

March 9, 2015

Rev. 2 

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

February 16, 2015

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

Re: CHPRC SAF X15-002  
Work Order: 358687  
SDG: GEL358687

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 09, 2014. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per client P&D, this data package was revised to remove the DOC analysis from sample ID B2Y225.

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: 303271ES20 - 7H  
Chain of Custody: X15-002-084 and X15-002-085  
Enclosures



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# **Problem and Discrepancy Report**

## Problem and Discrepancy Report

GEL

SDG GEL358687

02/02/15

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**1. The data package has the following issues:**

- The hard copy report has DOC reported for sample B2Y225. A SIR was issued to cancel the DOC analysis requested in this SDG but sample B2Y225 was missed. Please remove the DOC data from the hard copy for this sample and re-report.

**Resolution:** *Provide correction.*

**Lab Response:**

The lab will remove the DOC data from the report and submit a revision. The lab did complete the DOC analysis prior to the request to cancel.

Provide a resolution to each issue noted on the report

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# Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR15-038
REV NUM	0
DATE INITIATED	10/20/2014

SAMPLE EVENT INFORMATION

SAF NUM(S) X15-002  
 OPERABLE UNIT(S) 100-BC-5  
 PROJECT(S) CERC15  
 SAMPLE EVENT TITLE(S) CERC15  
 LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 7  
 SAMPLE NUMBERS B2Y1H3, B2Y1H4, B2Y1K5, B2Y1K6, B2Y1X6, B2Y1X7, B2Y223  
 SAMPLE MATRIX WATER  
 COLLECTION DATE 10/7/2014 - 10/16/2014  
 SDG NUM GEL359372, GEL358687

ISSUE BACKGROUND

CLASS General Laboratory Direction  
 TYPE Cancellation of Analyses  
 DESCRIPTION DOC analysis was canceled for SAF X15-002. The above listed samples were received at GEL for DOC analysis and will be canceled. Sample B2Y223 was received at GEL on 10/9 and the lab was in process of analysis. They have put this sample to a do not use status and we will not report unless otherwise notified.

DISPOSITION

DESCRIPTION Proposed Disposition: Cancel DOC analysis.  
 JUSTIFICATION Accept Proposed Disposition  
 SUBMITTED BY: Heather Shaffer DATE: 10/20/2014  
 ACCEPTED BY: Karen Waters-Husted DATE: 10/20/2014

<b>SAMPLE ISSUE RESOLUTION</b>	<b>SIR NUM</b>	SDR15-038
	<b>REV NUM</b>	1
	<b>DATE INITIATED</b>	11/18/2014

**SAMPLE EVENT INFORMATION**

**SAF NUM(S)** X15-002  
**OPERABLE UNIT(S)** 100-BC-5  
**PROJECT(S)** CERC15  
**SAMPLE EVENT TITLE(S)** CERC15  
**LABORATORY** GEL Laboratories, LLC

**SAMPLING INFORMATION**

**NUMBER OF SAMPLES** 7  
**SAMPLE NUMBERS** B2Y1H3, B2Y1H4, B2Y1K5, B2Y1K6, B2Y1X6, B2Y1X7, B2Y225  
**SAMPLE MATRIX** WATER  
**COLLECTION DATE** 10/7/2014 - 10/16/2014  
**SDG NUM** GEL359372, GEL358687, GEL359405

**ISSUE BACKGROUND**

**CLASS** General Laboratory Direction  
**TYPE** Cancellation of Analyses  
**DESCRIPTION** DOC analysis was canceled for SAF X15-002. The above listed samples were received at GEL for DOC analysis and will be canceled. Sample B2Y225 was received at GEL on 10/9 and the lab was in process of analysis. They have put this sample to a do not use status and we will not report unless otherwise notified.  
 Rev 1 due to a typo in sample number being corrected. SJC 11/18/2014

**DISPOSITION**

**DESCRIPTION** Proposed Disposition: Cancel DOC analysis.

**JUSTIFICATION** Accept Proposed Disposition

SUBMITTED BY: Heather Shaffer DATE: 10/20/2014  
 ACCEPTED BY: Karen Waters-Husted DATE: 10/20/2014

# Case Narrative

Per client P&D, this data package was revised to remove the DOC analysis from sample ID B2Y225.

