

November 3, 2015



PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

October 26, 2015

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

Re: CHPRC SAF X16-001
Work Order: 382652
SDG: GEL382652

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 07, 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,

Sarah Edwards for
Heather Shaffer
Project Manager

Purchase Order: 300071JDBA 7H
Chain of Custody: X16-001-066, X16-001-067 and X16-001-072
Enclosures



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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF X16-001
SDG: GEL382652

October 26, 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 October 07, 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>
382652001	B32TP6
382652002	B32TP5
382652003	B32TP8
382652004	B32TV9
382652005	B32TW2

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.

November 3, 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: General Chemistry and Metals.

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.



Sarah Edwards for
Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **X16-001-066**
 Page 1 of 1

382692
 Telephone No. 509-376-4650
 Contact/Requester Karen Waters-Husted
 Purchase Order/Charge Code 303271
 Sampling Origin Hanford Site
 Logbook No. HNF-N-506
 Ice Chest No. 605-494
 Method of Shipment Commercial Carrier
 Bill of Lading/Air Bill No. 774677179377
 Offsite Property No. 6025

Priority: 30 Days
PRIORITY
 SPECIAL INSTRUCTIONS Hold Time
 Submit deliverables & invoices to *CPP Sample Management.
 Total Activity Exemption: Yes No

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

Sample No.	Filter	* Part	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32TP5	N	W	OCT 06 2015	1040	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B32TP5	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B32TP5	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B32TP8	Y	W	OCT 06 2015	1040	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By	Part	Sign	Date/Time	Received By	Sign	Date/Time	Matrix *
CHRIS FULTON CHPRC			OCT 06 2015 1400	CHRIS FULTON CHPRC		OCT 06 2015 1310	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By			OCT 06 2015 1400	Received By			
CHRIS FULTON CHPRC			OCT 06 2015 1400	Received By	FEDEX		
Relinquished By				Received By			
CHRIS FULTON CHPRC				Received By		10.7.15/0905	
Relinquished By				Received By			
CHRIS FULTON CHPRC				Received By			

81 kg

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#
X16-001-067
Page 1 of 1

Collector	S.W. King/CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X16-001	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271
Project Title	100-BC-5 RI, OCTOBER 2015	Logbook No.	HNF-N-506 <i>Ne 1 172</i>	Ice Chest No.	<i>6225-496</i>
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	<i>774677177377</i>
Protocol	CERCLA	Priority:	30 Days	Offsite Property No.	<i>6025</i>

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.	B32TP6	Filter	N	Date	<i>10/06/2015</i>	Time	<i>10:40</i>	No/Type Container	1x250-mL GIP	9056_ANIONS_IC: COMMON	Sample Analysis	Holding Time	28 Days/48 Hours	Preservative	Cool <=6C
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SPECIAL INSTRUCTIONS Hold Time
 Submit deliverables & invoices to ^CPP Sample Management.

Total Activity Exemption: Yes No

November 3, 2015

Relinquished By	S.W. King/CHPRC	Print	<i>[Signature]</i>	Sign	<i>[Signature]</i>	Received By	CHRIS FULTON CHPRC	Date/Time	OCT 06 2015 12:00
Relinquished By	CHRIS FULTON CHPRC	Print	<i>[Signature]</i>	Sign	<i>[Signature]</i>	Received By	FEDEX	Date/Time	OCT 06 2015 14:00
Relinquished By	<i>[Signature]</i>	Print	<i>[Signature]</i>	Sign	<i>[Signature]</i>	Received By	<i>Siobh Edwards Sarah Edwards</i>	Date/Time	10.7.15/10905
Relinquished By	<i>[Signature]</i>	Print	<i>[Signature]</i>	Sign	<i>[Signature]</i>	Received By		Date/Time	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
PRINTED ON	9/29/2015	FSR ID = FSR5683	A-6004-842 (REV 2)

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X16-001-072**

Page 1 of 1

Collector: **S.W. King/CHPRC**

Contact/Requester: **Karen Waters-Husted**

Telephone No.: **509-376-4650**

SAF No.: **X16-001**

Sampling Origin: **Hanford Site**

Purchase Order/Charge Code: **303271**

Project Title: **100-BC-5 RI, OCTOBER 2015**

Logbook No.: **HNF-N-506-161-72**

Ice Chest No.: **620-444**

Shipped To (Lab): **GEL Laboratories, LLC**

Method of Shipment: **Commercial Carrier**

Bill of Lading/Air Bill No.: **77467717 7377**

Protocol: **CERCLA**

Priority: **30 Days**

Offsite Property No.: **6025**

POSSIBLE SAMPLE HAZARDS/REMARKS

SPECIAL INSTRUCTIONS: **Hold Time**

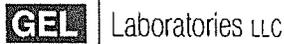
Submit deliverables & invoices to ^CPP Sample Management.

