75%-125%)			
Magnesium	5000	U	ND	5550	ug/L		111	(75%-125%)		02/12/15	15:12
Manganese	500	U	ND	520	ug/L		104	(75%-125%)		02/09/15	19:41
Nickel	500	U	ND	522	ug/L		104	(75%-125%)			
Potassium	5000	U	ND	5310	ug/L		106	(75%-125%)			
Silver	500	U	ND	507	ug/L		101	(75%-125%)			
Sodium	5000	U	ND	4970	ug/L		99.2	(75%-125%)			
Vanadium	500	U	ND	539	ug/L		108	(75%-125%)			
Zinc	500	U	ND	510	ug/L		102	(75%-125%)			
QC1203252662 365860001 MSD											
Antimony	500	U	ND	509	ug/L	0.450	102	(0%-20%)		02/09/15	19:44
Arsenic	500	U	ND	527	ug/L	0.529	105	(0%-20%)			
Barium	500	U	ND	521	ug/L	0.0614	104	(0%-20%)			
Cadmium	500	U	ND	522	ug/L	0.00766	104	(0%-20%)			
Calcium	5000	U	ND	5310	ug/L	0.0226	106	(0%-20%)			
Chromium	500	U	ND	530	ug/L	0.00	106	(0%-20%)			
Cobalt	500	U	ND	541	ug/L	0.0499	108	(0%-20%)			
Copper	500	U	ND	520	ug/L	0.0442	104	(0%-20%)			
Iron	5000	U	ND	5180	ug/L	0.124	104	(0%-20%)			
Magnesium	5000	U	ND	5420	ug/L	2.38	108	(0%-20%)		02/12/15	15:15
Manganese	500	U	ND	520	ug/L	0.106	104	(0%-20%)		02/09/15	19:44

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QC Summary

Workorder: **365860**

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453349										
Nickel	500	U	ND	523	ug/L	0.0517	104	(0%-20%)	HSC	02/09/15	19:44
Potassium	5000	U	ND	5360	ug/L	0.836	107	(0%-20%)			
Silver	500	U	ND	507	ug/L	0.0651	101	(0%-20%)			
Sodium	5000	U	ND	4940	ug/L	0.594	98.6	(0%-20%)			
Vanadium	500	U	ND	539	ug/L	0.0353	108	(0%-20%)			
Zinc	500	U	ND	510	ug/L	0.0471	102	(0%-20%)			
QC1203252663 365860001 SDILT											
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/09/15	19:47
Arsenic		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Barium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Calcium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Chromium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Copper		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Iron		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Magnesium		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/12/15	15:18
Manganese		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/09/15	19:47
Nickel		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Potassium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Silver		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Sodium		U	ND DU	ND	ug/L	N/A		(0%-10%)			

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QC Summary

Workorder: 365860

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453349										
Vanadium	U	ND	DU	ND	ug/L	N/A		(0%-10%)	HSC	02/09/15	19:47
Zinc	U	ND	D	4.12	ug/L	N/A		(0%-10%)			

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 >= 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.

Radiological Analysis

February 23, 2015
Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365860
Work Order #: 365860

Method/Analysis Information

Product: KPA_UTOT: COMMON
Analytical Method: ASTM D 5174
Analytical Batch Number: 1452782

Sample ID	Client ID
365860001	B2YWK0
365860003	B2YWK1
365860006	B2YWL8
1203251107	MB for batch 1452782
1203251110	Laboratory Control Sample (LCS)
1203251111	Laboratory Control Sample (LCS)
1203251108	365758001(B2YWH9) Sample Duplicate (DUP)
1203251109	365758001(B2YWH9) Matrix Spike (MS)

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

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-RAD-A-023 REV# 19.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The calibration for Total Uranium is performed prior to each analysis and is located with the raw data.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 365758001 (B2YWH9).