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF X15-002  
SDG: GEL358687**

**February 16, 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 09, 2014, 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:

<b>Laboratory Identification</b>	<b>Sample Description</b>
358687001	B2Y223
358687002	B2Y225
358687003	B2Y222

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



Heather Shaffer  
Project Manager

# **Chain of Custody and Supporting Documentation**

March 9, 2015

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CH2M Hill Plateau Remediation Company		C.O.C. # <b>X15-002-085</b>	
Collector M.A. White CHPRC X15-002		Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650
SAF No. 100-BC-5 RI Sampling, OCT 2014		Sampling Origin Hanford Site	Purchase Order/Charge Code 303271ES20
Project Title 100-BC-5 RI Sampling, OCT 2014		Logbook No. HNF-N-506 (8/25)	Ice Chest No. 6005-118
Shipped To (Lab) GEL Laboratories, LLC		Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 7714 2383 1461
Protocol CERCLA		Priority: 30 Days	Offsite Property No. 5137
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> ** ** 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		<b>SPECIAL INSTRUCTIONS</b> Do not batch FY14 and FY15 samples into the same SDG.	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample No. B2Y223	Filter * N	Date OCT 07 2014	Time 1432
No/Type Container 1x250-mL GIP	Sample Analysis 9056_ANIONS_IC: COMMON	Holding Time 28 Days/48 Hours	Preservative Cool <=6C

Relinquished By M.A. White CHPRC	Print ma White	Sign [Signature]	Date/Time OCT 07 2014 1500	Received By SSU-1	Print SSU-1	Sign [Signature]	Date/Time OCT 07 2014 1500	Matrix *
Relinquished By SSU-1	Print [Signature]	Sign [Signature]	Date/Time OCT 08 2014 0815	Received By L.D. Wall CHPRC	Print L.D. Wall	Sign [Signature]	Date/Time OCT 08 2014 0815	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Relinquished By L.D. Wall CHPRC	Print L.D. Wall	Sign [Signature]	Date/Time OCT 08 2014 1400	Received By FEDEX	Print FEDEX	Sign [Signature]	Date/Time OCT 08 2014 1400	
Relinquished By	Print [Signature]	Sign [Signature]	Date/Time OCT 08 2014 1400	Received By P. Went Patricia Dent	Print P. Went Patricia Dent	Sign [Signature]	Date/Time 10/9/14 0930	
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time		

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X15-002-084

Page 1 of 1

Collector: M.A. White  
 CHPRC

SAF No.: X15-002

Project Title: 100-BC-5 RI Sampling, OCT 2014

Shipped To (Lab): GEL Laboratories, LLC

Protocol: CERCLA

Contact/Requester: Karen Waters-Husted

Sampling Origin: Hanford Site

Logbook No.: HNF-N-506 1915

Method of Shipment: Commercial Carrier

Priority: 30 Days

Telephone No.: 509-376-4650

Purchase Order/Charge Code: 30327IES20

Ice Chest No.: 6WS-118

Bill of Lading/Air Bill No.: 7714 2383 1461

Offsite Property No.: 5137

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

**SPECIAL INSTRUCTIONS** Hold Time: Total Activity Exemption: Yes  No

Do not batch FY14 and FY15 samples into the same SDG.

Sample No.	Filter	* Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2Y225	Y	OCT 07 2014	1432	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B2Y225	Y			1x250-mL aG	9060_DOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B2Y222	N			1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B2Y222	N			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B2Y222	N			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

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Relinquished By: M.A. White  
 CHPRC

Relinquished By: 13 of 6

Relinquished By: L.D. Wall  
 CHPRC

Relinquished By: Fe D X

Received By: SSK#1  
 L.D. Wall  
 CHPRC

Received By: FEDEX

Received By: P. Valent Patricia Dent

Date/Time: OCT 07 2014 1510

Date/Time: OCT 08 2014 0815

Date/Time: OCT 08 2014 1400

Date/Time: 10/14/09 30

Print: [Signatures]

Sign: [Signatures]

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

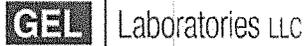
Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: [Signature]

FINAL SAMPLE DISPOSITION

PRINTED O 9/4/2014

A-6004-842 (REV 2)