Total Activity Exemption: Yes No

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B32TV9	N	W OCT 06 2015	1118	1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B32TV9	N	W OCT 06 2015	1118	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B32TW2	Y	W OCT 06 2015	1118	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Sign	Date/Time	Matrix *
S.W. King/CHPRC			OCT 06 2015 1200	CHRIS FULTON CHPRC		OCT 06 2015 1200	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
CHRIS FULTON CHPRC			OCT 06 2015 1400	FEDEX			S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
CHRIS FULTON CHPRC			OCT 06 2015 1400	Received By <i>Subhward</i>	<i>Subhward</i>	10.7.15/0905	
CHRIS FULTON CHPRC				Received By			

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SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order:	
Received By: <u>SE</u>		Date Received: <u>10.7.15</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) *all temperatures are recorded in Celsius <u>3.4</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>201404337</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 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 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:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 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:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7746 7717 7377-4</u> <u>7746 7717 7664-3</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 26 October 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	P330-15-00283, P330-15-00253
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	SC000122016-1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122015-19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

November 3, 2015

Metals

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL382652

Work Order #: 382652

Sample ID	Client ID
382652002	B32TP5
382652003	B32TP8
382652004	B32TV9
382652005	B32TW2
1203407556	Method Blank (MB)ICP
1203407557	Laboratory Control Sample (LCS)
1203407560	382659003(B32X86L) Serial Dilution (SD)
1203407558	382659003(B32X86S) Matrix Spike (MS)
1203407559	382659003(B32X86SD) Matrix Spike Duplicate (MSD)
1203407585	Method Blank (MB)ICP-MS
1203407586	Laboratory Control Sample (LCS)
1203407589	382659003(B32X86L) Serial Dilution (SD)
1203407587	382659003(B32X86S) Matrix Spike (MS)
1203407588	382659003(B32X86SD) Matrix Spike Duplicate (MSD)

Sample Analysis

Samples 382652 002, 003, 004 and 005 in this SDG were analyzed for metals on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1513269 and 1513282
Prep Batch :	1513268 and 1513280
Standard Operating Procedures:	GL-MA-E-013 REV# 24, GL-MA-E-006 REV# 13 and GL-MA-E-014 REV# 26
Analytical Method:	6010_METALS_ICP and 6020_METALS_ICPMS
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 350X ICPMS. The instrument is

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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: 382659003 (B32X86)-ICP and ICP-MS.

Matrix Spike (MS/MSD) Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

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

Serial Dilution % Difference Statement

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

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

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

Data Exception (DER) Documentation

A data exception report was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Certification Statement

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

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: GEL382652 GEL Work Order: 382652

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 03 NOV 2015

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652002

CLIENT ID: B32TP5

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	59.6	ug/L			MS	15	1	ICPMS12	151028-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151030-3
7440-38-2	Arsenic	3.48	ug/L	B		MS	1.7	1	ICPMS12	151028-2
7440-39-3	Barium	15.6	ug/L			MS	0.6	1	ICPMS12	151028-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151028-2
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	101215-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151028-2
7440-70-2	Calcium	42100	ug/L			P	50	1	OPTIMA3	101215-1
7440-47-3	Chromium	8.91	ug/L	B		MS	2	1	ICPMS12	151028-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-50-8	Copper	0.723	ug/L	B		MS	0.35	1	ICPMS12	151028-2
7439-89-6	Iron	138	ug/L			P	30	1	OPTIMA3	101215-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7439-95-4	Magnesium	10300	ug/L			P	110	1	OPTIMA3	101215-1
7439-96-5	Manganese	1.5	ug/L	B		MS	1	1	ICPMS12	151028-2
7439-98-7	Molybdenum	2.81	ug/L			MS	0.165	1	ICPMS12	151030-3
7440-02-0	Nickel	1.61	ug/L	B		MS	0.5	1	ICPMS12	151028-2
7440-09-7	Potassium	5400	ug/L			P	50	1	OPTIMA3	101215-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151030-3
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-23-5	Sodium	12300	ug/L			P	100	1	OPTIMA3	101215-1
7440-24-6	Strontium	166	ug/L			MS	2	1	ICPMS12	151028-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151028-2
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151028-2
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7440-61-1	Uranium	1.68	ug/L			MS	0.067	1	ICPMS12	151028-2

