



February 23, 2015

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

Re: CHPRC SAF F13-047
Work Order: 365932
SDG: GEL365932

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 28, 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: 300085-7H
Chain of Custody: F13-047-102 and F13-047-103
Enclosures



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Case Narrative

February 24, 2015

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F13-047
SDG: GEL365932

February 23, 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 28, 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:

Laboratory Identification	Sample Description
365932001	B2YRT5
365932002	B2YRT6

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry 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 Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

February 24, 2015
Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

February 24, 2015

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-047-102	PAGE 1 OF 1
COLLECTOR J. Aguilar	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8295, I-006	PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Water	SAF NO. F13-047	COA 300085	AIR QUALITY	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. 605-538 438	FIELD LOGBOOK NO. HNF-N-507-24/82	ACTUAL SAMPLE DEPTH 117.1"	BILL OF LADING/AIR BILL NO. 17737 300205020		ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. 5306				

MATRIX*	PRESERVATION	Cool <=6C
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	HOLDING TIME	28 Days/48 Hours
	TYPE OF CONTAINER	G/P
	NO. OF CONTAINER(S)	1
	VOLUME	250mL
	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE	SAMPLE DATE	1-27-15
	SAMPLE TIME	1041
	MATRIX*	
B2YRT5	WATER	✓

305932

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM J. Aguilar	DATE/TIME 1-27-15 1130	RECEIVED BY/STORED IN L.D. Wall	DATE/TIME 1-27-15 1130	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM L.D. Wall	DATE/TIME JAN 27 2015 1400	RECEIVED BY/STORED IN CHPRC	DATE/TIME 1-28-15/0845	(1) 9056_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Sulfate};	
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME 1-28-15/0845	RECEIVED BY/STORED IN FedEx	DATE/TIME 1-28-15/0845		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

A-6003-618 (REV 2)

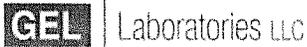
CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-047-103	PAGE 1 OF 1
COLLECTOR <i>J Ayala</i>	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8295, I-006	PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Water	FIELD LOGBOOK NO. 14NF-N-SD7-29/82	SAF NO. F13-047	AIR QUALITY	
ICE CHEST NO. 6WS-538488	ACTUAL SAMPLE DEPTH 117.1"	OFFSITE PROPERTY NO. 59600	COA 300085	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	BILL OF LADING/AIR BILL NO. 7727 3020 5020				

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION None
	HOLDING TIME 6 Months	
	TYPE OF CONTAINER P	
	NO. OF CONTAINER(S) 1	
	VOLUME 500mL	
	SAMPLE ANALYSIS TRITIUM_DIST LSC: COMMON;	
SAMPLE NO. B2YRT6	MATRIX* WATER	SAMPLE DATE 1-27-15
		SAMPLE TIME 1041
		✓

365922

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J Ayala</i>	DATE/TIME 1-27-15 1130	RECEIVED BY/STORED IN <i>L.D. Wall</i>	DATE/TIME 1-27-15 1130	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM <i>L.D. Wall</i>	DATE/TIME JAN 27 2015 1400	RECEIVED BY/STORED IN <i>CHPTG</i>	DATE/TIME 1-28-15/0845	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM <i>Fidco</i>	DATE/TIME 1-28-15/0845	RECEIVED BY/STORED IN <i>Sarah Edwards</i>	DATE/TIME 1-28-15/0845	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-190	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-14-190	
LABORATORY SECTION	RECEIVED BY	TITLE			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY			
PRINTED ON 11/7/2014		DATE/TIME			

February 24, 2015



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>305932</u>	
Received By: <u>SE</u>		Date Received: <u>1.28.15</u>	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>Open</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *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>130532792</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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7	Are Encore containers present?	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7727 3020 5020</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 23 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

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL365932
Work Order #: 365932**

Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1453650 **Method:** 9056_ANIONS_IC:COMMON

Sample Analysis

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

Sample ID	Client ID
365932001	B2YRT5
1203253519	Method Blank (MB)
1203253520	Laboratory Control Sample (LCS)
1203253521	365929001(B2YYW7) Sample Duplicate (DUP)
1203253522	365929001(B2YYW7) 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

Sample365929001 (B2YYW7) was selected for QC analysis.

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

The MS/PS recoveries for this sample set were 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

Sample was initially analyzed within holding; however, the PS failed and the holding time had expired prior to reanalysis of sample. 1203253522 (Non SDG 365929001PS).

Sample Dilutions

Samples 1203253521 (Non SDG 365929001DUP), 1203253522 (Non SDG 365929001PS) and 365932001 (B2YRT5) were diluted because target analyte concentrations exceeded the calibration range. Samples 1203253521 (Non SDG 365929001DUP), 1203253522 (Non SDG 365929001PS) and 365932001 (B2YRT5) were diluted based on historical data.