SAMPLE RECEIPT & REVIEW FORM

Client: CPBC		SDG/AR/COC/Work Order: 358087	
Received By: P. Went		Date Received: 10/21/14	
<b>Suspected Hazard Information</b>		Yes	No
*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.			
COC/Samples marked as radioactive?		X	
Classified Radioactive II or III by RSO?		X	
COC/Samples marked containing PCBs?		X	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		X	
If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.			
Shipped as a DOT Hazardous?		X	
Samples identified as Foreign Soil?		X	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Ice bags <u>Blue</u> ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: 2C Secondary Temperature Device Serial # (If Applicable): 130462966
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	X			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?	X			Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			X	
13	COC form is properly signed in relinquished/received sections?	X			
14	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other  7714 2383 1461-2c

Comments (Use Continuation Form if needed):

# **Data Review Qualifier Definitions**

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

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol-condensation product	Y	Organics	Semi-Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (Organics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely performed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is $\geq$ MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is $\geq$ EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is $\geq$ EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

# Laboratory Certifications

**List of current GEL Certifications as of 16 February 2015**

<b>State</b>	<b>Certification</b>
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-15-10
Utah NELAP	SC000122014-16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12

# Metals Analysis

# Case Narrative

**Metals Fractional Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG GEL358687**

<b>Sample ID</b>	<b>Client ID</b>
358687002	B2Y225
358687003	B2Y222
1203184883	Method Blank (MB) <b>ICP</b>
1203184884	Laboratory Control Sample (LCS)
1203184887	358687002(B2Y225L) Serial Dilution (SD)
1203184885	358687002(B2Y225S) Matrix Spike (MS)
1203184886	358687002(B2Y225SD) Matrix Spike Duplicate (MSD)
1203184787	Method Blank (MB) <b>ICP-MS</b>
1203184788	Laboratory Control Sample (LCS)
1203184791	358687002(B2Y225L) Serial Dilution (SD)
1203184789	358687002(B2Y225S) Matrix Spike (MS)
1203184790	358687002(B2Y225SD) Matrix Spike Duplicate (MSD)

**Sample Analysis**

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

**Method/Analysis Information**

<b>Analytical Batch:</b>	1426222 and 1426184
<b>Prep Batch :</b>	1426221 and 1426182
<b>Standard Operating Procedures:</b>	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 11 and GL-MA-E-014 REV# 25
<b>Analytical Method:</b>	SW846 3005A/6010C and SW846 3005A/6020A
<b>Prep Method :</b>	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. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 0.4L/min, argon gas flows of 13 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/-7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 300X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1600W power, 16 L/m for the plasma, and 1.2 L/m auxiliary gases, and 1.12 L/min carrier gas flow.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1600W power, 16 L/m for the plasma, and 1.2 L/m auxiliary gases, and 1.12 L/min carrier gas flow.

#### **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: 358687002 (B2Y225)-ICP and ICP-MS.

##### **Matrix Spike (MS) Recovery Statement**

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

##### **Matrix Spike Duplicate (MSD) Recovery Statement**

The percent recovery (%R) obtained from the MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable analytes met the acceptance criteria.

#### **MS/MSD Relative Percent Difference (RPD) Statement**

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

#### **Serial Dilution % Difference Statement**

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

#### **Technical Information**

##### **Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. 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**

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

##### **Preparation Information**

The samples in this SDG were prepared exactly 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**

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. Data exception reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. A data exception report was not required for this SDG.

##### **Additional Comments**

Additional comments were not required for this SDG.



# Sample Data Summary

**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: GEL358687 GEL Work Order: 358687

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

\* Duplicate analysis not within control limits

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

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

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

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by

Nick Cole A. Elmore 11.5.14

## Certificate of Analysis

Company : CH2MHill Plateau Remediation  
 Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 5, 2014