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

Sample 365860003 (B2YWK1) was treated with a post-spike due to contractual requirements and reanalyzed to test for quenching. The post-spike verified the initial result, so the initial result is reported. Samples 365860006 (B2YWL8) were diluted 1:10, treated with a post-spike due to contractual requirements and reanalyzed to test for quenching. The post-spike verified the diluted result, so the diluted result is reported. Sample 365860001 (B2YWK0) was reanalyze due to initial analysis yielding zeroes for the results. The reanalyzed result verified the initial analysis. Sample was treated with a post-spike due to contractual requirements and reanalyzed to test for quenching. The post-spike verified the initial result, so the initial result is reported.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

MB 1203251107 (MB) failed R2 and/or lifetime. This was due to insufficient uranium in the sample for measurement. The results are reported.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
D	Results are reported from a diluted aliquot of sample.	Total Uranium	365860006	B2YWL8

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 23, 2015

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365860 GEL Work Order: 365860

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature: 

Name: Heather McCarty

Date: 17 FEB 2015

Title: Analyst II

Sample Data Summary

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 W15-001

Report Date: February 17, 2015

Client Sample ID:	B2YWK0	Project:	CPRC0W15001
Sample ID:	365860001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Total Uranium													
<i>KPA_UTOT: COMMON "As Received"</i>													
Total Uranium 7440-61-1	U	0.00	+/-0.00	0.245	+/-0.00	1.00	ug/L	1	CXP3	02/13/15	0905	1452782	1

The following Analytical Methods were performed

Method	Description
1	ASTM D 5174

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
- 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 >= 2X the MDA and, after corrections, result is >= 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 >= 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

February 24, 2015
GEL LABORATORIES LLC

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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 W15-001

Report Date: February 17, 2015

Client Sample ID: B2YWK0 Project: CPRC0W15001
Sample ID: 365860001 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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- 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)
- The above sample is reported on an "as received" basis.

Certificate of Analysis

Company : CH2M Hill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W15-001

Report Date: February 17, 2015

Client Sample ID:	B2YWK1	Project:	CPRC0W15001
Sample ID:	365860003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
Rad Total Uranium												
<i>KPA_UTOT: COMMON "As Received"</i>												
Total Uranium 7440-61-1		8.55	+/-0.245	0.245	+/-0.747	1.00	ug/L	1	CXP3	02/13/15	0907 1452782	1

The following Analytical Methods were performed

Method	Description
1	ASTM D 5174

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
- 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 >= 2X the MDA and, after corrections, result is >= 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 >= 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

February 24, 2015
GEL LABORATORIES LLC

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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 W15-001

Report Date: February 17, 2015

Client Sample ID: B2YWK1 Project: CPRC0W15001
Sample ID: 365860003 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
o Analyte failed to recover within LCS limits (Organics only)
The above sample is reported on an "as received" basis.

Certificate of Analysis

Company : CH2M Hill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF W15-001

Report Date: February 17, 2015

Client Sample ID:	B2YWL8	Project:	CPRC0W15001
Sample ID:	365860006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	23-JAN-15		
Receive Date:	27-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
Rad Total Uranium												
<i>KPA_UTOT: COMMON "As Received"</i>												
Total Uranium 7440-61-1	D	42.9	+/-1.26	2.45	+/-4.52	1.00	ug/L	10	CXP3	02/13/15	1019 1452782	1

The following Analytical Methods were performed

Method	Description
1	ASTM D 5174

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
- 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 >= 2X the MDA and, after corrections, result is >= 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 >= 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

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 W15-001

Report Date: February 17, 2015

Client Sample ID: B2YWL8 Project: CPRC0W15001
Sample ID: 365860006 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
o Analyte failed to recover within LCS limits (Organics only)
The above sample is reported on an "as received" basis.

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

Report Date: February 17, 2015
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 365860

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Total U									
Batch	1452782								
QC1203251107	MB								
Total Uranium			U	-0.0006	ug/L			CXP3	02/13/1509:13
				Uncert: +/-0.00					
				TPU: +/-4.95E-05					
QC1203251108	365758001	DUP							
Total Uranium		D	18.6	19.5	ug/L				02/13/1509:16
			Uncert: +/-0.553	+/-0.559		RPD: 5	(0% - 20%)		
			TPU: +/-1.96	+/-1.70		RER: 0.722	(0-2)		
QC1203251109	365758001	MS							
Total Uranium	50.0	D	18.6	67.4	ug/L	REC: 98	(75%-125%)		02/13/1509:21
			Uncert: +/-0.553	+/-4.40					
			TPU: +/-1.96	+/-7.09					
QC1203251110	LCS								
Total Uranium	50.0			51.6	ug/L	REC: 103	(80%-120%)		02/13/1509:24
				Uncert: +/-3.38					
				TPU: +/-5.44					
QC1203251111	LCS								
Total Uranium	5.00			5.31	ug/L	REC: 106	(80%-120%)		02/13/1509:25
				Uncert: +/-0.153					
				TPU: +/-0.464					

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
- 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 >= 2X the MDA and, after corrections, result is >= 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 >= 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.

QC Summary

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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)									

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.