METALS
 -1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652002

CLIENT ID: B32TP5

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	7.89	ug/L			P	1	1	OPTIMA3	101215-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151028-2

***Analytical Methods:**

- P** SW846 3005A/6010C
- MS** SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652003

CLIENT ID: B32TP8

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151028-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151030-3
7440-38-2	Arsenic	2.97	ug/L	B		MS	1.7	1	ICPMS12	151028-2
7440-39-3	Barium	15.6	ug/L			MS	0.6	1	ICPMS12	151028-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151028-2
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	101215-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151028-2
7440-70-2	Calcium	42300	ug/L			P	50	1	OPTIMA3	101215-1
7440-47-3	Chromium	6.94	ug/L	B		MS	2	1	ICPMS12	151028-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-50-8	Copper	0.677	ug/L	B		MS	0.35	1	ICPMS12	151028-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	101215-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7439-95-4	Magnesium	10300	ug/L			P	110	1	OPTIMA3	101215-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7439-98-7	Molybdenum	2.68	ug/L			MS	0.165	1	ICPMS12	151030-3
7440-02-0	Nickel	0.703	ug/L	B		MS	0.5	1	ICPMS12	151028-2
7440-09-7	Potassium	5460	ug/L			P	50	1	OPTIMA3	101215-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151030-3
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-23-5	Sodium	12100	ug/L			P	100	1	OPTIMA3	101215-1
7440-24-6	Strontium	165	ug/L			MS	2	1	ICPMS12	151028-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151028-2
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151028-2
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7440-61-1	Uranium	1.72	ug/L			MS	0.067	1	ICPMS12	151028-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652003

CLIENT ID: B32TP8

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	7.78	ug/L			P	1	1	OPTIMA3	101215-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151028-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652004

CLIENT ID: B32TV9

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151028-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151030-3
7440-38-2	Arsenic	3.54	ug/L	B		MS	1.7	1	ICPMS12	151028-2
7440-39-3	Barium	15.5	ug/L			MS	0.6	1	ICPMS12	151028-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151028-2
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	101215-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151028-2
7440-70-2	Calcium	38400	ug/L			P	50	1	OPTIMA3	101215-1
7440-47-3	Chromium	2.63	ug/L	B		MS	2	1	ICPMS12	151028-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	151028-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	101215-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7439-95-4	Magnesium	9690	ug/L			P	110	1	OPTIMA3	101215-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7439-98-7	Molybdenum	2.26	ug/L			MS	0.165	1	ICPMS12	151030-3
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7440-09-7	Potassium	5300	ug/L			P	50	1	OPTIMA3	101215-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151030-3
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-23-5	Sodium	12400	ug/L			P	100	1	OPTIMA3	101215-1
7440-24-6	Strontium	155	ug/L			MS	2	1	ICPMS12	151028-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151028-2
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151028-2
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7440-61-1	Uranium	1.42	ug/L			MS	0.067	1	ICPMS12	151028-2

METALS
 -1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652004

CLIENT ID: B32TV9

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.46	ug/L			P	1	1	OPTIMA3	101215-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151028-2

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652005

CLIENT ID: B32TW2

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7429-90-5	Aluminum	15	ug/L	U		MS	15	1	ICPMS12	151028-2
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS12	151030-3
7440-38-2	Arsenic	3.15	ug/L	B		MS	1.7	1	ICPMS12	151028-2
7440-39-3	Barium	15.4	ug/L			MS	0.6	1	ICPMS12	151028-2
7440-41-7	Beryllium	0.2	ug/L	U		MS	0.2	1	ICPMS12	151028-2
7440-42-8	Boron	15	ug/L	U		P	15	1	OPTIMA3	101215-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS12	151028-2
7440-70-2	Calcium	38500	ug/L			P	50	1	OPTIMA3	101215-1
7440-47-3	Chromium	2.34	ug/L	B		MS	2	1	ICPMS12	151028-2
7440-48-4	Cobalt	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-50-8	Copper	0.35	ug/L	U		MS	0.35	1	ICPMS12	151028-2
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	101215-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7439-95-4	Magnesium	9820	ug/L			P	110	1	OPTIMA3	101215-1
7439-96-5	Manganese	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7439-98-7	Molybdenum	2.28	ug/L			MS	0.165	1	ICPMS12	151030-3
7440-02-0	Nickel	0.5	ug/L	U		MS	0.5	1	ICPMS12	151028-2
7440-09-7	Potassium	5300	ug/L			P	50	1	OPTIMA3	101215-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS12	151030-3
7440-22-4	Silver	0.1	ug/L	U		MS	0.1	1	ICPMS12	151028-2
7440-23-5	Sodium	12500	ug/L			P	100	1	OPTIMA3	101215-1
7440-24-6	Strontium	150	ug/L			MS	2	1	ICPMS12	151028-2
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS12	151028-2
7440-29-1	Thorium	0.383	ug/L	U		MS	0.383	1	ICPMS12	151028-2
7440-31-5	Tin	1	ug/L	U		MS	1	1	ICPMS12	151028-2
7440-61-1	Uranium	1.4	ug/L			MS	0.067	1	ICPMS12	151028-2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL382652