Client Sample ID:	B2Y225	Project:	CPRC0X15002
Sample ID:	358687002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	07-OCT-14 14:32		
Receive Date:	09-OCT-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP</b>											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		33400	+/-6680	50.0	200	ug/L	1	HSC	10/16/14	1511	1426222 1
7440-70-2											
Iron	U	13.0	+/-10.3	30.0	100	ug/L	1				
7439-89-6											
Magnesium		10600	+/-2120	110	300	ug/L	1				
7439-95-4											
Potassium		5810	+/-1160	50.0	150	ug/L	1				
7440-09-7											
Sodium		13300	+/-2660	100	300	ug/L	1				
7440-23-5											
Vanadium		18.8	+/-3.77	1.00	5.00	ug/L	1				
7440-62-2											
<b>Metals Analysis-ICP-MS</b>											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Antimony	U	0.191	+/-0.336	1.00	5.00	ug/L	1	BAJ	11/01/14	2129	1426184 2
7440-36-0											
Arsenic		4.50	+/-1.06	1.70	5.00	ug/L	1				
7440-38-2											
Barium		7.29	+/-1.47	0.600	5.00	ug/L	1				
7440-39-3											
Cadmium	U	0.008	+/-0.0367	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		8.79	+/-1.88	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	U	0.021	+/-0.0336	0.100	4.00	ug/L	1				
7440-48-4											
Copper	U	0.130	+/-0.120	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.049	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese	U	0.900	+/-0.379	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	B	0.598	+/-0.205	0.500	2.00	ug/L	1				
7440-02-0											
Silver	U	0.007	+/-0.0667	0.200	2.00	ug/L	1				

## Certificate of Analysis

Company : CH2MHill Plateau Remediation  
 Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 5, 2014

Client Sample ID: B2Y225      Project: CPRC0X15002  
 Sample ID: 358687002      Client ID: CPRC001

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP-MS</b>												
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>												
7440-22-4		138	+/-27.7	2.00	10.0	ug/L	1					
Strontium												
7440-24-6	U	0.003	+/-0.150	0.450	2.00	ug/L	1					
Thallium												
7440-28-0	U	0.005	+/-0.128	0.383	2.00	ug/L	1					
Thorium												
7440-29-1	U	0.264	+/-0.337	1.00	5.00	ug/L	1					
Tin												
7440-31-5	U	3.38	+/-1.35	3.50	10.0	ug/L	1					
Zinc												
7440-66-6	B	13.2	+/-2.95	4.00	15.0	ug/L	1	PRB	11/03/14	1142	1426184	3
Boron												
7440-42-8	U	-0.008	+/-0.0667	0.200	2.00	ug/L	1	BAJ	11/03/14	1115	1426184	4
Beryllium												
7440-41-7	U	3.17	+/-5.04	15.0	50.0	ug/L	1	BAJ	11/02/14	1701	1426184	5
Aluminum												
7429-90-5	B	2.78	+/-0.560	0.165	20.0	ug/L	1					
Molybdenum												
7439-98-7	U	1.06	+/-0.543	1.50	5.00	ug/L	1					
Selenium												
7782-49-2		1.33	+/-0.267	0.067	0.200	ug/L	1					
Uranium												
7440-61-1												

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	10/13/14	0900	1426182
SW846 3005A	SW846 3005A for 6010C	JP1	10/14/14	1243	1426221

**The following Analytical Methods were performed**

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

## Certificate of Analysis

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 5, 2014

Client Sample ID:	B2Y222	Project:	CPRC0X15002
Sample ID:	358687003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	07-OCT-14 14:32		
Receive Date:	09-OCT-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP</b>											
<i>6010_METALS_ICP:GW 04 (6 metals) "As Received"</i>											
Calcium		33700	+/-6740	50.0	200	ug/L	1	HSC	10/16/14	1508	1426222 1
7440-70-2											
Iron		239	+/-48.9	30.0	100	ug/L	1				
7439-89-6											
Magnesium		10900	+/-2180	110	300	ug/L	1				
7439-95-4											
Potassium		5830	+/-1170	50.0	150	ug/L	1				
7440-09-7											
Sodium		13400	+/-2680	100	300	ug/L	1				
7440-23-5											
Vanadium		19.1	+/-3.84	1.00	5.00	ug/L	1				
7440-62-2											
<b>Metals Analysis-ICP-MS</b>											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
Antimony	U	0.129	+/-0.334	1.00	5.00	ug/L	1	BAJ	11/01/14	2140	1426184 2
7440-36-0											
Arsenic		4.75	+/-1.11	1.70	5.00	ug/L	1				
7440-38-2											
Barium		7.17	+/-1.45	0.600	5.00	ug/L	1				
7440-39-3											
Cadmium	U	0.00	+/-0.0367	0.110	2.00	ug/L	1				
7440-43-9											
Chromium		8.65	+/-1.85	2.00	10.0	ug/L	1				
7440-47-3											
Cobalt	U	0.010	+/-0.0334	0.100	4.00	ug/L	1				
7440-48-4											
Copper	U	0.088	+/-0.118	0.350	8.00	ug/L	1				
7440-50-8											
Lead	U	0.067	+/-0.167	0.500	2.00	ug/L	1				
7439-92-1											
Manganese		5.13	+/-1.08	1.00	5.00	ug/L	1				
7439-96-5											
Nickel	U	0.137	+/-0.169	0.500	2.00	ug/L	1				
7440-02-0											
Silver	U	0.022	+/-0.0668	0.200	2.00	ug/L	1				

