

February 25, 2015



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407

P 843.556.8171 F 843.766.1178

www.gel.com

February 25, 2015

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

Re: CHPRC SAF S15-001
Work Order: 365992
SDG: GEL365992

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 29, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 300071
Chain of Custody: S15-001-122, S15-001-123, S15-001-188, S15-001-189 and S15-001-340
Enclosures



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Case Narrative

February 25, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S15-001
SDG: GEL365992

February 25, 2015

Laboratory Identification:

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

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on January 29, 2015, for analysis. The 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>
365992001	B30196
365992002	B30018
365992003	B30017
365992004	B30020
365992005	B302B4
365992006	B302B3
365992007	B30195
365992008	B30197

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 25, 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, General Chemistry, 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

February 25, 2015

CH2M Hill Plateau Remediation Company		C.O.C. # S15-001-189	
300992		Page 1 of 1	
Collector	K.C. Patterson/CHPRC	Contact/Requester	Karen Waters-Husted
SAF No.	S15-001	Sampling Origin	Hanford Site
Project Title	SURV, JANUARY 2015	Logbook No.	HNF-N-506 70122
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier
Protocol	SURV	Priority:	30 Days PRIORITY
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 Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Sample No.	B30196	No/Type Container	1x250-mL G/P
Filter	N	Time	1/28/15 1137
Date	1/28/15	Sample Analysis	9056_ANIONS_IC: COMMON
Print		Holding Time	28 Days/48 Hours
Sign		Preservative	Cool <=6C

Relinquished By	K.C. Patterson/CHPRC	Print	[Signature]	Sign	[Signature]	Date/Time	1/23/15
Relinquished By	F.M. Hall	Print	CHPRC	Sign	[Signature]	Date/Time	JAN 28 2015
Relinquished By	80	Print	FEDEX	Sign	[Signature]	Date/Time	JAN 28 2015 1400
Relinquished By	10	Print	[Signature]	Sign	[Signature]	Date/Time	1-29-15 0855
Relinquished By	7	Print	[Signature]	Sign	[Signature]	Date/Time	

Received By	F.M. Hall	Print	CHPRC	Sign	[Signature]	Date/Time	JAN 28 2015
Received By	FEDEX	Print		Sign		Date/Time	
Received By	W. Kaslow	Print	[Signature]	Sign	[Signature]	Date/Time	1-29-15 0855
Received By		Print		Sign		Date/Time	

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

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

CH2MHill Plateau Remediation Company		C.O.C.# S15-001-123	
Collector J.R. Aguilar/CHPRC		Page 1 of 1	
Contact/Requester Karen Waters-Husted		Telephone No. 509-376-4650	
Sampling Origin Hanford Site		Purchase Order/Charge Code 300071	
Project Title SURV, JANUARY 2015		Ice Chest No. <i>GLS-303</i>	
Shipped To (Lab) GEL Laboratories, LLC		Bill of Lading/Air Bill No. <i>7727 4509 0550</i>	
Protocol SURV		Offsite Property No.	
Priority: 30 Days		Hold Time	
SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
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
B30018	N	W 1-28-15	0908
No/Type Container	Sample Analysis	Holding Time	Preservative
1x250-mL G/P	9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: GW 02	28 Days/48 Hours	Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
J.R. Aguilar/CHPRC	<i>[Signature]</i>	JAN 28 2015	1110	BLA White/CHPRC	BLA White/CHPRC	JAN 28 2015	1110	S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
J.R. White/CHPRC	<i>[Signature]</i>	JAN 28 2015	1400	FEDEX	FEDEX			
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
J.R. White/CHPRC	<i>[Signature]</i>	JAN 28 2015	0855	M. Kraslow	M. Kraslow			
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
J.R. White/CHPRC	<i>[Signature]</i>	JAN 28 2015	0855	M. Kraslow	M. Kraslow			
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)							Date/Time
PRINTED O 11/25/2014								A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # S15-001-122
		<i>365992</i>		Page 1 of 1
Collector	J.R. Aguilar/CHPRC	Contact/Requester	Karen Waters-Husted	
SAF No.	S15-001	Sampling Origin	Hanford Site	
Project Title	SURV, JANUARY 2015	Logbook No.	HNF-N-506 <i>67 / 78</i>	
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	
Protocol	SURV	Priority:	30 Days PRIORITY	
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS	Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
** ** 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
B30017	N	W	<i>1-28-15</i>	<i>0908</i>	1x500-mg G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B30020	Y	W	<i>1-28-15</i>	<i>0908</i>	1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B30020	Y	W	<i>1-28-15</i>	<i>0908</i>	1x500-mg G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By	<i>J.R. Aguilar</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign	
J.R. Aguilar/CHPRC			JAN 28 2015		1110						JAN 28 2015						JAN 28 2015						1110
Relinquished By	<i>M.A. White</i>	Print		Sign		Received By	<i>FED Ex</i>	Print		Sign		Received By	<i>FED Ex</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign	
M.A. White/CHPRC			JAN 28 2015		1400						JAN 28 2015						JAN 28 2015						1110
Relinquished By	<i>FED Ex</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign		Received By	<i>M.A. White</i>	Print		Sign	
FED Ex			JAN 28 2015		1400						JAN 28 2015						JAN 28 2015						1110

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M.A. White/CHPRC			JAN 28 2015		1400						JAN 28 2015						JAN 28 2015						1110

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M.A. White/CHPRC			JAN 28 2015		1400						JAN 28 2015						JAN 28 2015						1110

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M.A. White/CHPRC			JAN 28 2015		1400						JAN 28 2015						JAN 28 2015						1110

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February 25, 2015

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			C.O.C. # S15-001-188	
Collector K.C. Patterson/CHPRC		Contact/Requester Karen Waters-Husted			Telephone No. 509-376-4650	
SAF No. S15-001		Sampling Origin Hanford Site			Purchase Order/Charge Code 300071	
Project Title SURV, JANUARY 2015		Logbook No. HNF-N-506 70122			Ice Chest No. CWS-303	
Shipped To (Lab) GEL Laboratories, LLC		Method of Shipment Commercial Carrier			Bill of Lading/Air Bill No. 7727 4509 0550	
Protocol SURV		Priority: 30 Days			Offsite Property No.	
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS Hold Time			Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B30195	N	W	1/28/15	1137	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2
B30195	N	W			4x40-mL aGs*	8260_VOA_GCMS_IX: COMMON	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B30195	N	W			1x2-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B30195	N	W			1x4-L G/P	GAMMA_GS: COMMON	6 Months	HNO3 to pH <2
B30195	N	W			2x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B30195	N	W			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B30195	N	W			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B30197	Y	W			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_ICPMS: GW 01	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
K.C. Patterson/CHPRC			JAN 28 2015 12:30	M. Hall	CHPRC		JAN 28 2015 1:30	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
F.M. Hall			JAN 28 2015 1:40	FEDEX				
Relinquished By			JAN 28 2015	Received By			1-29-15 0855	
Relinquished By				Received By				

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
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February 25, 2015



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>205992</u>	
Received By: <u>MK</u>		Date Received: <u>1-29-15</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) <u>2.2°</u> all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130532776</u> Secondary Temperature Device Serial # (if Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7727 4509 0550</u>

Comments (Use Continuation Form if needed):

Data Review Qualifier Definitions

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

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely preformed
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 25 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 25, 2015
GC/MS Volatile
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL365992
Work Order #: 365992

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
365992007	B30195
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 (B30195PS) and 1203254815 (B30195PSD) recoveries were not all within the acceptance limits.

Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The

February 25, 2015

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 25, 2015

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365992 GEL Work Order: 365992

The Qualifiers in this report are defined as follows:

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

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

DL Indicates that sample is diluted.

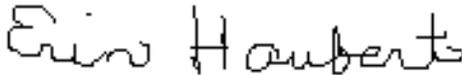
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Erin Haubert

Date: 23 FEB 2015

Title: Data Validator

Sample Data Summary

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 S15-001**

Report Date: February 18, 2015

Client Sample ID:	B30195	Project:	CPRC0S15001
Sample ID:	365992007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 11:37		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>										
1,1,1,2-Tetrachloroethane	U	0.00	0.300	5.00	ug/L	1	CDS1 01/30/15	1038	1454155	1
630-20-6										
1,1,1-Trichloroethane	U	0.00	0.300	5.00	ug/L	1				
71-55-6										
1,1,2,2-Tetrachloroethane	U	0.00	0.300	5.00	ug/L	1				
79-34-5										
1,1,2-Trichloroethane	U	0.00	0.300	5.00	ug/L	1				
79-00-5										
1,1-Dichloroethane	U	0.00	0.300	10.0	ug/L	1				
75-34-3										
1,1-Dichloroethylene	U	0.00	0.300	10.0	ug/L	1				
75-35-4										
1,2,3-Trichloropropane	U	0.00	0.300	5.00	ug/L	1				
96-18-4										
1,2-Dibromo-3-chloropropane	U	0.00	0.500	5.00	ug/L	1				
96-12-8										
1,2-Dibromoethane	U	0.00	0.300	5.00	ug/L	1				
106-93-4										
1,2-Dichloroethane	U	0.00	0.300	5.00	ug/L	1				
107-06-2										
1,2-Dichloropropane	U	0.00	0.300	5.00	ug/L	1				
78-87-5										
2-Butanone	TU	0.00	3.00	10.0	ug/L	1				
78-93-3										
2-Chloro-1,3-butadiene	U	0.00	0.300	10.0	ug/L	1				
126-99-8										
2-Hexanone	U	0.00	3.00	20.0	ug/L	1				
591-78-6										
4-Methyl-2-pentanone	U	0.00	3.00	10.0	ug/L	1				
108-10-1										
Acetone	TU	0.00	3.00	20.0	ug/L	1				
67-64-1										
Acetonitrile	U	0.00	16.7	100	ug/L	1				
75-05-8										
Acrolein	U	0.00	3.00	100	ug/L	1				
107-02-8										