METHOD TYPE: SW846

SAMPLE ID: 382652005

CLIENT ID: B32TW2

CONTRACT: CPRC0X16001

MATRIX: WATER

DATE RECEIVED 07-OCT-15

LEVEL: Low

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-62-2	Vanadium	9.61	ug/L			P	1	1	OPTIMA3	101215-1
7440-66-6	Zinc	3.5	ug/L	U		MS	3.5	1	ICPMS12	151028-2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A

Quality Control Summary

November 3, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: November 3, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 382652

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
QC1203407586	LCS										
Aluminum	2000			1900	ug/L		95	(80%-120%)	BAJ	10/28/15	19:15
Antimony	50.0			54.7	ug/L		109	(80%-120%)		10/30/15	23:18
Arsenic	50.0			52.7	ug/L		105	(80%-120%)		10/28/15	19:15
Barium	50.0			49.5	ug/L		99	(80%-120%)			
Beryllium	50.0			57.2	ug/L		114	(80%-120%)			
Cadmium	50.0			51.2	ug/L		102	(80%-120%)			
Chromium	50.0			51.1	ug/L		102	(80%-120%)			
Cobalt	50.0			49.8	ug/L		99.7	(80%-120%)			
Copper	50.0			50.2	ug/L		100	(80%-120%)			
Lead	50.0			51.4	ug/L		103	(80%-120%)			
Manganese	50.0			49.9	ug/L		99.7	(80%-120%)			
Molybdenum	50.0			55.4	ug/L		111	(80%-120%)		10/30/15	23:18
Nickel	50.0			52.2	ug/L		104	(80%-120%)		10/28/15	19:15
Selenium	50.0			55.2	ug/L		110	(80%-120%)		10/30/15	23:18
Silver	50.0			52.5	ug/L		105	(80%-120%)		10/28/15	19:15
Strontium	50.0			49.2	ug/L		98.3	(80%-120%)			
Thallium	50.0			49.8	ug/L		99.6	(80%-120%)			
Thorium	50.0			51.0	ug/L		102	(80%-120%)			
Tin	50.0			49.9	ug/L		99.8	(80%-120%)			
Uranium	50.0			50.8	ug/L		102	(80%-120%)			

November 3, 2015
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QC Summary

Workorder: 382652

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
Zinc	50.0			53.2	ug/L		106	(80%-120%)	BAJ	10/28/15	19:15
QC1203407585	MB										
Aluminum			U	15.0	ug/L					10/28/15	19:12
Antimony			U	1.00	ug/L					10/30/15	23:16
Arsenic			U	1.70	ug/L					10/28/15	19:12
Barium			U	0.600	ug/L						
Beryllium			U	0.200	ug/L						
Cadmium			U	0.110	ug/L						
Chromium			U	2.00	ug/L						
Cobalt			U	0.100	ug/L						
Copper			U	0.350	ug/L						
Lead			U	0.500	ug/L						
Manganese			U	1.00	ug/L						
Molybdenum			U	0.165	ug/L					10/30/15	23:16
Nickel			U	0.500	ug/L					10/28/15	19:12
Selenium			U	1.50	ug/L					10/30/15	23:16
Silver			U	0.100	ug/L					10/28/15	19:12
Strontium			U	2.00	ug/L						
Thallium			U	0.450	ug/L						
Thorium			U	0.383	ug/L						
Tin			U	1.00	ug/L						
Uranium			U	0.067	ug/L						