## Certificate of Analysis

Company : CH2MHill Plateau Remediation  
 Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 5, 2014

Client Sample ID: B2Y222      Project: CPRC0X15002  
 Sample ID: 358687003      Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Metals Analysis-ICP-MS</b>											
<i>6020_METALS_ICPMS: GW 01 "As Received"</i>											
7440-22-4		139	+/-27.8	2.00	10.0	ug/L					
Strontium											
7440-24-6	U	0.006	+/-0.150	0.450	2.00	ug/L					
Thallium											
7440-28-0	U	0.005	+/-0.128	0.383	2.00	ug/L					
Thorium											
7440-29-1	U	0.032	+/-0.333	1.00	5.00	ug/L					
Tin											
7440-31-5	U	3.31	+/-1.34	3.50	10.0	ug/L					
Zinc											
7440-66-6		15.7	+/-3.42	4.00	15.0	ug/L	1	PRB	11/03/14	1148	1426184 3
Boron											
7440-42-8	U	-0.006	+/-0.0667	0.200	2.00	ug/L	1	BAJ	11/03/14	1129	1426184 4
Beryllium											
7440-41-7	U	4.16	+/-5.07	15.0	50.0	ug/L	1	BAJ	11/02/14	1724	1426184 5
Aluminum											
7429-90-5	B	2.47	+/-0.497	0.165	20.0	ug/L					
Molybdenum											
7439-98-7	U	1.27	+/-0.561	1.50	5.00	ug/L					
Selenium											
7782-49-2		1.28	+/-0.257	0.067	0.200	ug/L					
Uranium											
7440-61-1											

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3005A	ICP-MS 3005A PREP	KXP3	10/13/14	0900	1426182
SW846 3005A	SW846 3005A for 6010C	JP1	10/14/14	1243	1426221

**The following Analytical Methods were performed**

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

# Quality Control Summary

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## QC Summary

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 358687

Parmname	NOM	Sample Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>										
Batch	1426184									
QC1203184788	LCS									
Aluminum	2000		1990	ug/L		99.7	(80%-120%)	BAJ	11/02/14	16:25
Antimony	50.0		51.4	ug/L		103	(80%-120%)		11/01/14	21:07
Arsenic	50.0		56.1	ug/L		112	(80%-120%)			
Barium	50.0		50.2	ug/L		100	(80%-120%)			
Beryllium	50.0		54.2	ug/L		108	(80%-120%)		11/03/14	10:47
Boron	100		117	ug/L		117	(80%-120%)	PRB	11/03/14	11:31
Cadmium	50.0		52.1	ug/L		104	(80%-120%)	BAJ	11/01/14	21:07
Chromium	50.0		53.1	ug/L		106	(80%-120%)			
Cobalt	50.0		52.5	ug/L		105	(80%-120%)			
Copper	50.0		54.4	ug/L		109	(80%-120%)			
Lead	50.0		52.3	ug/L		105	(80%-120%)			
Manganese	50.0		53.8	ug/L		108	(80%-120%)			
Molybdenum	50.0		51.2	ug/L		102	(80%-120%)		11/02/14	16:25
Nickel	50.0		53.8	ug/L		108	(80%-120%)		11/01/14	21:07
Selenium	50.0		53.4	ug/L		107	(80%-120%)		11/02/14	16:25
Silver	50.0		54.3	ug/L		109	(80%-120%)		11/01/14	21:07
Strontium	50.0		53.4	ug/L		107	(80%-120%)			
Thallium	50.0		50.0	ug/L		100	(80%-120%)			
Thorium	50.0		51.8	ug/L		104	(80%-120%)			
Tin	50.0		51.4	ug/L		103	(80%-120%)			