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 S15-001**

Report Date: February 18, 2015

Client Sample ID: B30195 Project: CPRC0S15001
 Sample ID: 365992007 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>											
Acrylonitrile	U	0.00	3.00	100	ug/L	1					
107-13-1											
Allyl chloride	U	0.00	3.00	10.0	ug/L	1					
107-05-1											
Benzene	U	0.00	0.300	5.00	ug/L	1					
71-43-2											
Bromoform	U	0.00	0.300	5.00	ug/L	1					
75-25-2											
Carbon disulfide	U	0.00	1.60	10.0	ug/L	1					
75-15-0											
Carbon tetrachloride	U	0.00	0.300	5.00	ug/L	1					
56-23-5											
Chlorobenzene	U	0.00	0.300	5.00	ug/L	1					
108-90-7											
Chloroethane	U	0.00	0.300	10.0	ug/L	1					
75-00-3											
Chloroform	U	0.00	0.300	5.00	ug/L	1					
67-66-3											
Dibromochloromethane	U	0.00	0.300	5.00	ug/L	1					
124-48-1											
Dibromomethane	U	0.00	0.300	10.0	ug/L	1					
74-95-3											
Dichlorodifluoromethane	U	0.00	0.300	10.0	ug/L	1					
75-71-8											
Ethyl methacrylate	U	0.00	3.00	10.0	ug/L	1					
97-63-2											
Ethylbenzene	U	0.00	0.300	5.00	ug/L	1					
100-41-4											
Iodomethane	U	0.00	3.00	10.0	ug/L	1					
74-88-4											
Isobutyl alcohol	U	0.00	33.0	500	ug/L	1					
78-83-1											
Methacrylonitrile	U	0.00	3.00	10.0	ug/L	1					
126-98-7											
Methylene chloride	U	0.00	1.60	5.00	ug/L	1					
75-09-2											
Styrene	U	0.00	0.300	5.00	ug/L	1					
100-42-5											
Tetrachloroethylene	U	0.00	0.300	5.00	ug/L	1					
127-18-4											

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 S15-001**

Report Date: February 18, 2015

Client Sample ID: B30195 Project: CPRC0S15001
 Sample ID: 365992007 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Volatile Organics											
<i>8260_VOA_GCMS_IX: COMMON "As Received"</i>											
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 acetate	U	0.00	1.60	50.0	ug/L	1					
108-05-4											
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-1,3-Dichloropropylene	U	0.00	0.300	5.00	ug/L	1					
10061-01-5											
trans-1,2-Dichloroethylene	U	0.00	0.300	5.00	ug/L	1					
156-60-5											
trans-1,3-Dichloropropylene	U	0.00	0.300	5.00	ug/L	1					
10061-02-6											
trans-1,4-Dichloro-2-butene	U	0.00	1.50	50.0	ug/L	1					
110-57-6											

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	8260_VOA_GCMS_IX: COMMON "As Received"	50.5 ug/L	50.0	101	(77%-123%)
Bromofluorobenzene	8260_VOA_GCMS_IX: COMMON "As Received"	52.8 ug/L	50.0	106	(80%-120%)
Toluene-d8	8260_VOA_GCMS_IX: COMMON "As Received"	45.8 ug/L	50.0	91.5	(80%-120%)

Quality Control Summary

February 25, 2015
GEL LABORATORIES LLC

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QC Summary

Report Date: February 18, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365992

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS										
Batch	1454155									
QC1203254812 LCS										
1,1,1,2-Tetrachloroethane	50.0		50.3	ug/L		101	(70%-130%)	CDS1	01/30/15	07:03
1,1,1-Trichloroethane	50.0		52.4	ug/L		105	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0		49.5	ug/L		99	(70%-130%)			
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%)			
1,2,3-Trichloropropane	50.0		48.2	ug/L		96.3	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0		54.4	ug/L		109	(70%-130%)			
1,2-Dibromoethane	50.0		50.6	ug/L		101	(70%-130%)			
1,2-Dichloroethane	50.0		47.4	ug/L		94.7	(70%-130%)			
1,2-Dichloropropane	50.0		50.2	ug/L		100	(70%-130%)			
2-Butanone	250		283	ug/L		113	(70%-130%)			
2-Hexanone	250		294	ug/L		117	(70%-130%)			
4-Methyl-2-pentanone	250		270	ug/L		108	(70%-130%)			
Acetone	250		290	ug/L		116	(70%-130%)			
Acetonitrile	1250		1270	ug/L		102	(70%-130%)			
Benzene	50.0		49.8	ug/L		99.5	(70%-130%)			
Bromoform	50.0		53.9	ug/L		108	(70%-130%)			
Carbon disulfide	250		263	ug/L		105	(70%-130%)			
Carbon tetrachloride	50.0		52.1	ug/L		104	(70%-130%)			

February 25, 2015
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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Chlorobenzene	50.0			49.0	ug/L		98	(70%-130%)	CDS1	01/30/15	07:03
Chloroethane	50.0			41.4	ug/L		82.7	(70%-130%)			
Chloroform	50.0			48.8	ug/L		97.5	(70%-130%)			
Dibromochloromethane	50.0			54.2	ug/L		108	(70%-130%)			
Dibromomethane	50.0			49.1	ug/L		98.3	(70%-130%)			
Dichlorodifluoromethane	50.0			43.0	ug/L		86	(70%-130%)			
Ethylbenzene	50.0			51.7	ug/L		103	(70%-130%)			
Iodomethane	250			249	ug/L		99.6	(70%-130%)			
Methylene chloride	50.0			45.1	ug/L		90.2	(70%-130%)			
Styrene	50.0			55.1	ug/L		110	(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 acetate	250			239	ug/L		95.6	(70%-130%)			
Vinyl chloride	50.0			43.2	ug/L		86.5	(70%-130%)			
Xylenes (total)	150			154	ug/L		103	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			52.5	ug/L		105	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			50.2	ug/L		100	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			52.2	ug/L		104	(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%)			

February 25, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
**Toluene-d8	50.0			49.2	ug/L		98.4	(80%-120%)			
QC1203254813 LCS											
2-Chloro-1,3-butadiene	50.0			54.2	ug/L		108	(70%-130%)	CDS1	01/30/15	08:38
Acrolein	250			252	ug/L		101	(70%-130%)			
Acrylonitrile	250			224	ug/L		89.7	(70%-130%)			
Allyl chloride	250			229	ug/L		91.7	(70%-130%)			
Ethyl methacrylate	250			241	ug/L		96.6	(70%-130%)			
Isobutyl alcohol	2500			2490	ug/L		99.4	(70%-130%)			
Methacrylonitrile	250			232	ug/L		92.6	(70%-130%)			
trans-1,4-Dichloro-2-butene	250			236	ug/L		94.5	(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											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					01/30/15	10:08
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
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						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
1,2-Dichloropropane			U	0.300	ug/L				CDS1	01/30/15	10:08
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L				CDS1	01/30/15	10:08
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	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											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	53.5	ug/L		107	(70%-130%)		01/30/15	16:42
1,1,1-Trichloroethane	50.0	U	0.00	55.3	ug/L		111	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	53.0	ug/L		106	(70%-130%)			

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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%)			
1,2,3-Trichloropropane	50.0	U	0.00	51.9	ug/L		104	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	58.1	ug/L		116	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	55.4	ug/L		111	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	53.3	ug/L		107	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	54.8	ug/L		110	(70%-130%)			
2-Butanone	250	TU	0.00	176	ug/L		70.6	(70%-130%)			
2-Hexanone	250	U	0.00	212	ug/L		84.8	(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%)			
Acetonitrile	1250	U	0.00	1400	ug/L		112	(70%-130%)			
Benzene	50.0	U	0.00	53.2	ug/L		106	(70%-130%)			
Bromoform	50.0	U	0.00	58.1	ug/L		116	(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%)			
Chloroethane	50.0	U	0.00	49.6	ug/L		99.1	(70%-130%)			
Chloroform	50.0	U	0.00	53.9	ug/L		108	(70%-130%)			
Dibromochloromethane	50.0	U	0.00	58.5	ug/L		117	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Dibromomethane	50.0	U	0.00	55.1	ug/L		110	(70%-130%)			
Dichlorodifluoromethane	50.0	U	0.00	55.4	ug/L		111	(70%-130%)	CDS1	01/30/15	16:42
Ethylbenzene	50.0	U	0.00	54.8	ug/L		110	(70%-130%)			
Iodomethane	250	U	0.00	275	ug/L		110	(70%-130%)			
Methylene chloride	50.0	U	0.00	49.1	ug/L		98.2	(70%-130%)			
Styrene	50.0	U	0.00	60.5	ug/L		121	(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 acetate	250	U	0.00	252	ug/L		101	(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-1,3-Dichloropropylene	50.0	U	0.00	56.7	ug/L		113	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	54.9	ug/L		110	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	56.3	ug/L		113	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		50.5	50.5	ug/L		101	(77%-123%)			
**Bromofluorobenzene	50.0		52.8	49.8	ug/L		99.7	(80%-120%)			
**Toluene-d8	50.0		45.8	47.6	ug/L		95.3	(80%-120%)			
QC1203254816 365992007 PS											
2-Chloro-1,3-butadiene	50.0	U	0.00	56.6	ug/L		113	(70%-130%)		01/30/15	17:42
Acrolein	250	U	0.00	297	ug/L		119	(70%-130%)			
Acrylonitrile	250	U	0.00	238	ug/L		95.2	(70%-130%)			
Allyl chloride	250	U	0.00	250	ug/L		99.9	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Ethyl methacrylate	250	U	0.00	260	ug/L		104	(70%-130%)	CDS1	01/30/15	17:42
Isobutyl alcohol	2500	U	0.00	2680	ug/L		107	(70%-130%)			
Methacrylonitrile	250	U	0.00	247	ug/L		99	(70%-130%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	255	ug/L		102	(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											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	52.2	ug/L	2.38	104	(0%-20%)		01/30/15	17:12
1,1,1-Trichloroethane	50.0	U	0.00	55.6	ug/L	0.631	111	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	51.9	ug/L	2.19	104	(0%-20%)			
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%)			
1,2,3-Trichloropropane	50.0	U	0.00	51.5	ug/L	0.890	103	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	56.5	ug/L	2.86	113	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00	54.0	ug/L	2.67	108	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	53.1	ug/L	0.226	106	(0%-20%)			
1,2-Dichloropropane	50.0	U	0.00	53.4	ug/L	2.53	107	(0%-20%)			
2-Butanone	250	TU	0.00	T 163	ug/L	7.98	65.1 *	(0%-20%)			
2-Hexanone	250	U	0.00	198	ug/L	6.62	79.3	(0%-20%)			
4-Methyl-2-pentanone	250	U	0.00	249	ug/L	5.03	99.5	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Acetone	250	TU	0.00	T	120	ug/L	4.78	47.8*	(0%-20%)	CDS1	01/30/15 17:12
Acetonitrile	1250	U	0.00		1300	ug/L	7.51	104	(0%-20%)		
Benzene	50.0	U	0.00		52.0	ug/L	2.19	104	(0%-20%)		
Bromoform	50.0	U	0.00		57.5	ug/L	1.16	115	(0%-20%)		
Carbon disulfide	250	U	0.00		272	ug/L	4.30	109	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		56.0	ug/L	0.465	112	(0%-20%)		
Chlorobenzene	50.0	U	0.00		51.5	ug/L	2.42	103	(0%-20%)		
Chloroethane	50.0	U	0.00		51.4	ug/L	3.68	103	(0%-20%)		
Chloroform	50.0	U	0.00		53.4	ug/L	0.802	107	(0%-20%)		
Dibromochloromethane	50.0	U	0.00		57.9	ug/L	1.08	116	(0%-20%)		
Dibromomethane	50.0	U	0.00		53.7	ug/L	2.58	107	(0%-20%)		
Dichlorodifluoromethane	50.0	U	0.00		56.5	ug/L	2.11	113	(0%-20%)		
Ethylbenzene	50.0	U	0.00		53.1	ug/L	3.13	106	(0%-20%)		
Iodomethane	250	U	0.00		270	ug/L	1.95	108	(0%-20%)		
Methylene chloride	50.0	U	0.00		48.4	ug/L	1.37	96.9	(0%-20%)		
Styrene	50.0	U	0.00		58.0	ug/L	4.12	116	(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 acetate	250	U	0.00		242	ug/L	4.03	96.8	(0%-20%)		
Vinyl chloride	50.0	U	0.00		54.8	ug/L	0.677	110	(0%-20%)		