November 3, 2015
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QC Summary

Workorder: 382652

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
Zinc			U	3.50	ug/L				BAJ	10/28/15	19:12
QC1203407587 382659003 MS											
Aluminum	2000	889		2850	ug/L		98.1	(75%-125%)		10/28/15	20:00
Antimony	50.0	U	1.00	52.8	ug/L		105	(75%-125%)		10/30/15	23:43
Arsenic	50.0	U	1.70	53.4	ug/L		104	(75%-125%)		10/28/15	20:00
Barium	50.0		24.8	74.2	ug/L		98.9	(75%-125%)			
Beryllium	50.0	U	0.200	57.2	ug/L		114	(75%-125%)			
Cadmium	50.0	U	0.110	50.2	ug/L		100	(75%-125%)			
Chromium	50.0	U	2.00	52.7	ug/L		102	(75%-125%)			
Cobalt	50.0	B	0.536	50.1	ug/L		99.2	(75%-125%)			
Copper	50.0		3.05	51.6	ug/L		97.2	(75%-125%)			
Lead	50.0	U	0.500	50.3	ug/L		99.9	(75%-125%)			
Manganese	50.0		28.6	79.4	ug/L		102	(75%-125%)			
Molybdenum	50.0	B	0.294	55.2	ug/L		110	(75%-125%)		10/30/15	23:43
Nickel	50.0	B	1.07	52.8	ug/L		103	(75%-125%)		10/28/15	20:00
Selenium	50.0	U	1.50	53.0	ug/L		105	(75%-125%)		10/30/15	23:43
Silver	50.0	U	0.100	50.6	ug/L		101	(75%-125%)		10/28/15	20:00
Strontium	50.0		81.0	133	ug/L		105	(75%-125%)			
Thallium	50.0	U	0.450	48.6	ug/L		97.2	(75%-125%)			
Thorium	50.0	U	0.383	50.3	ug/L		100	(75%-125%)			
Tin	50.0	U	1.00	51.0	ug/L		102	(75%-125%)			
Uranium	50.0	B	0.096	50.6	ug/L		101	(75%-125%)			

November 3, 2015
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QC Summary

Workorder: 382652

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
Zinc	50.0	B	3.66	53.9	ug/L		101	(75%-125%)	BAJ	10/28/15	20:00
QC1203407588 382659003 MSD											
Aluminum	2000		889	2840	ug/L	0.407	97.6	(0%-20%)		10/28/15	20:03
Antimony	50.0	U	1.00	53.0	ug/L	0.42	106	(0%-20%)		10/30/15	23:45
Arsenic	50.0	U	1.70	52.9	ug/L	0.845	103	(0%-20%)		10/28/15	20:03
Barium	50.0		24.8	73.2	ug/L	1.41	96.8	(0%-20%)			
Beryllium	50.0	U	0.200	58.6	ug/L	2.37	117	(0%-20%)			
Cadmium	50.0	U	0.110	50.2	ug/L	0.0378	100	(0%-20%)			
Chromium	50.0	U	2.00	53.1	ug/L	0.757	102	(0%-20%)			
Cobalt	50.0	B	0.536	51.6	ug/L	2.89	102	(0%-20%)			
Copper	50.0		3.05	52.7	ug/L	1.96	99.2	(0%-20%)			
Lead	50.0	U	0.500	50.2	ug/L	0.205	99.7	(0%-20%)			
Manganese	50.0		28.6	79.5	ug/L	0.193	102	(0%-20%)			
Molybdenum	50.0	B	0.294	55.0	ug/L	0.526	109	(0%-20%)		10/30/15	23:45
Nickel	50.0	B	1.07	52.2	ug/L	1.03	102	(0%-20%)		10/28/15	20:03
Selenium	50.0	U	1.50	53.2	ug/L	0.232	105	(0%-20%)		10/30/15	23:45
Silver	50.0	U	0.100	50.6	ug/L	0.166	101	(0%-20%)		10/28/15	20:03
Strontium	50.0		81.0	129	ug/L	3.5	95.4	(0%-20%)			
Thallium	50.0	U	0.450	49.9	ug/L	2.68	99.8	(0%-20%)			
Thorium	50.0	U	0.383	50.7	ug/L	0.828	101	(0%-20%)			
Tin	50.0	U	1.00	51.0	ug/L	0.0353	102	(0%-20%)			
Uranium	50.0	B	0.096	50.8	ug/L	0.32	101	(0%-20%)			