Analyte	365932
	001
Chloride	10X
Sulfate	10X

Sample Re-analysis

Sample1203253522 (Non SDG 365929001PS) was reanalyzed due to PS failure. The reanalysis data was reported. Sample1203253522 (Non SDG 365929001PS) was re-analyzed to verify the result.

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1377752. 1203253522 (Non SDG 365929001PS).

Manual Integrations

Samples 1203253521 (Non SDG 365929001DUP) and 365932001 (B2YRT5) 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.

Certification Statement

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

February 24, 2015

GEL LABORATORIES LLC

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

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL365932 GEL Work Order: 365932

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.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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: 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 F13-047**

Report Date: February 23, 2015

Client Sample ID:	B2YRT5	Project:	CPRC0F13047
Sample ID:	365932001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	27-JAN-15 10:41		
Receive Date:	28-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>										
Fluoride 16984-48-8	B	277	+/-14.4	33.0	500	ug/L	1	RXB5 01/29/15 0349	1453650	1
Nitrate-N 14797-55-8		2780	+/-93.4	33.0	250	ug/L	1			
Chloride 16887-00-6	D	15700	+/-569	670	2000	ug/L	10	RXB5 01/29/15 0553	1453650	2
Sulfate 14808-79-8	D	42000	+/-1470	1330	4000	ug/L	10			

The following Analytical Methods were performed

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

Quality Control Summary

February 24, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: February 23, 2015

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 365932

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1453650										
QC1203253521	365929001	DUP									
Chloride		4420		4430	ug/L	0.0226		(0%-20%)	RXB5	01/29/15	02:47
Fluoride	B	231	B	227	ug/L	1.88	^	(+/-500)			
Nitrate-N		1460		1460	ug/L	0.411		(0%-20%)			
Sulfate	D	25400	D	25600	ug/L	0.793		(0%-20%)		01/29/15	04:51
QC1203253520	LCS										
Chloride	5000			4650	ug/L			93 (90%-110%)		01/29/15	06:55
Fluoride	2500			2400	ug/L			96.1 (90%-110%)			
Nitrate-N	2500			2400	ug/L			96.2 (90%-110%)			
Sulfate	10000			9780	ug/L			97.8 (90%-110%)			
QC1203253519	MB										
Chloride			U	67.0	ug/L					01/29/15	06:24
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Sulfate			U	133	ug/L						
QC1203253522	365929001	PS									
Chloride	5.00	4.42		9.81	mg/L			108 (90%-110%)		01/30/15	11:43
Fluoride	2.50	B 0.231		2.66	mg/L			97.3 (90%-110%)			
Nitrate-N	2.50	1.46	X	4.05	mg/L			104 (90%-110%)			
Sulfate	10.0	D 2.54	D	12.9	mg/L			103 (90%-110%)		01/29/15	05:22

Notes:

The Qualifiers in this report are defined as follows:

February 24, 2015
GEL LABORATORIES LLC

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

QC Summary

Workorder: 365932

Page 2 of 2

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 31-JAN-15	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: SW846 9056A	Matrix Type: Liquid	Client Code: CPRC
Batch ID: 1453650	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 365929(GEL365929),365932(GEL365932)			
Application Issues: Sample Analyzed out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample Analyzed out of Holding: QC 1203253522PS		1. Sample was initially analyzed within holding; however, the PS failed and the holding time had expired prior to reanalysis of sample. 1203253522 (B2YYW7PS).	

Originator's Name:

Rachael Bell 12-FEB-15

Data Validator/Group Leader:

Thomas Lewis 23-FEB-15

Radiological Analysis

February 24, 2015

Radiochemistry

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL365932

Work Order #: 365932

"
"
"

Method/Analysis Information

"

Product: TRITIUM_DIST_LSC: COMMON

Cpcn\ \ecri'O gj qf < GRC"; 28\O' qf kkgf

Cpcn\ \ecri'Dcvej 'P wo dgt< 3676464

"

Sample ID "" Client ID

587; 54224" " D4[TV8

3425477269"" O D'hqt'dcvej '3676464

3425477272"" Ncdqtcvqt { 'Eqvtqnl'Uco r rg'*NEU+

342547726: "" 587; ; 4229*D523; 7+'Uco r rg'F wr rkecvg'*F WR+

342547726; "" 587; ; 4229*D523; 7+'O cvtkz 'Ur kng'*O U+

"

Vj g'uco r ngu'lp'yj ku'UF I 'y gtg'cpcn| gf "qp'cp'\$cu'tgegkxgf '\$'dcuku0"

"