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1454155										
Xylenes (total)	150	U	0.00	158	ug/L	3.85	105	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	55.9	ug/L	1.39	112	(0%-20%)	CDS1	01/30/15	17:12
trans-1,2-Dichloroethylene	50.0	U	0.00	53.3	ug/L	2.88	107	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	55.1	ug/L	2.19	110	(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											
2-Chloro-1,3-butadiene	50.0	U	0.00	55.9	ug/L	1.25	112	(0%-20%)		01/30/15	18:12
Acrolein	250	U	0.00	308	ug/L	3.56	123	(0%-20%)			
Acrylonitrile	250	U	0.00	245	ug/L	2.78	97.9	(0%-20%)			
Allyl chloride	250	U	0.00	245	ug/L	1.97	98	(0%-20%)			
Ethyl methacrylate	250	U	0.00	260	ug/L	0.123	104	(0%-20%)			
Isobutyl alcohol	2500	U	0.00	2820	ug/L	4.99	113	(0%-20%)			
Methacrylonitrile	250	U	0.00	252	ug/L	1.89	101	(0%-20%)			
trans-1,4-Dichloro-2-butene	250	U	0.00	258	ug/L	1.22	103	(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:

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

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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 25, 2015

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL365992

Work Order #: 365992

Sample ID	Client ID
365992003	B30017
365992004	B30020
365992005	B302B4
365992006	B302B3
365992007	B30195
365992008	B30197
1203254314	Method Blank (MB)ICP
1203254315	Laboratory Control Sample (LCS)
1203254318	365992003(B30017L) Serial Dilution (SD)
1203254316	365992003(B30017S) Matrix Spike (MS)
1203254317	365992003(B30017SD) Matrix Spike Duplicate (MSD)
1203269513	365992003(B30017PS) Post Spike (PS)
1203254288	Method Blank (MB)ICP-MS
1203254289	Laboratory Control Sample (LCS)
1203254292	365992003(B30017L) Serial Dilution (SD)
1203254290	365992003(B30017S) Matrix Spike (MS)
1203254291	365992003(B30017SD) Matrix Spike Duplicate (MSD)

Sample Analysis

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

Method/Analysis Information

Analytical Batch:	1453962 and 1453952
Prep Batch :	1453961 and 1453951
Standard Operating Procedures:	GL-MA-E-013 REV# 23, GL-MA-E-006 REV# 11 and GL-MA-E-014 REV# 25
Analytical Method:	SW846 3005A/6010C and SW846 3005A/6020A
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.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

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 samples were selected as the quality control (QC) samples for this SDG: 365992003 (B30017)-ICP and ICP-MS.

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 MS (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analytes.

Sample	Analyte	Value
1203254316 (B30017MS)	Sodium	131* (75%-125%)

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.

Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203269513 (B30017PS)	Sodium	66.2* (80%-120%)

Serial Dilution % Difference Statement

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 (DER) was generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: 1384726. 1203254316 (B30017MS) and 1203269513 (B30017PS)-ICP.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

February 25, 2015

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 25, 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: GEL365992 GEL Work Order: 365992

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

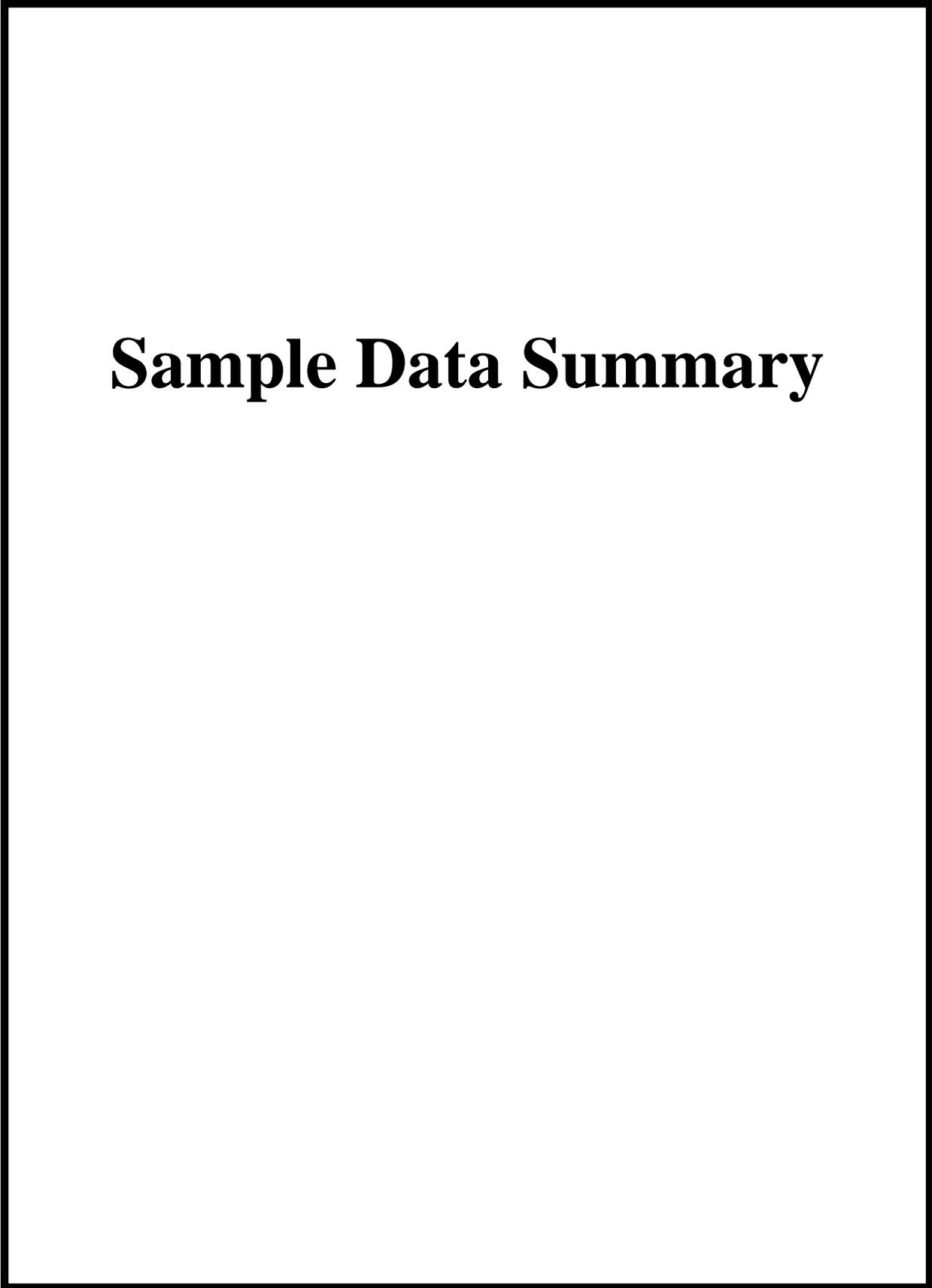
The following data validator verified the information presented in this data report:

Signature: 