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QC Summary

Workorder: 358687

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1426184										
Uranium	50.0			45.8	ug/L		91.5	(80%-120%)	BAJ	11/02/14	16:25
Zinc	50.0			54.8	ug/L		110	(80%-120%)		11/01/14	21:07
QC1203184787	MB										
Aluminum			U	ND	ug/L					11/02/14	16:20
Antimony			U	ND	ug/L					11/01/14	21:05
Arsenic			U	ND	ug/L						
Barium			U	ND	ug/L						
Beryllium			U	ND	ug/L					11/03/14	10:43
Boron			U	ND	ug/L				PRB	11/03/14	11:29
Cadmium			U	ND	ug/L				BAJ	11/01/14	21:05
Chromium			U	ND	ug/L						
Cobalt			U	ND	ug/L						
Copper			U	ND	ug/L						
Lead			U	ND	ug/L						
Manganese			U	ND	ug/L						
Molybdenum			U	ND	ug/L					11/02/14	16:20
Nickel			U	ND	ug/L					11/01/14	21:05
Selenium			U	ND	ug/L					11/02/14	16:20
Silver			U	ND	ug/L					11/01/14	21:05
Strontium			U	ND	ug/L						
Thallium			U	ND	ug/L						
Thorium			U	ND	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1426184										
Tin			U	ND	ug/L				BAJ	11/01/14	21:05
Uranium			U	ND	ug/L					11/02/14	16:20
Zinc			U	ND	ug/L					11/01/14	21:05
QC1203184789 358687002 MS											
Aluminum	2000	U	ND	1890	ug/L		94.2	(75%-125%)		11/02/14	17:06
Antimony	50.0	U	ND	49.7	ug/L		98.9	(75%-125%)		11/01/14	21:31
Arsenic	50.0		4.50	58.6	ug/L		108	(75%-125%)			
Barium	50.0		7.29	55.2	ug/L		95.9	(75%-125%)			
Beryllium	50.0	U	ND	48.9	ug/L		97.8	(75%-125%)		11/03/14	11:18
Boron	100	B	13.2	127	ug/L		114	(75%-125%)	PRB	11/03/14	11:44
Cadmium	50.0	U	ND	49.8	ug/L		99.7	(75%-125%)	BAJ	11/01/14	21:31
Chromium	50.0		8.79	60.1	ug/L		103	(75%-125%)			
Cobalt	50.0	U	ND	50.2	ug/L		100	(75%-125%)			
Copper	50.0	U	ND	52.1	ug/L		104	(75%-125%)			
Lead	50.0	U	ND	50.2	ug/L		100	(75%-125%)			
Manganese	50.0	U	ND	52.0	ug/L		102	(75%-125%)			
Molybdenum	50.0	B	2.78	54.4	ug/L		103	(75%-125%)		11/02/14	17:06
Nickel	50.0	B	0.598	51.5	ug/L		102	(75%-125%)		11/01/14	21:31
Selenium	50.0	U	ND	53.8	ug/L		105	(75%-125%)		11/02/14	17:06
Silver	50.0	U	ND	50.8	ug/L		102	(75%-125%)		11/01/14	21:31
Strontium	50.0		138	190	ug/L		104	(75%-125%)			
Thallium	50.0	U	ND	48.1	ug/L		96.2	(75%-125%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1426184										
Thorium	50.0	U	ND	51.4	ug/L		103	(75%-125%)	BAJ	11/01/14	21:31
Tin	50.0	U	ND	49.3	ug/L		98	(75%-125%)			
Uranium	50.0		1.33	47.3	ug/L		92	(75%-125%)		11/02/14	17:06
Zinc	50.0	U	ND	54.8	ug/L		103	(75%-125%)		11/01/14	21:31
QC1203184790 358687002 MSD											
Aluminum	2000	U	ND	1850	ug/L	2.17	92.2	(0%-20%)		11/02/14	17:10
Antimony	50.0	U	ND	50.2	ug/L	1.07	100	(0%-20%)		11/01/14	21:33
Arsenic	50.0		4.50	60.6	ug/L	3.35	112	(0%-20%)			
Barium	50.0		7.29	55.4	ug/L	0.279	96.2	(0%-20%)			
Beryllium	50.0	U	ND	49.9	ug/L	2.05	99.8	(0%-20%)		11/03/14	11:22
Boron	100	B	13.2	130	ug/L	2.47	117	(0%-20%)	PRB	11/03/14	11:45
Cadmium	50.0	U	ND	51.2	ug/L	2.62	102	(0%-20%)	BAJ	11/01/14	21:33
Chromium	50.0		8.79	59.2	ug/L	1.51	101	(0%-20%)			
Cobalt	50.0	U	ND	49.5	ug/L	1.22	99	(0%-20%)			
Copper	50.0	U	ND	51.7	ug/L	0.834	103	(0%-20%)			
Lead	50.0	U	ND	50.7	ug/L	1.10	101	(0%-20%)			
Manganese	50.0	U	ND	52.3	ug/L	0.504	103	(0%-20%)			
Molybdenum	50.0	B	2.78	54.9	ug/L	0.831	104	(0%-20%)		11/02/14	17:10
Nickel	50.0	B	0.598	50.6	ug/L	1.73	100	(0%-20%)		11/01/14	21:33
Selenium	50.0	U	ND	53.8	ug/L	0.026	105	(0%-20%)		11/02/14	17:10
Silver	50.0	U	ND	51.0	ug/L	0.285	102	(0%-20%)		11/01/14	21:33
Strontium	50.0		138	198	ug/L	4.04	120	(0%-20%)			