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QC Summary

Workorder: 382652

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
Zinc	50.0	B	3.66		53.3	ug/L	1.27	99.2	(0%-20%)	BAJ	10/28/15 20:03
QC1203407589	382659003	SDILT									
Aluminum			889	D	190	ug/L	6.94		(0%-10%)		10/28/15 20:08
Antimony		U	0.157	DU	5.00	ug/L	N/A		(0%-10%)		10/30/15 23:47
Arsenic		U	1.28	DU	8.50	ug/L	N/A		(0%-10%)		10/28/15 20:08
Barium			24.8	D	5.64	ug/L	13.9		(0%-10%)		
Beryllium		U	0.042	DU	1.00	ug/L	N/A		(0%-10%)		
Cadmium		U	0.023	DU	0.550	ug/L	N/A		(0%-10%)		
Chromium		U	1.89	DU	10.0	ug/L	N/A		(0%-10%)		
Cobalt		B	0.536	D	0.107	ug/L	.187		(0%-10%)		
Copper			3.05	D	0.663	ug/L	8.76		(0%-10%)		
Lead		U	0.372	DU	2.50	ug/L	N/A		(0%-10%)		
Manganese			28.6	D	5.82	ug/L	1.7		(0%-10%)		
Molybdenum		B	0.294	DU	0.825	ug/L	N/A		(0%-10%)		10/30/15 23:47
Nickel		B	1.07	DU	2.50	ug/L	N/A		(0%-10%)		10/28/15 20:08
Selenium		U	0.544	DU	7.50	ug/L	N/A		(0%-10%)		10/30/15 23:47
Silver		U	0.007	DU	0.500	ug/L	N/A		(0%-10%)		10/28/15 20:08
Strontium			81.0	D	15.8	ug/L	2.43		(0%-10%)		
Thallium		U	0.020	DU	2.25	ug/L	N/A		(0%-10%)		
Thorium		U	0.163	DU	1.92	ug/L	N/A		(0%-10%)		
Tin		U	0.107	DU	5.00	ug/L	N/A		(0%-10%)		
Uranium		B	0.096	DU	0.335	ug/L	N/A		(0%-10%)		

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QC Summary

Workorder: 382652

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1513282										
Zinc		B	3.66	DU	17.5	ug/L	N/A	(0%-10%)	BAJ	10/28/15	20:08

Metals Analysis-ICP											
Batch	1513269										
QC1203407557	LCS										
Boron	500				514	ug/L		103	(80%-120%)	HSC	10/12/15 13:54
Calcium	5000				4900	ug/L		97.9	(80%-120%)		
Iron	5000				5270	ug/L		105	(80%-120%)		
Magnesium	5000				5130	ug/L		103	(80%-120%)		
Potassium	5000				5230	ug/L		105	(80%-120%)		
Sodium	5000				5240	ug/L		105	(80%-120%)		
Vanadium	500				525	ug/L		105	(80%-120%)		

QC1203407556	MB										
Boron				U	15.0	ug/L					10/12/15 13:50
Calcium				U	50.0	ug/L					
Iron				U	30.0	ug/L					
Magnesium				U	110	ug/L					
Potassium				U	50.0	ug/L					
Sodium				U	100	ug/L					
Vanadium				U	1.00	ug/L					

QC1203407558	382659003	MS									
Boron	500	U	15.0		529	ug/L		105	(75%-125%)		10/12/15 14:00
Calcium	5000		17900		22800	ug/L		98.5	(75%-125%)		
Iron	5000		1050		6400	ug/L		107	(75%-125%)		
Magnesium	5000		5020		10200	ug/L		104	(75%-125%)		

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QC Summary

Workorder: **382652**

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1513269										
Potassium	5000	1600		6940	ug/L		107	(75%-125%)			
Sodium	5000	2810		8290	ug/L		110	(75%-125%)	HSC	10/12/15	14:00
Vanadium	500	6.47		532	ug/L		105	(75%-125%)			
QC1203407559 382659003 MSD											
Boron	500	U	15.0	535	ug/L	1.17	106	(0%-20%)		10/12/15	14:03
Calcium	5000	17900		23100	ug/L	1.22	104	(0%-20%)			
Iron	5000	1050		6480	ug/L	1.21	109	(0%-20%)			
Magnesium	5000	5020		10300	ug/L	1.02	107	(0%-20%)			
Potassium	5000	1600		7050	ug/L	1.5	109	(0%-20%)			
Sodium	5000	2810		8380	ug/L	1.19	112	(0%-20%)			
Vanadium	500	6.47		536	ug/L	0.892	106	(0%-20%)			
QC1203407560 382659003 SDILT											
Boron		U	5.53	DU	75.0	ug/L	N/A	(0%-10%)		10/12/15	14:07
Calcium			17900	D	3520	ug/L	1.74	(0%-10%)			
Iron			1050	D	210	ug/L	.502	(0%-10%)			
Magnesium			5020	D	1000	ug/L	.449	(0%-10%)			
Potassium			1600	D	298	ug/L	7.01	(0%-10%)			
Sodium			2810	D	537	ug/L	4.34	(0%-10%)			
Vanadium			6.47	D	1.29	ug/L	.629	(0%-10%)			