Name: Nik-Cole Elmore

Date: 25 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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B30017	Project:	CPRC0S15001
Sample ID:	365992003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 09:08		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		91200	+/-18200	50.0	200	ug/L	1	HSC	02/09/15	1544	1453962 1
7440-70-2											
Iron	U	7.21	+/-10.1	30.0	100	ug/L	1				
7439-89-6											
Magnesium		22600	+/-4530	110	300	ug/L	1				
7439-95-4											
Potassium		4440	+/-887	50.0	150	ug/L	1				
7440-09-7											
Sodium	N	14100	+/-2820	100	300	ug/L	1				
7440-23-5											
Vanadium	B	4.87	+/-1.03	1.00	5.00	ug/L	1				
7440-62-2											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	3.96	+/-5.06	15.0	50.0	ug/L	1	PRB	02/20/15	1817	1453952 2
7429-90-5											
Arsenic	U	1.17	+/-0.613	1.70	5.00	ug/L	1				
7440-38-2											
Barium		80.7	+/-16.1	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.009	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Cadmium	U	0.018	+/-0.0368	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		401	+/-80.3	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	U	0.057	+/-0.0352	0.100	4.00	ug/L	1				
7440-48-4											
Copper	B	3.03	+/-0.616	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.069	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	U	0.070	+/-0.334	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	B	1.35	+/-0.317	0.500	2.00	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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B30017 Project: CPRC0S15001
 Sample ID: 365992003 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0 Selenium	B	2.48	+/-0.705	1.50	5.00	ug/L	1				
7782-49-2 Silver	U	0.008	+/-0.0667	0.200	2.00	ug/L	1				
7440-22-4 Strontium		563	+/-113	2.00	10.0	ug/L	1				
7440-24-6 Thallium	U	0.108	+/-0.152	0.450	2.00	ug/L	1				
7440-28-0 Zinc	B	3.78	+/-1.39	3.50	10.0	ug/L	1				
7440-66-6 Molybdenum	B	1.28	+/-0.261	0.165	20.0	ug/L	1	BAJ	02/23/15	1443	1453952 3
7439-98-7 Uranium		2.23	+/-0.447	0.067	0.200	ug/L	1				
7440-61-1 Thorium	U	0.109	+/-0.130	0.383	2.00	ug/L	1	BAJ	02/25/15	0856	1453952 4
7440-29-1 Antimony	U	0.618	+/-0.356	1.00	5.00	ug/L	1	PRB	02/24/15	1909	1453952 5
7440-36-0 Boron		93.2	+/-18.7	4.00	15.0	ug/L	1				
7440-42-8 Tin	U	0.292	+/-0.338	1.00	5.00	ug/L	1				
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B30020	Project:	CPRC0S15001
Sample ID:	365992004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 09:08		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		95000	+/-19000	50.0	200	ug/L	1	HSC	02/09/15	1602	1453962 1
7440-70-2											
Iron	U	-0.217	+/-10.0	30.0	100	ug/L	1				
7439-89-6											
Magnesium		23700	+/-4750	110	300	ug/L	1				
7439-95-4											
Potassium		4590	+/-919	50.0	150	ug/L	1				
7440-09-7											
Sodium	N	14800	+/-2970	100	300	ug/L	1				
7440-23-5											
Vanadium	B	4.97	+/-1.05	1.00	5.00	ug/L	1				
7440-62-2											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	3.56	+/-5.05	15.0	50.0	ug/L	1	PRB	02/20/15	1841	1453952 2
7429-90-5											
Arsenic	U	1.33	+/-0.626	1.70	5.00	ug/L	1				
7440-38-2											
Barium		78.7	+/-15.7	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.00	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Cadmium	U	0.014	+/-0.0368	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		392	+/-78.4	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	B	0.130	+/-0.0423	0.100	4.00	ug/L	1				
7440-48-4											
Copper		42.0	+/-8.41	0.350	8.00	ug/L	1				
7440-50-8											
Lead	B	0.729	+/-0.221	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	U	0.115	+/-0.334	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	B	1.30	+/-0.309	0.500	2.00	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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B30020 Project: CPRC0S15001
 Sample ID: 365992004 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0											
Selenium	B	1.65	+/-0.599	1.50	5.00	ug/L					
7782-49-2											
Silver	U	-0.002	+/-0.0667	0.200	2.00	ug/L					
7440-22-4											
Strontium		546	+/-109	2.00	10.0	ug/L					
7440-24-6											
Thallium	U	0.059	+/-0.150	0.450	2.00	ug/L					
7440-28-0											
Zinc	B	3.50	+/-1.36	3.50	10.0	ug/L					
7440-66-6											
Molybdenum	B	1.20	+/-0.247	0.165	20.0	ug/L	1	BAJ	02/23/15	1456	1453952 3
7439-98-7											
Uranium		2.18	+/-0.437	0.067	0.200	ug/L					
7440-61-1											
Thorium	U	0.037	+/-0.128	0.383	2.00	ug/L	1	BAJ	02/25/15	0906	1453952 4
7440-29-1											
Antimony	U	0.389	+/-0.342	1.00	5.00	ug/L	1	PRB	02/24/15	1925	1453952 5
7440-36-0											
Boron		97.3	+/-19.5	4.00	15.0	ug/L					
7440-42-8											
Tin	U	0.340	+/-0.340	1.00	5.00	ug/L					
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

~~February 25, 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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B302B4	Project:	CPRC0S15001
Sample ID:	365992005	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 12:24		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		82100	+/-16400	50.0	200	ug/L	1	HSC	02/09/15	1606	1453962 1
7440-70-2											
Iron		263	+/-53.5	30.0	100	ug/L	1				
7439-89-6											
Magnesium		22900	+/-4580	110	300	ug/L	1				
7439-95-4											
Potassium		6260	+/-1250	50.0	150	ug/L	1				
7440-09-7											
Sodium	N	42300	+/-8460	100	300	ug/L	1				
7440-23-5											
Vanadium		12.9	+/-2.60	1.00	5.00	ug/L	1				
7440-62-2											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	7.02	+/-5.19	15.0	50.0	ug/L	1	PRB	02/20/15	1844	1453952 2
7429-90-5											
Arsenic		2.22	+/-0.720	1.70	5.00	ug/L	1				
7440-38-2											
Barium		112	+/-22.4	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.010	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Cadmium	U	0.015	+/-0.0368	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		124	+/-24.8	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	B	0.593	+/-0.123	0.100	4.00	ug/L	1				
7440-48-4											
Copper	B	1.76	+/-0.371	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.052	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese		8.69	+/-1.77	1.00	5.00	ug/L	1				
7439-96-5											
Nickel		29.4	+/-5.88	0.500	2.00	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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B302B4 Project: CPRC0S15001
 Sample ID: 365992005 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0 Selenium	U	1.11	+/-0.547	1.50	5.00	ug/L	1				
7782-49-2 Silver	U	0.005	+/-0.0667	0.200	2.00	ug/L	1				
7440-22-4 Strontium		583	+/-117	2.00	10.0	ug/L	1				
7440-24-6 Thallium	U	0.029	+/-0.150	0.450	2.00	ug/L	1				
7440-28-0 Zinc	B	4.05	+/-1.42	3.50	10.0	ug/L	1				
7440-66-6 Molybdenum	B	1.91	+/-0.386	0.165	20.0	ug/L	1	BAJ	02/23/15	1457	1453952 3
7439-98-7 Uranium		1.42	+/-0.285	0.067	0.200	ug/L	1				
7440-61-1 Thorium	U	0.046	+/-0.128	0.383	2.00	ug/L	1	BAJ	02/25/15	0908	1453952 4
7440-29-1 Antimony	U	0.277	+/-0.338	1.00	5.00	ug/L	1	PRB	02/24/15	1926	1453952 5
7440-36-0 Boron		32.8	+/-6.69	4.00	15.0	ug/L	1				
7440-42-8 Tin	U	0.237	+/-0.337	1.00	5.00	ug/L	1				
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B302B3	Project:	CPRC0S15001
Sample ID:	365992006	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 12:24		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		83500	+/-16700	50.0	200	ug/L	1	HSC	02/09/15	1609	1453962 1
7440-70-2											
Iron	U	6.04	+/-10.1	30.0	100	ug/L	1				
7439-89-6											
Magnesium		23100	+/-4620	110	300	ug/L	1				
7439-95-4											
Potassium		6380	+/-1280	50.0	150	ug/L	1				
7440-09-7											
Sodium	N	41200	+/-8240	100	300	ug/L	1				
7440-23-5											
Vanadium		12.6	+/-2.54	1.00	5.00	ug/L	1				
7440-62-2											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	2.96	+/-5.03	15.0	50.0	ug/L	1	PRB	02/20/15	1846	1453952 2
7429-90-5											
Arsenic		2.34	+/-0.735	1.70	5.00	ug/L	1				
7440-38-2											
Barium		111	+/-22.1	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.010	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Cadmium	U	0.020	+/-0.0369	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		68.3	+/-13.7	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	B	0.130	+/-0.0423	0.100	4.00	ug/L	1				
7440-48-4											
Copper	B	0.729	+/-0.187	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.030	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	B	2.36	+/-0.578	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	B	1.49	+/-0.342	0.500	2.00	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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B302B3 Project: CPRC0S15001
 Sample ID: 365992006 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0 Selenium	B	1.62	+/-0.596	1.50	5.00	ug/L	1				
7782-49-2 Silver	U	0.00	+/-0.0667	0.200	2.00	ug/L	1				
7440-22-4 Strontium		572	+/-114	2.00	10.0	ug/L	1				
7440-24-6 Thallium	U	0.007	+/-0.150	0.450	2.00	ug/L	1				
7440-28-0 Zinc		15.6	+/-3.33	3.50	10.0	ug/L	1				
7440-66-6 Molybdenum	B	0.449	+/-0.105	0.165	20.0	ug/L	1	BAJ	02/23/15	1459	1453952 3
7439-98-7 Uranium		1.39	+/-0.278	0.067	0.200	ug/L	1				
7440-61-1 Thorium	U	0.013	+/-0.128	0.383	2.00	ug/L	1	BAJ	02/25/15	0909	1453952 4
7440-29-1 Antimony	U	0.307	+/-0.339	1.00	5.00	ug/L	1	PRB	02/24/15	1928	1453952 5
7440-36-0 Boron		31.0	+/-6.35	4.00	15.0	ug/L	1				
7440-42-8 Tin	U	0.125	+/-0.334	1.00	5.00	ug/L	1				
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B30195	Project:	CPRC0S15001
Sample ID:	365992007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 11:37		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		9870	+/-1970	50.0	200	ug/L	1	HSC	02/09/15	1612	1453962 1
7440-70-2											
Iron		297	+/-60.2	30.0	100	ug/L	1				
7439-89-6											
Magnesium		1240	+/-250	110	300	ug/L	1				
7439-95-4											
Potassium		6140	+/-1230	50.0	150	ug/L	1				
7440-09-7											
Sodium	N	62800	+/-12600	100	300	ug/L	1				
7440-23-5											
Vanadium	U	0.378	+/-0.342	1.00	5.00	ug/L	1				
7440-62-2											
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Aluminum	U	10.1	+/-5.39	15.0	50.0	ug/L	1	PRB	02/20/15	1849	1453952 2
7429-90-5											
Arsenic		9.49	+/-1.98	1.70	5.00	ug/L	1				
7440-38-2											
Barium		30.9	+/-6.18	0.600	5.00	ug/L	1				
7440-39-3											
Beryllium	U	0.005	+/-0.0667	0.200	2.00	ug/L	1				
7440-41-7											
Cadmium	U	0.019	+/-0.0369	0.110	2.00	ug/L	1				
7440-43-9											
Chromium	U	0.191	+/-0.668	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	U	0.042	+/-0.0344	0.100	4.00	ug/L	1				
7440-48-4											
Copper	B	7.58	+/-1.52	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.129	+/-0.169	0.500	2.00	ug/L	1				
7439-92-1											
Manganese		14.4	+/-2.89	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	U	0.327	+/-0.179	0.500	2.00	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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B30195 Project: CPRC0S15001
 Sample ID: 365992007 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0 Selenium	U	-0.275	+/-0.503	1.50	5.00	ug/L	1				
7782-49-2 Silver	U	0.004	+/-0.0667	0.200	2.00	ug/L	1				
7440-22-4 Strontium		77.3	+/-15.5	2.00	10.0	ug/L	1				
7440-24-6 Thallium	U	0.001	+/-0.150	0.450	2.00	ug/L	1				
7440-28-0 Zinc	B	6.70	+/-1.78	3.50	10.0	ug/L	1				
7440-66-6 Molybdenum	B	10.0	+/-2.01	0.165	20.0	ug/L	1	BAJ	02/23/15	1500	1453952 3
7439-98-7 Uranium	U	0.037	+/-0.0235	0.067	0.200	ug/L	1				
7440-61-1 Thorium	U	0.020	+/-0.128	0.383	2.00	ug/L	1	BAJ	02/25/15	0911	1453952 4
7440-29-1 Antimony	U	0.123	+/-0.334	1.00	5.00	ug/L	1	PRB	02/24/15	1930	1453952 5
7440-36-0 Boron		76.4	+/-15.3	4.00	15.0	ug/L	1				
7440-42-8 Tin	U	0.201	+/-0.336	1.00	5.00	ug/L	1				
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