SOP Reference

Rtqegf wtg'hqt'r tgr ctcvqp.'cpcn\ uku'cpf 'tgr qt vki 'qh'cpcn\ \ecri'f cvc'ctg'eqvtqmgf 'd { 'I GN'Ncdqtcvqt'kgu'NNE'cu Ucpf ctf 'Qr gtcvki 'Rtqegf wtg'*UQR+0Vj g'f cvc'f kuewuugf 'lp'yj ku'pcttcvkg'j cu'dggp'cpcn| gf 'lp'ceeqtfcpeg'y kj I N/TCF/C/224'TGX%430"

Calibration Information:

"

Calibration Information

Cml'pklcni'cpf "eqv'p'vki 'ecrkdtecvqt' tgs wkt go gpw'j cxg'dggp'o gv0"

"

Standards Information

Ucpf ctf "uq'w'k'p'u'hqt'yj gug'cpcn\ uku'ctg'P KUV'tcegcdng'qt'xgt'kkgf'y kj "c'P KUV'tcegcdng'ucpf ctf 'cpf'wugf dghqt'g'yj g'gzr ktcvqp'f cvgu0"

"

Sample Geometry

Cml'eqv'p'vki 'uq'w'egu'y gtg'r tgr ctgf 'lp'yj g'uco g'i gqo gw { 'cu'yj g'ecrkdtecvqt'ucpf ctf u0"

Quality Control (QC) Information:

"

Blank Information

Vj g'drcp'ntxqno g'ku'tgr t'gug'p'cvkg'qh'yj g'uco r rg'xqno g'lp'yj ku'dcvej 0"

"

Designated QC

Vj g'hq'nyj kpi 'uco r rg'y cu'wugf 'hqt'S E<587; ; 4229*D523; 7+0"

"

QC Information

Cm'qh'j g'S E'uco r ngu'o gv'y g'tgs wkt gf "ceegr vpegr'iko ku0"

Technical Information:"

"

Holding Time"

Cm'uco r ng'r tqegf wt gu'hqt 'y ku'uco r ng'ugv'y gt g'r gthqto gf 'y kj kp'vj g'tgs wkt gf 'j qrf kpi 'vlo g0"

"

Sample Re-prep/Re-analysis"

P qpg'qh'j g'uco r ngu'lp'vj ku'uco r ng'ugv'tgs wkt gf 'tgr tgr "qt'tgpcn(uku0"

"

Recounts"

Uco r ng'587; 54224"*D4[TV8+y cu'tgeqwpvgf "q'xgtkh('uco r ng'tguwn0Vj g'tgeqwpvt guwn/ku'uko krc't'q'j g qtki kpcn'tguwn0Qt ki kpcn'tguwn/ku'tgr qtvgf 0"

Miscellaneous Information:"

"

Data Exception (DER) Documentation"

F cvc'gzeegr vqp'tgr qtu'ctg'i gpgtcvgf "q'f qewo gpv'cp{ 'r tqegf wt crl'cpqo crkgu'j cv'bo c{ 'f gxkcv'htqo 'tghgtgpegf UQR'qt'eqpwtcewcnlf qewo gpw0C'f cvc'gzeegr vqp'tgr qt v'F GT +y cu'pqv'i gpgtcvgf 'hqt'vj ku'UF I 0"

"

"

Sample-Specific MDA/MDC"

Vj g'O F C I O F E'tgr qtvgf "qp'vj g'egt v'hecvg'qh'cpcn(uku'ku'c'uco r ng'ur gekhe'O F C I O F E0"

"

Additional Comments"

Cf f kkpnc'eqo o gpw'y gtg'pqv'tgs wkt gf 'hqt'vj ku'uco r ng'ugv0"

Qualifier Information"

"

O cpwcn's wcn'htgu'y gtg'pqv'tgs wkt gf 0"

"

"

"

Certification Statement"

"

Y j gtg'vj g'cpcn(v'ecr'bo gvj qf 'j cu'dggp'r gthqto gf 'wpgt 'P GNCR'egt v'hecv'p. 'vj g'cpcn(uku'j cu'bo gv'cm'qh'j g tgs wkt go gpw'qh'j g'P GNCE'ucpf ctf 'wprguu'qj gty kug'pqvgf 'lp'vj g'cpcn(v'ecr'ecug'pcttcv'xg0"

February 24, 2015

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

ERTE223'EJ 4O J km'Rrcvcw'Tgo gf kcvkp'Ego r cp{
ErkpvUF I <I GN587; 54" I GN"Y qtm'Qtf gt<587; 54

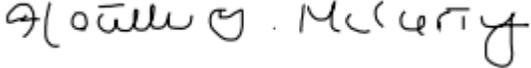
The Qualifiers in this report are defined as follows:

W""Cpcn{ | gf 'hqt'dw'pqv'f gvev'f'cdq'xg'ho k'kpi "etkgt'k'k'pen'f'gu'OFN.'OFC.'RS N.'| gtq.'eqwp'kpi "gttqt.'cpf'vqcn
cpcn{ v'ecr'gttqt0