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL382652
Work Order #: 382652**

Method/Analysis Information

Product: Carbon and Total Organic
Analytical Batch: 1514477 **Method:** 9060_TOC: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060A:

Sample ID	Client ID
382652002	B32TP5
1203410460	Method Blank (MB)
1203410461	Laboratory Control Sample (LCS)
1203410462	382104003(B31CH7) Sample Duplicate (DUP)
1203410463	382652002(B32TP5) Sample Duplicate (DUP)
1203410464	382961002(B32MH0) Sample Duplicate (DUP)
1203410465	382104003(B31CH7) Post Spike (PS)
1203410466	382652002(B32TP5) Post Spike (PS)
1203410467	382961002(B32MH0) Post Spike (PS)

Sample 382652 002 in this SDG was 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-093 REV# 13.

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 Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

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.

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

Samples 382104003 (B31CH7), 382652002 (B32TP5) and 382961002 (B32MH0) were 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

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Samples 1203410464 (Non SDG 382961002DUP) and 1203410467 (Non SDG 382961002PS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

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

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: Ion Chromatography
Analytical Batch: 1513155 **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
382652001	B32TP6
1203407327	Method Blank (MB)
1203407328	Laboratory Control Sample (LCS)
1203407329	382659002(B32XB4) Sample Duplicate (DUP)
1203407330	382659002(B32XB4) Post Spike (PS)

Sample 382652 001 in this SDG was 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# 24.

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-5000 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 382659002 (B32XB4) 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 following sample was diluted because target analyte concentrations exceeded the calibration range. 382652001 (B32TP6).

Analyte	382652
	001
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 1203407329 (Non SDG 382659002DUP), 1203407330 (Non SDG 382659002PS) and 382652001 (B32TP6) 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: 1514559 **Method:** 2320_ALKALINITY: COMMON (Alkalinity only)

Sample Analysis

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

Sample ID	Client ID
382652002	B32TP5
382652004	B32TV9
1203410671	Method Blank (MB)
1203410672	Laboratory Control Sample (LCS)
1203410673	382748003(B32LL4) Sample Duplicate (DUP)

Samples 382652 002 and 004 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 382748003 (B32LL4) was selected for QC analysis.

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

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

November 3, 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.

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL382652 GEL Work Order: 382652

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: 02 NOV 2015

Title: Data Validator

Sample Data Summary

~~November 2, 2015~~
GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: November 2, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF X16-001

Client Sample ID: B32TP6	Project: CPRC0X16001
Sample ID: 382652001	Client ID: CPRC001
Matrix: WATER	
Collect Date: 06-OCT-15 10:40	
Receive Date: 07-OCT-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
9056_ANIONS_IC: COMMON "As Received"											
Chloride		8980	67.0	200	ug/L	1	RXB5	10/07/15	1234	1513155	1
Fluoride	B	225	33.0	500	ug/L	1					
Nitrate-N		1590	33.0	250	ug/L	1					
Nitrite-N	U	38.0	38.0	250	ug/L	1					
Sulfate	D	33300	1330	4000	ug/L	10	RXB5	10/07/15	1922	1513155	2

The following Analytical Methods were performed:

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

Notes:

~~November 2, 2015~~
GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: November 2, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF X16-001

Client Sample ID: B32TP5	Project: CPRC0X16001
Sample ID: 382652002	Client ID: CPRC001
Matrix: WATER	
Collect Date: 06-OCT-15 10:40	
Receive Date: 07-OCT-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
9060_TOC: COMMON "As Received"											
Total Organic Carbon #1	B	384	330	1000	ug/L	1	TSM	10/22/15	0852	1514477	1
Total Organic Carbon #2	B	400	330	1000	ug/L	1					
Total Organic Carbon #3	B	392	330	1000	ug/L	1					
Total Organic Carbon #4	B	397	330	1000	ug/L	1					
Total Organic Carbon Average	B	393	330	1000	ug/L	1					
Titration and Ion Analysis											
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"											
Alkalinity, Total as CaCO3		118000	725	1000	ug/L		AMB	10/14/15	1723	1514559	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A	
2	2320_ALKALINITY	