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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 S15-001**

Report Date: February 25, 2015

Client Sample ID:	B30197	Project:	CPRC0S15001
Sample ID:	365992008	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 11:37		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP												
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>												
Calcium		9970	+/-1990	50.0	200	ug/L	1	HSC	02/09/15	1615	1453962	1
7440-70-2												
Iron	B	56.3	+/-15.1	30.0	100	ug/L	1					
7439-89-6												
Magnesium		1240	+/-250	110	300	ug/L	1					
7439-95-4												
Potassium		6220	+/-1240	50.0	150	ug/L	1					
7440-09-7												
Sodium	N	63200	+/-12600	100	300	ug/L	1					
7440-23-5												
Vanadium	U	0.318	+/-0.339	1.00	5.00	ug/L	1					
7440-62-2												
Metals Analysis-ICP-MS												
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>												
Aluminum	U	5.89	+/-5.14	15.0	50.0	ug/L	1	PRB	02/20/15	1852	1453952	2
7429-90-5												
Arsenic		9.68	+/-2.02	1.70	5.00	ug/L	1					
7440-38-2												
Barium		28.2	+/-5.64	0.600	5.00	ug/L	1					
7440-39-3												
Beryllium	U	0.00	+/-0.0667	0.200	2.00	ug/L	1					
7440-41-7												
Cadmium	U	0.019	+/-0.0369	0.110	2.00	ug/L	1					
7440-43-9												
Chromium	U	0.144	+/-0.667	2.00	10.0	ug/L	1					
7440-47-3												
Cobalt	B	0.271	+/-0.0636	0.100	4.00	ug/L	1					
7440-48-4												
Copper	U	0.273	+/-0.129	0.350	8.00	ug/L	1					
7440-50-8												
Lead	U	0.034	+/-0.167	0.500	2.00	ug/L	1					
7439-92-1												
Manganese		11.9	+/-2.41	1.00	5.00	ug/L	1					
7439-96-5												
Nickel	U	0.224	+/-0.173	0.500	2.00	ug/L	1					

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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 S15-001**

Report Date: February 25, 2015

Client Sample ID: B30197 Project: CPRC0S15001
 Sample ID: 365992008 Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Metals Analysis-ICP-MS											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-02-0											
Selenium	U	-0.411	+/-0.507	1.50	5.00	ug/L					
7782-49-2											
Silver	U	0.001	+/-0.0667	0.200	2.00	ug/L					
7440-22-4											
Strontium		74.6	+/-14.9	2.00	10.0	ug/L					
7440-24-6											
Thallium	U	0.002	+/-0.150	0.450	2.00	ug/L					
7440-28-0											
Zinc	U	1.79	+/-1.22	3.50	10.0	ug/L					
7440-66-6											
Molybdenum	B	10.0	+/-2.00	0.165	20.0	ug/L	1	BAJ	02/23/15	1502	1453952 3
7439-98-7											
Uranium	U	0.034	+/-0.0233	0.067	0.200	ug/L					
7440-61-1											
Thorium	U	0.010	+/-0.128	0.383	2.00	ug/L	1	BAJ	02/25/15	0912	1453952 4
7440-29-1											
Antimony	U	0.174	+/-0.335	1.00	5.00	ug/L	1	PRB	02/24/15	1932	1453952 5
7440-36-0											
Boron		75.8	+/-15.2	4.00	15.0	ug/L					
7440-42-8											
Tin	U	0.097	+/-0.334	1.00	5.00	ug/L					
7440-31-5											

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	JP1	01/29/15	1612	1453951
SW846 3005A	SW846 3005A for 6010C	JP1	01/29/15	1612	1453961

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3005A/6010C	
2	SW846 3005A/6020A	
3	SW846 3005A/6020A	
4	SW846 3005A/6020A	
5	SW846 3005A/6020A	

Quality Control Summary

February 25, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 25, 2015

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365992

Parmname	NOM	Sample Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS										
Batch	1453952									
QC1203254289	LCS									
Aluminum	2000		2030	ug/L		102	(80%-120%)	PRB	02/20/15	18:08
Antimony	50.0		46.6	ug/L		93.2	(80%-120%)		02/24/15	19:07
Arsenic	50.0		52.8	ug/L		106	(80%-120%)		02/20/15	18:08
Barium	50.0		49.7	ug/L		99.4	(80%-120%)			
Beryllium	50.0		59.0	ug/L		118	(80%-120%)			
Boron	100		108	ug/L		108	(80%-120%)		02/24/15	19:07
Cadmium	50.0		50.7	ug/L		101	(80%-120%)		02/20/15	18:08
Chromium	50.0		50.0	ug/L		100	(80%-120%)			
Cobalt	50.0		50.0	ug/L		99.9	(80%-120%)			
Copper	50.0		50.9	ug/L		102	(80%-120%)			
Lead	50.0		49.1	ug/L		98.2	(80%-120%)			
Manganese	50.0		50.0	ug/L		100	(80%-120%)			
Molybdenum	50.0		52.0	ug/L		104	(80%-120%)	BAJ	02/23/15	14:41
Nickel	50.0		50.7	ug/L		101	(80%-120%)	PRB	02/20/15	18:08
Selenium	50.0		52.2	ug/L		104	(80%-120%)			
Silver	50.0		50.2	ug/L		100	(80%-120%)			
Strontium	50.0		50.7	ug/L		101	(80%-120%)			
Thallium	50.0		45.3	ug/L		90.7	(80%-120%)			
Thorium	50.0		48.6	ug/L		97.3	(80%-120%)	BAJ	02/25/15	08:55
Tin	50.0		48.3	ug/L		96.5	(80%-120%)	PRB	02/24/15	19:07

February 25, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1453952										
Uranium	50.0			53.3	ug/L		107	(80%-120%)	BAJ	02/23/15	14:41
Zinc	50.0			51.8	ug/L		104	(80%-120%)	PRB	02/20/15	18:08
QC1203254288	MB										
Aluminum			U	ND	ug/L					02/20/15	18:05
Antimony			U	ND	ug/L					02/24/15	19:05
Arsenic			U	ND	ug/L					02/20/15	18:05
Barium			U	ND	ug/L						
Beryllium			U	ND	ug/L						
Boron			U	ND	ug/L					02/24/15	19:05
Cadmium			U	ND	ug/L					02/20/15	18:05
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Lead			U	ND	ug/L						
Manganese			U	ND	ug/L						
Molybdenum			U	ND	ug/L				BAJ	02/23/15	14:40
Nickel			U	ND	ug/L				PRB	02/20/15	18:05
Selenium			U	ND	ug/L						
Silver			U	ND	ug/L						
Strontium			U	ND	ug/L						
Thallium			U	ND	ug/L						
Thorium			U	ND	ug/L				BAJ	02/25/15	08:54

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GEL LABORATORIES LLC

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

QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1453952										
Tin			U	ND	ug/L				PRB	02/24/15	19:05
Uranium			U	ND	ug/L				BAJ	02/23/15	14:40
Zinc			U	ND	ug/L				PRB	02/20/15	18:05
QC1203254290 365992003 MS											
Aluminum	2000	U	ND	2030	ug/L		101	(75%-125%)		02/20/15	18:20
Antimony	50.0	U	ND	53.8	ug/L		106	(75%-125%)		02/24/15	19:11
Arsenic	50.0	U	ND	55.1	ug/L		108	(75%-125%)		02/20/15	18:20
Barium	50.0		80.7	130	ug/L		97.7	(75%-125%)			
Beryllium	50.0	U	ND	55.6	ug/L		111	(75%-125%)			
Boron	100		93.2	207	ug/L		114	(75%-125%)		02/24/15	19:11
Cadmium	50.0	U	ND	51.1	ug/L		102	(75%-125%)		02/20/15	18:20
Chromium	50.0		401	460	ug/L		N/A	(75%-125%)			
Cobalt	50.0	U	ND	51.5	ug/L		103	(75%-125%)			
Copper	50.0	B	3.03	53.4	ug/L		101	(75%-125%)			
Lead	50.0	U	ND	49.1	ug/L		98.1	(75%-125%)			
Manganese	50.0	U	ND	51.0	ug/L		102	(75%-125%)			
Molybdenum	50.0	B	1.28	54.8	ug/L		107	(75%-125%)	BAJ	02/23/15	14:45
Nickel	50.0	B	1.35	51.8	ug/L		101	(75%-125%)	PRB	02/20/15	18:20
Selenium	50.0	B	2.48	53.4	ug/L		102	(75%-125%)			
Silver	50.0	U	ND	49.2	ug/L		98.4	(75%-125%)			
Strontium	50.0		563	624	ug/L		N/A	(75%-125%)			
Thallium	50.0	U	ND	45.6	ug/L		91	(75%-125%)			