Review/Validation

I GN'tgs w'kgu'cm'cpcn{ v'ecr'f'cvc"q'dg'xgt'k'k'f "d{ "c's w'k'k'f "f'cvc'tgx'kgy gt0" k'p'c'f'f'k'k'p.'cm'ENR'k'k'ng'f'gr'k'x'g'cd'ng'u
t'geg'k'g'c'v'j k'f "g'x'g'nt'g'x'k'gy "q'h'v'j g'f'c'v'k'p'c'n'f'c'v'r'c'c'c'i'g0"

Vj g'hqmy kpi "f'cvc'x'c'k'f'c'v'q't'x'g't'k'k'f "v'j g'k'p'k'q'to c'v'k'p'r't'g'g'p'v'g'f "k'p'v'j k'u'f'c'v't'g'r'q't'v"

Signature: 

Name: Heather McCarty

Date: 13 FEB 2015

Title: Analyst II

Sample Data Summary

Certificate of Analysis

Eqo rcp{ "< EJ 40J kmRrcvrgcwTgo gf kcvkp
 Eqo rcp{
 Cfftguu{ "< O UKP "T5/72'EJ RTE
 RQ'Dqz"3822
 Tlej rcpf."Y cuj kpi vqp"; ; 574
 Eqpvcev< O t0UeqvHk| i gtrcf
 Rtqlgev< EJ RTE"UCHB5/269

Tgr qtvF cvg< Hgdtwct{"35."4237

ErkpvUco r rg"K<	D4[TV8	Rtqlgev<	ERTE2HB5269
Uco r rg"K<	587; 54224	Erkpv"K<	ERTE223
O cvtz<	Y CVGT		
EqngevF cvg<	49/ICP/37		
T gegkxg'F cvg<	4: /ICP/37		
Eqngevt<	Erkpv		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time Batch	Mtd.
-----------	-----------	--------	-------------	-----	-----	----	-------	----	---------	------	------------	------

Rad Liquid Scintillation Analysis

TRITIUM_DIST_LSC: COMMON "As Received"

Vtkkwo		7642	- 1/3: 5	980	- 1/3282	322	r EkN	D[U3		24129137 393;	3676464	3
--------	--	------	----------	-----	----------	-----	-------	-------	--	---------------	---------	---

3224: /39/:

The following Analytical Methods were performed

Method	Description
3	GRC"; 280'O qf kkgf

P qvqu<
 VRW'cpf 'Eqwvklpi "Wpegtvklp{ "ctg'ecrewrvgf "cv'j g"; 7' "eqplkf gpeg'hxgn"*30 8'uki o c+0
 "Vj g'S wcrkkgu'lp"j ku'tgr qtv'ctg'f gkpgf "cu'hqmy u"<
 D""Vj g'cuuqekcvf "S E'uco r rg'drcpnj cu'c'tguwn'@ "4Z"j g'OFC'cpf.'chngt'eqttgevkqpu.'tguwn'ku'@ 'OFC'hqt"j ku'uco r rg"
 F ""T guwn'ctg'tgr qtv'f "tqo "c'f kmgf 'crks wqv'qhi'uco r rg0
 P ""Ur kng'Uco r rg'tgeqxtg { 'ku'qwukf g'eqpvqn'iko ku0
 W ""Cpcn| gf 'hqt'dw'pqvf ggevgf "cdqxg'iko kkp' "etkgtk0kpenf gu'OFN.'OFC.'RS N.'| gtq.'eqwvklpi "gttqt.'cpf "qvcn'cpcn { wcrkkgttqt0
 WZ ""I co o c'Ur gev'queqr { //Wpegtvklp 'kf gpvk'kcvkp"
 Z ""Eqpuwn'Ecug'P cttcvkxg.'F cv'Uwo o ct { 'r cen' g.'qt'Rtqlgev'O cpci gt'eqpegtplpi "j ku's wcrkkg
 [""Eqpuwn'Ecug'P cttcvkxg.'F cv'Uwo o ct { 'r cen' g.'qt'Rtqlgev'O cpci gt'eqpegtplpi "j ku's wcrkkg
 \ ""Eqpuwn'Ecug'P cttcvkxg.'F cv'Uwo o ct { 'r cen' g.'qt'Rtqlgev'O cpci gt'eqpegtplpi "j ku's wcrkkg
 "Vj g'cdqxg'uco r rg'ku'tgr qtv'f "qp"cp"\$cu'tgegkxgf \$'dcuku0

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

Report Date: February 13, 2015
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 365932

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
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:

- < 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).
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- 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.
- UX Gamma Spectroscopy--Uncertain identification
- 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

QC Summary

Workorder: 365932

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
----------	-----	--------	------	----	-------	-------------	-------	---------	------	------

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.