Notes:

Certificate of Analysis

Report Date: November 2, 2015

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF X16-001

Client Sample ID: B32TV9	Project: CPRC0X16001
Sample ID: 382652004	Client ID: CPRC001
Matrix: WATER	
Collect Date: 06-OCT-15 11:18	
Receive Date: 07-OCT-15	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: COMMON (Alkalinity only) "As Received"											
Alkalinity, Total as CaCO3		114000	725	1000	ug/L		AMB	10/14/15	1726	1514559	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

November 3, 2015
GEL LABORATORIES LLC

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

QC Summary

Report Date: November 2, 2015

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 382652

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1514477										
QC1203410462	382104003	DUP									
Total Organic Carbon Average	U	330	U	330	ug/L	N/A			TSM	10/22/15	07:29
QC1203410463	382652002	DUP									
Total Organic Carbon Average	B	393	B	417	ug/L	5.93 ^		(+/-1000)		10/22/15	09:34
QC1203410464	382961002	DUP									
Total Organic Carbon Average	B	723	B	722	ug/L	0.138 ^		(+/-1000)		10/23/15	18:18
QC1203410461	LCS										
Total Organic Carbon Average	10000			10000	ug/L		100	(85%-115%)		10/22/15	06:07
QC1203410460	MB										
Total Organic Carbon Average			U	330	ug/L					10/22/15	05:53
QC1203410465	382104003	PS									
Total Organic Carbon Average	10.0	U	0.236	10.6	mg/L		103	(65%-120%)		10/22/15	08:10
QC1203410466	382652002	PS									
Total Organic Carbon Average	10.0	B	0.393	10.7	mg/L		103	(65%-120%)		10/22/15	10:16
QC1203410467	382961002	PS									
Total Organic Carbon Average	10.0	B	0.723	10.6	mg/L		98.8	(65%-120%)		10/23/15	19:00
Ion Chromatography											
Batch	1513155										
QC1203407329	382659002	DUP									
Chloride		653		651	ug/L	0.322 ^		(+/-200)	RXB5	10/07/15	14:40
Fluoride	B	113	B	118	ug/L	3.9 ^		(+/-500)			
Nitrate-N	B	133	B	131	ug/L	1.44 ^		(+/-250)			
Nitrite-N	U	38.0	U	38.0	ug/L	N/A					
Sulfate		9910		9900	ug/L	0.118		(0%-20%)			
QC1203407328	LCS										
Chloride	5000			4730	ug/L		94.6	(90%-110%)		10/07/15	16:14
Fluoride	2500			2430	ug/L		97	(90%-110%)			

November 3, 2015
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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1513155										
Nitrate-N	2500			2420	ug/L		96.6	(90%-110%)			
Nitrite-N	2500			2420	ug/L		96.7	(90%-110%)	RXB5	10/07/15	16:14
Sulfate	10000			9920	ug/L		99.2	(90%-110%)			
QC1203407327 MB											
Chloride			U	67.0	ug/L					10/07/15	15:43
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	38.0	ug/L						
Sulfate			U	133	ug/L						
QC1203407330 382659002 PS											
Chloride	5.00	0.653		5.49	mg/L		96.7	(90%-110%)		10/07/15	15:11
Fluoride	2.50	B 0.113		2.53	mg/L		96.7	(90%-110%)			
Nitrate-N	2.50	B 0.133		2.52	mg/L		95.6	(90%-110%)			
Nitrite-N	2.50	U 0.00		2.45	mg/L		97.9	(90%-110%)			
Sulfate	10.0	9.91		20.7	mg/L		108	(90%-110%)			
Titration and Ion Analysis											
Batch	1514559										
QC1203410673 382748003 DUP											
Alkalinity, Total as CaCO3		88900		89400	ug/L	0.567		(0%-20%)	AMB	10/14/15	17:33
QC1203410672 LCS											
Alkalinity, Total as CaCO3	50000			52500	ug/L		105	(90%-110%)		10/14/15	16:46
QC1203410671 MB											
Alkalinity, Total as CaCO3			U	725	ug/L					10/14/15	16:46

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

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	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.										
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.