February 25, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1453952										
Thorium	50.0	U	ND	54.7	ug/L		109	(75%-125%)	BAJ	02/25/15	08:58
Tin	50.0	U	ND	56.1	ug/L		112	(75%-125%)	PRB	02/24/15	19:11
Uranium	50.0		2.23	55.4	ug/L		106	(75%-125%)	BAJ	02/23/15	14:45
Zinc	50.0	B	3.78	54.1	ug/L		101	(75%-125%)	PRB	02/20/15	18:20
QC1203254291 365992003 MSD											
Aluminum	2000	U	ND	2030	ug/L	0.180	101	(0%-20%)		02/20/15	18:23
Antimony	50.0	U	ND	53.8	ug/L	0.0576	106	(0%-20%)		02/24/15	19:13
Arsenic	50.0	U	ND	55.7	ug/L	1.21	109	(0%-20%)		02/20/15	18:23
Barium	50.0		80.7	129	ug/L	0.226	97.2	(0%-20%)			
Beryllium	50.0	U	ND	54.1	ug/L	2.87	108	(0%-20%)			
Boron	100		93.2	203	ug/L	2.03	110	(0%-20%)		02/24/15	19:13
Cadmium	50.0	U	ND	50.7	ug/L	0.753	101	(0%-20%)		02/20/15	18:23
Chromium	50.0		401	457	ug/L	0.793	N/A	(0%-20%)			
Cobalt	50.0	U	ND	50.4	ug/L	2.18	101	(0%-20%)			
Copper	50.0	B	3.03	52.9	ug/L	0.966	99.8	(0%-20%)			
Lead	50.0	U	ND	47.7	ug/L	2.98	95.2	(0%-20%)			
Manganese	50.0	U	ND	50.4	ug/L	1.18	101	(0%-20%)			
Molybdenum	50.0	B	1.28	55.7	ug/L	1.69	109	(0%-20%)	BAJ	02/23/15	14:46
Nickel	50.0	B	1.35	51.2	ug/L	1.34	99.6	(0%-20%)	PRB	02/20/15	18:23
Selenium	50.0	B	2.48	52.5	ug/L	1.74	100	(0%-20%)			
Silver	50.0	U	ND	49.4	ug/L	0.302	98.7	(0%-20%)			
Strontium	50.0		563	621	ug/L	0.554	N/A	(0%-20%)			

February 25, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1453952										
Thallium	50.0	U	ND	46.3	ug/L	1.48	92.3	(0%-20%)	PRB	02/20/15	18:23
Thorium	50.0	U	ND	56.3	ug/L	2.89	112	(0%-20%)	BAJ	02/25/15	08:59
Tin	50.0	U	ND	55.3	ug/L	1.47	110	(0%-20%)	PRB	02/24/15	19:13
Uranium	50.0		2.23	56.9	ug/L	2.59	109	(0%-20%)	BAJ	02/23/15	14:46
Zinc	50.0	B	3.78	53.2	ug/L	1.62	98.9	(0%-20%)	PRB	02/20/15	18:23
QC1203254292 365992003 SDILT											
Aluminum		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/20/15	18:29
Antimony		U	ND D	1.46	ug/L	N/A		(0%-10%)		02/24/15	19:17
Arsenic		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/20/15	18:29
Barium			80.7 D	15.9	ug/L	1.57		(0%-10%)			
Beryllium		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Boron			93.2 D	25.8	ug/L	38.5		(0%-10%)		02/24/15	19:17
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)		02/20/15	18:29
Chromium			401 D	80.4	ug/L	.104		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Copper		B	3.03 D	0.581	ug/L	3.97		(0%-10%)			
Lead		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Manganese		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Molybdenum		B	1.28 D	0.276	ug/L	8.15		(0%-10%)	BAJ	02/23/15	14:49
Nickel		B	1.35 DU	ND	ug/L	N/A		(0%-10%)	PRB	02/20/15	18:29
Selenium		B	2.48 DU	ND	ug/L	N/A		(0%-10%)			
Silver		U	ND DU	ND	ug/L	N/A		(0%-10%)			

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1453952										
Strontium		563	D	111	ug/L	1.82		(0%-10%)	PRB	02/20/15	18:29
Thallium	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Thorium	U	ND	DU	ND	ug/L	N/A		(0%-10%)	BAJ	02/25/15	09:01
Tin	U	ND	DU	ND	ug/L	N/A		(0%-10%)	PRB	02/24/15	19:17
Uranium		2.23	D	0.445	ug/L	.269		(0%-10%)	BAJ	02/23/15	14:49
Zinc	B	3.78	DU	ND	ug/L	N/A		(0%-10%)	PRB	02/20/15	18:29
Metals Analysis-ICP											
Batch	1453962										
QC1203254315	LCS										
Calcium	5000			5570	ug/L		111	(80%-120%)	HSC	02/09/15	15:41
Iron	5000			5620	ug/L		112	(80%-120%)			
Magnesium	5000			5690	ug/L		114	(80%-120%)			
Potassium	5000			5510	ug/L		110	(80%-120%)			
Sodium	5000			5550	ug/L		111	(80%-120%)			
Vanadium	500			563	ug/L		113	(80%-120%)			
QC1203254314	MB										
Calcium			U	ND	ug/L					02/09/15	15:38
Iron			U	ND	ug/L						
Magnesium			U	ND	ug/L						
Potassium			U	ND	ug/L						
Sodium			U	ND	ug/L						
Vanadium			U	ND	ug/L						
QC1203254316	365992003	MS									
Calcium	5000	91200		98700	ug/L		N/A	(75%-125%)		02/09/15	15:47

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1453962										
Iron	5000	U	ND	5720	ug/L		114	(75%-125%)			
Magnesium	5000		22600	29000	ug/L		N/A	(75%-125%)	HSC	02/09/15	15:47
Potassium	5000		4440	10100	ug/L		114	(75%-125%)			
Sodium	5000	N	14100	N 20700	ug/L		131 *	(75%-125%)			
Vanadium	500	B	4.87	578	ug/L		115	(75%-125%)			
QC1203254317 365992003 MSD											
Calcium	5000		91200	99900	ug/L	1.13	N/A	(0%-20%)		02/09/15	15:50
Iron	5000	U	ND	5610	ug/L	1.94	112	(0%-20%)			
Magnesium	5000		22600	28700	ug/L	0.866	N/A	(0%-20%)			
Potassium	5000		4440	10300	ug/L	1.38	116	(0%-20%)			
Sodium	5000	N	14100	20000	ug/L	3.62	117	(0%-20%)			
Vanadium	500	B	4.87	579	ug/L	0.251	115	(0%-20%)			
QC1203269513 365992003 PS											
Sodium	5000	N	14100	17400	ug/L		66.2 *	(80%-120%)		02/23/15	13:03
QC1203254318 365992003 SDILT											
Calcium			91200	D 18100	ug/L	.944		(0%-10%)		02/09/15	15:53
Iron		U	ND	DU ND	ug/L	N/A		(0%-10%)			
Magnesium			22600	D 4530	ug/L	.0287		(0%-10%)			
Potassium			4440	D 880	ug/L	.763		(0%-10%)			
Sodium		N	14100	D 2720	ug/L	3.79		(0%-10%)			
Vanadium		B	4.87	D 1.34	ug/L	38.1		(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

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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.

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 23-FEB-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ICP	Test / Method: SW846 3005A/6010C	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1453962	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 365992(GEL365992)</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. Failed Recovery for MS/MSD, or PS/PSD: QC 1203254316MS</p> <p>2. Failed Recovery for PS/PSD: QC 1203269513PS</p>		<p>1. The MS (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analytes. 1203254316 (B30017MS) Sodium [131* (75%-125%)].</p> <p>2. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences. 1203269513 (B30017PS) Sodium [66.2* (80%-120%)]. 1203269513 (B30017PS).</p>	

Originator's Name:

Helen Camello 23-FEB-15

Data Validator/Group Leader:

Theresa McKelvey 25-FEB-15

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365992
Work Order #: 365992**

Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1453914 **Method:** 9056_ANIONS_IC: COMMON and 9056_ANIONS_IC: COMMON + GW 02

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9056A:

Sample ID	Client ID
365992001	B30196
365992002	B30018
1203254175	Method Blank (MB)
1203254176	Laboratory Control Sample (LCS)
1203254177	365992002(B30018) Sample Duplicate (DUP)
1203254178	365992002(B30018) Post Spike (PS)

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-GC-E-086 REV# 23.

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.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 365992002 (B30018) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203254178 (B30018PS).

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

Samples 1203254177 (B30018DUP), 1203254178 (B30018PS) and 365992002 (B30018) were diluted because target analyte concentrations exceeded the calibration range. The following samples in this sample group were diluted due to matrix interference. 1203254177 (B30018DUP), 1203254178 (B30018PS) and 365992002 (B30018). Samples 1203254177 (B30018DUP), 1203254178 (B30018PS) and 365992002 (B30018) were diluted based on historical data.

Analyte	365992
	002
Chloride	10X
Nitrate	10X
Sulfate	10X

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

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

Manual Integrations

Samples 1203254177 (B30018DUP), 1203254178 (B30018PS), 365992001 (B30196) and 365992002 (B30018) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments

Additional comments were not required for this SDG.

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. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Alkalinity
Analytical Batch: 1454936 **Method:** 2320_ALKALINITY: GW 01

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SM 2320B:

Sample ID	Client ID
365992004	B30020
1203257029	Method Blank (MB)
1203257031	Laboratory Control Sample (LCS)
1203257033	365929002(B2YYW9) Sample Duplicate (DUP)
1203257035	365929002(B2YYW9) 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-GC-E-033 REV# 11.

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.

Calibration Information

The Titration and Ion analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 365929002 (B2YYW9) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

50mL of sample was used due to limited quantity. 1203257033 (B2YYW9DUP) and 1203257035 (B2YYW9MS).

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. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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 25, 2015

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365992 GEL Work Order: 365992

The Qualifiers in this report are defined as follows:

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

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: Thomas Lewis

Date: 24 FEB 2015

Title: Data Validator

Sample Data Summary

~~February 25, 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 S15-001**

Report Date: February 24, 2015

Client Sample ID:	B30196	Project:	CPRC0S15001
Sample ID:	365992001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 11:37		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
<i>9056_ANIONS_IC: COMMON "As Received"</i>										
Chloride 16887-00-6		2570	+/-88.4	67.0	200	ug/L	1	RXB5 01/29/15 2201	1453914	1
Fluoride 16984-48-8		901	+/-32.0	33.0	500	ug/L	1			
Nitrate-N 14797-55-8	U	0.00	+/-11.0	33.0	250	ug/L	1			
Nitrite-N 14797-65-0	U	0.00	+/-12.7	38.0	250	ug/L	1			
Sulfate 14808-79-8	B	215	+/-44.9	133	500	ug/L	1			

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9056A	

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 S15-001**

Report Date: February 24, 2015

Client Sample ID:	B30018	Project:	CPRC0S15001
Sample ID:	365992002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 09:08		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Ion Chromatography										
<i>9056_ANIONS_IC: COMMON + GW 02 "As Received"</i>										
Bromide 24959-67-9	B	206	+/-23.4	67.0	250	ug/L	1	RXB5 01/29/15 2231	1453914	1
Fluoride 16984-48-8	B	82.6	+/-11.3	33.0	500	ug/L	1			
Nitrite-N 14797-65-0	U	0.00	+/-12.7	38.0	250	ug/L	1			
Phosphorus in phosphate PO4-P	U	52.5	+/-22.4	67.0	500	ug/L	1			
Chloride 16887-00-6	D	16200	+/-584	670	2000	ug/L	10	RXB5 01/30/15 0035	1453914	2
Nitrate-N 14797-55-8	D	7000	+/-258	330	1000	ug/L	10			
Sulfate 14808-79-8	D	191000	+/-6390	1330	4000	ug/L	10			

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 9056A	

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 S15-001**

Report Date: February 24, 2015

Client Sample ID:	B30020	Project:	CPRC0S15001
Sample ID:	365992004	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15 09:08		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Titration and Ion Analysis										
<i>2320_ALKALINITY: GW 01 "As Received"</i>										
Alkalinity, Total as CaCO3		86500	725	1000	ug/L		PX01 02/04/15	1140	1454936	1
ALKALINITY										
Bicarbonate alkalinity (CaCO3)		86500	725	1000	ug/L					
71-52-3										
Carbonate alkalinity (CaCO3)	U	0.00	725	1000	ug/L					
CO3ALKALINITY										
Hydroxide alkalinity as CaCO3	U	0.00	725	1000	ug/L					
84625-61-6										

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SM 2320B	

Quality Control Summary

February 25, 2015
GEL LABORATORIES LLC

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QC Summary

Report Date: February 24, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365992

<u>Parmname</u>	<u>NOM</u>	<u>Sample</u>	<u>Qual</u>	<u>QC</u>	<u>Units</u>	<u>RPD%</u>	<u>REC%</u>	<u>Range</u>	<u>Anlst</u>	<u>Date</u>	<u>Time</u>
Ion Chromatography											
Batch	1453914										
QC1203254177 365992002 DUP											
Bromide	B	206	B	192	ug/L	7.08 ^		(+/-250)	RXB5	01/29/15	23:02
Chloride	D	16200	D	16300	ug/L	0.610		(0%-20%)		01/30/15	01:06
Fluoride	B	82.6	B	85.9	ug/L	3.92 ^		(+/-500)		01/29/15	23:02
Nitrate-N	D	7000	D	6980	ug/L	0.229		(0%-20%)		01/30/15	01:06
Nitrite-N	U	38.0	U	38.0	ug/L	N/A				01/29/15	23:02
Phosphorus in phosphate	U	67.0	U	67.0	ug/L	N/A					
Sulfate	D	191000	D	191000	ug/L	0.0951		(0%-20%)		01/30/15	01:06
QC1203254176 LCS											
Bromide		1250		1260	ug/L		101	(90%-110%)		01/30/15	02:40
Chloride		5000		4650	ug/L		93	(90%-110%)			
Fluoride		2500		2400	ug/L		95.9	(90%-110%)			
Nitrate-N		2500		2410	ug/L		96.3	(90%-110%)			
Nitrite-N		2500		2450	ug/L		98	(90%-110%)			
Phosphorus in phosphate		1250		1360	ug/L		109	(90%-110%)			
Sulfate		10000		9790	ug/L		97.9	(90%-110%)			
QC1203254175 MB											
Bromide			U	67.0	ug/L					01/30/15	02:09
Chloride			U	67.0	ug/L						
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	38.0	ug/L						

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1453914										
Phosphorus in phosphate			U	67.0	ug/L				RXB5	01/30/15	02:09
Sulfate			U	133	ug/L						
QC1203254178	365992002	PS									
Bromide	1.25	B	0.206	1.49	mg/L		102	(90%-110%)		01/29/15	23:33
Chloride	5.00	D	1.62	D	6.72	mg/L	102	(90%-110%)		01/30/15	01:38
Fluoride	2.50	B	0.0826	2.51	mg/L		96.9	(90%-110%)		01/29/15	23:33
Nitrate-N	2.50	D	0.700	D	3.28	mg/L	103	(90%-110%)		01/30/15	01:38
Nitrite-N	2.50	U	0.00	2.56	mg/L		102	(90%-110%)		01/29/15	23:33
Phosphorus in phosphate	1.25	U	0.0525	1.23	mg/L		94.6	(90%-110%)			
Sulfate	10.0	D	19.1	D	30.9	mg/L	117*	(90%-110%)		01/30/15	01:38
Titration and Ion Analysis											
Batch	1454936										
QC1203257033	365929002	DUP									
Alkalinity, Total as CaCO3			75800	75800	ug/L	0.00		(0%-20%)	PXO1	02/04/15	11:30
Bicarbonate alkalinity (CaCO3)			75800	75800	ug/L	0.00		(0%-20%)			
Carbonate alkalinity (CaCO3)		U	1450	U	1450	ug/L	N/A				
Hydroxide alkalinity as CaCO3		U	1450	U	1450	ug/L	N/A				
QC1203257031	LCS										
Alkalinity, Total as CaCO3	50000			47600	ug/L		95.3	(90%-110%)		02/04/15	10:39
QC1203257029	MB										
Alkalinity, Total as CaCO3			U	725	ug/L					02/04/15	10:39
Bicarbonate alkalinity (CaCO3)			U	725	ug/L						
Carbonate alkalinity (CaCO3)			U	725	ug/L						
Hydroxide alkalinity as CaCO3			U	725	ug/L						
QC1203257035	365929002	MS									

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1454936										
Alkalinity, Total as CaCO3	100000	75800		168000	ug/L		92.3	(80%-120%)		02/04/15	11:31

Notes:

The Qualifiers in this report are defined as follows:

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

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

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

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

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

Radiological Analysis

February 25, 2015
Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365992
Work Order #: 365992

Method/Analysis Information

Product: GAMMA_GS:COMMON (Cs137,Co60,Eu152,Eu154,Eu155)
Analytical Method: EPA 901.1
Analytical Batch Number: 1454199

Sample ID	Client ID
365992007	B30195
1203254931	MB for batch 1454199
1203254933	Laboratory Control Sample (LCS)
1203254932	365992007(B30195) Sample Duplicate (DUP)

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-013 REV# 25.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

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: 365992007 (B30195).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

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

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: I129LL_SEP_LEPS_GS_LL: COMMON
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Batch Number: 1455199

Sample ID	Client ID
365992007	B30195
1203257719	MB for batch 1455199
1203257722	Laboratory Control Sample (LCS)
1203257720	366207002(B30702) Sample Duplicate (DUP)
1203257721	366207002(B30702) 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-006 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

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: 366207002 (B30702).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 1203257722 (LCS) was recounted twice due to low recovery. The third count is reported.

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

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

February 25, 2015

Product: 9310_ALPHABETA_GPC: COMMON

Analytical Method: EPA 900.0/SW846 9310

Analytical Batch Number: 1454656

Sample ID	Client ID
365992007	B30195
1203257786	MB for batch 1454656
1203257790	Laboratory Control Sample (LCS)
1203257787	365992007(B30195) Sample Duplicate (DUP)
1203257788	365992007(B30195) Matrix Spike (MS)
1203257789	365992007(B30195) Matrix Spike Duplicate (MSD)

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-001 REV# 18.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

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: 365992007 (B30195).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

February 25, 2015

All chemical recoveries meet the required acceptance limits for this sample set.

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Samples 1203257788 (B30195MS) and 1203257789 (B30195MSD) were recounted due to high recovery. The recounts are reported.

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

The matrix spike and matrix spike duplicate, 1203257788 (B30195MS) and 1203257789 (B30195MSD), aliquots were reduced to conserve sample volume.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: SRISO_SEP_PRECIP_GPC: COMMON
Analytical Method: EPA 905.0 Modified
Analytical Batch Number: 1457323

Sample ID	Client ID
365992007	B30195
1203263708	MB for batch 1457323
1203263710	Laboratory Control Sample (LCS)
1203263709	366710005(B30658) Sample Duplicate (DUP)

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-004 REV# 17.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

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: 366710005 (B30658).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

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.

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: TRITIUM_DIST_LSC: COMMON
Analytical Method: EPA 906.0 Modified
Analytical Batch Number: 1454242

Sample ID	Client ID
365992007	B30195
1203255047	MB for batch 1454242
1203255050	Laboratory Control Sample (LCS)
1203255048	365992007(B30195) Sample Duplicate (DUP)
1203255049	365992007(B30195) 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-002 REV# 21.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

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: 365992007 (B30195).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

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

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

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 25, 2015

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365992 GEL Work Order: 365992

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Kate Gellatly

Date: 24 FEB 2015

Title: Analyst I

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 S15-001

Report Date: February 24, 2015

Client Sample ID:	B30195	Project:	CPRC0S15001
Sample ID:	365992007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	28-JAN-15		
Receive Date:	29-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis													
<i>GAMMA_GS:COMMON (Cs137,Co60,Eu152,Eu154,Eu155) "As Received"</i>													
Cesium-137 10045-97-3	U	-0.798	+/-3.95	7.04	+/-3.97	10.0	pCi/L		MJH1	02/03/15	0705	1454199	1
Cobalt-60 10198-40-0	U	3.02	+/-3.38	7.49	+/-3.65		pCi/L						
Europium-152 14683-23-9	U	-13.8	+/-15.8	21.7	+/-17.1		pCi/L						
Europium-154 15585-10-1	U	-7.62	+/-21.7	17.6	+/-22.0		pCi/L						
Europium-155 14391-16-3	U	5.84	+/-17.0	29.2	+/-17.2		pCi/L						
<i>I129LL_SEP_LEPS_GS_LL: COMMON "As Received"</i>													
Iodine-129 15046-84-1	U	-0.0981	+/-0.334	0.625	+/-0.337	1.00	pCi/L		BSW1	02/12/15	0931	1455199	2
Rad Gas Flow Proportional Counting													
<i>9310_ALPHABETA_GPC: COMMON "As Received"</i>													
Alpha 12587-46-1	U	-0.62	+/-1.43	2.95	+/-1.43	3.00	pCi/L		AXJ1	02/09/15	1311	1454656	3
Beta 12587-47-2		5.08	+/-1.59	2.34	+/-1.80	4.00	pCi/L						
<i>SRISO_SEP_PRECIP_GPC: COMMON "As Received"</i>													
Total Strontium SR-RAD		2.76	+/-1.30	1.95	+/-1.45	2.00	pCi/L		KSD1	02/21/15	1141	1457323	4
Rad Liquid Scintillation Analysis													
<i>TRITIUM_DIST_LSC: COMMON "As Received"</i>													
Tritium 10028-17-8	U	28.5	+/-45.0	76.9	+/-45.3	100	pCi/L		BYS1	02/07/15	1922	1454242	5

The following Analytical Methods were performed

Method	Description
1	EPA 901.1
2	DOE EML HASL-300,I-01 Modified
3	EPA 900.0/SW846 9310
4	EPA 905.0 Modified
5	EPA 906.0 Modified

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 S15-001

Report Date: February 24, 2015

Client Sample ID: B30195 Project: CPRC0S15001
 Sample ID: 365992007 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
Surrogate/Tracer recovery	Test											
Strontium Carrier	SRISO_SEP_PRECIP_GPC: COM				98.8		(25%-125%)					

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
- 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

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QC Summary

Report Date: February 24, 2015
Page 1 of 4

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 365992

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1454199								
QC1203254931	MB								
Cesium-137			U	1.53	pCi/L			MJH1	02/03/1509:07
				Uncert: +/-3.02					
				TPU: +/-3.10					
Cobalt-60			U	-1.06	pCi/L				
				Uncert: +/-2.82					
				TPU: +/-2.87					
Europium-152			U	-11.7	pCi/L				
				Uncert: +/-9.92					
				TPU: +/-11.3					
Europium-154			U	-3.75	pCi/L				
				Uncert: +/-7.99					
				TPU: +/-8.17					
Europium-155			U	-12.8	pCi/L				
				Uncert: +/-10.9					
				TPU: +/-12.4					
QC1203254932	365992007	DUP							
Cesium-137		U	-0.798	U	-1.75	pCi/L			02/03/1509:08
			Uncert: +/-3.95		+/-4.46		RPD: 0	N/A	
			TPU: +/-3.97		+/-4.53		RER: 0.309	(0-2)	
Cobalt-60		U	3.02	U	-1.2	pCi/L			
			Uncert: +/-3.38		+/-3.74		RPD: 0	N/A	
			TPU: +/-3.65		+/-3.78		RER: 1.57	(0-2)	
Europium-152		U	-13.8	U	4.14	pCi/L			
			Uncert: +/-15.8		+/-12.6		RPD: 0	N/A	
			TPU: +/-17.1		+/-12.7		RER: 1.65	(0-2)	
Europium-154		U	-7.62	U	-6.29	pCi/L			
			Uncert: +/-21.7		+/-13.1		RPD: 0	N/A	
			TPU: +/-22.0		+/-13.4		RER: 0.101	(0-2)	
Europium-155		U	5.84	U	22.1	pCi/L			
			Uncert: +/-17.0		+/-19.1		RPD: 0	N/A	
			TPU: +/-17.2		+/-21.6		RER: 1.15	(0-2)	
QC1203254933	LCS								
Americium-241	34500				38900	pCi/L	REC: 113 (80%-120%)		02/03/1508:52
					Uncert: +/-1120				
					TPU: +/-2890				
Cesium-137	13900				14400	pCi/L	REC: 104 (80%-120%)		
					Uncert: +/-316				
					TPU: +/-1210				
Cobalt-60	16200				16500	pCi/L	REC: 102 (80%-120%)		
					Uncert: +/-371				
					TPU: +/-1380				
Europium-152			U	-37.9	pCi/L				
				Uncert: +/-230					
				TPU: +/-231					

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1454199								
Europium-154			U	-103	pCi/L				
				Uncert: +/-119					
				TPU: +/-128					
Europium-155			U	-79.1	pCi/L				
				Uncert: +/-240					
				TPU: +/-243					
Batch	1455199								
QC1203257719	MB								
Iodine-129			U	-0.137	pCi/L			BSW1	02/12/1514:05
				Uncert: +/-0.294					
				TPU: +/-0.300					
QC1203257720	366207002	DUP							
Iodine-129		U	0.219	U	0.392	pCi/L			02/12/1514:06
			Uncert: +/-0.597		+/-0.398		RPD: 0	N/A	
			TPU: +/-0.606		+/-0.437		RER: 0.454	(0-2)	
QC1203257721	366207002	MS							
Iodine-129		26.0	U	0.219	23.2	pCi/L	REC: 89	(75%-125%)	02/12/1514:06
				Uncert: +/-0.597	+/-2.37				
				TPU: +/-0.606	+/-3.33				
QC1203257722	LCS								
Iodine-129		26.0			22.6	pCi/L	REC: 87	(80%-120%)	02/13/1513:10
				Uncert: +/-2.81					
				TPU: +/-3.61					
Rad Gas Flow									
Batch	1454656								
QC1203257786	MB								
Alpha			U	-0.00461	pCi/L			AXJ1	02/09/1513:32
				Uncert: +/-1.01					
				TPU: +/-1.01					
Beta			U	-1.5	pCi/L				
				Uncert: +/-1.30					
				TPU: +/-1.30					
QC1203257787	365992007	DUP							
Alpha		U	-0.62	U	-0.269	pCi/L			02/09/1513:32
			Uncert: +/-1.43		+/-1.27		RPD: 0	N/A	
			TPU: +/-1.43		+/-1.27		RER: 0.360	(0-2)	
Beta			5.08		5.08	pCi/L			
			Uncert: +/-1.59		+/-1.55		RPD: 0	(0% - 100%)	
			TPU: +/-1.80		+/-1.77		RER: 0.00368	(0-2)	
QC1203257788	365992007	MS							
Alpha		243	U	-0.62	301	pCi/L	REC: 124	(75%-125%)	02/10/1515:06
				Uncert: +/-1.43	+/-30.7				
				TPU: +/-1.43	+/-60.6				
Beta		949		5.08	1180	pCi/L	REC: 123	(75%-125%)	
				Uncert: +/-1.59	+/-40.0				
				TPU: +/-1.80	+/-204				
QC1203257789	365992007	MSD							
Alpha		243	U	-0.62	275	pCi/L	REC: 113	(75%-125%)	02/10/1511:46
				Uncert: +/-1.43	+/-28.6		RPD: 9	(0%-20%)	
				TPU: +/-1.43	+/-55.5		RER: 0.615	(0-2)	

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QC Summary

Workorder: 365992

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1454656								
Beta	949	5.08		1150	pCi/L	REC: 121 (75%-125%)			
	Uncert:	+/-1.59		+/-39.3		RPD: 2 (0%-20%)			
	TPU:	+/-1.80		+/-192		RER: 0.180 (0-2)			
QC1203257790	LCS								
Alpha	81.1			97.0	pCi/L	REC: 120 (80%-120%)			02/09/1513:11
	Uncert:			+/-8.51					
	TPU:			+/-18.0					
Beta	316			360	pCi/L	REC: 114 (80%-120%)			
	Uncert:			+/-12.6					
	TPU:			+/-59.9					
Batch	1457323								
QC1203263708	MB								
Total Strontium			U	-0.436	pCi/L			KSD1	02/21/1511:42
	Uncert:			+/-0.593					
	TPU:			+/-0.594					
QC1203263709	366710005	DUP							
Total Strontium		U	-0.204	U	0.779	pCi/L			02/21/1511:42
	Uncert:		+/-0.687		+/-0.826	RPD: 0	N/A		
	TPU:		+/-0.687		+/-0.845	RER: 1.77	(0-2)		
QC1203263710	LCS								
Total Strontium	79.0			69.4	pCi/L	REC: 88 (80%-120%)			02/21/1511:42
	Uncert:			+/-3.86					
	TPU:			+/-16.4					
Rad Liquid Scintillation									
Batch	1454242								
QC1203255047	MB								
Tritium			U	-18	pCi/L			BYS1	02/07/1521:24
	Uncert:			+/-42.0					
	TPU:			+/-42.0					
QC1203255048	365992007	DUP							
Tritium		U	28.5	U	-15	pCi/L			02/07/1523:27
	Uncert:		+/-45.0		+/-42.0	RPD: 0	N/A		
	TPU:		+/-45.3		+/-42.0	RER: 1.38	(0-2)		
QC1203255049	365992007	MS							
Tritium	1870	U	28.5		1780	pCi/L	REC: 95 (75%-125%)		02/08/1501:29
	Uncert:		+/-45.0		+/-306				
	TPU:		+/-45.3		+/-460				
QC1203255050	LCS								
Tritium	1870				1760	pCi/L	REC: 95 (80%-120%)		02/08/1501:47
	Uncert:				+/-301				
	TPU:				+/-455				

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide

QC Summary

Workorder: 365992

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

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.