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**QC Summary**

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1426184										
Thallium	50.0	U	ND	48.8	ug/L	1.46	97.6	(0%-20%)	BAJ	11/01/14	21:33
Thorium	50.0	U	ND	52.2	ug/L	1.49	104	(0%-20%)			
Tin	50.0	U	ND	50.6	ug/L	2.66	101	(0%-20%)			
Uranium	50.0		1.33	50.2	ug/L	5.82	97.7	(0%-20%)		11/02/14	17:10
Zinc	50.0	U	ND	54.7	ug/L	0.248	103	(0%-20%)		11/01/14	21:33
QC1203184791 358687002 SDILT											
Aluminum		U	ND DU	ND	ug/L	N/A		(0%-10%)		11/02/14	17:19
Antimony		U	ND DU	ND	ug/L	N/A		(0%-10%)		11/01/14	21:38
Arsenic			4.50 DU	ND	ug/L	N/A		(0%-10%)			
Barium			7.29 D	1.40	ug/L	4.26		(0%-10%)			
Beryllium		U	ND DU	ND	ug/L	N/A		(0%-10%)		11/03/14	11:25
Boron		B	13.2 D	10.8	ug/L	310		(0%-10%)	PRB	11/03/14	11:46
Cadmium		U	ND DU	ND	ug/L	N/A		(0%-10%)	BAJ	11/01/14	21:38
Chromium			8.79 DU	ND	ug/L	N/A		(0%-10%)			
Cobalt		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Copper		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Lead		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Manganese		U	ND DU	ND	ug/L	N/A		(0%-10%)			
Molybdenum		B	2.78 D	0.530	ug/L	4.81		(0%-10%)		11/02/14	17:19
Nickel		B	0.598 DU	ND	ug/L	N/A		(0%-10%)		11/01/14	21:38
Selenium		U	ND DU	ND	ug/L	N/A		(0%-10%)		11/02/14	17:19
Silver		U	ND DU	ND	ug/L	N/A		(0%-10%)		11/01/14	21:38

**GEL LABORATORIES LLC**

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**QC Summary**

Workorder: 358687

Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1426184										
Strontium		138	D	26.1	ug/L	5.44		(0%-10%)	BAJ	11/01/14	21:38
Thallium	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Thorium	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Tin	U	ND	DU	ND	ug/L	N/A		(0%-10%)			
Uranium		1.33	D	0.258	ug/L	2.93		(0%-10%)		11/02/14	17:19
Zinc	U	ND	DU	ND	ug/L	N/A		(0%-10%)		11/01/14	21:38
<b>Metals Analysis-ICP</b>											
Batch	1426222										
QC1203184884	LCS										
Calcium	5000			4950	ug/L		99	(80%-120%)	HSC	10/16/14	15:05
Iron	5000			5050	ug/L		101	(80%-120%)			
Magnesium	5000			5110	ug/L		102	(80%-120%)			
Potassium	5000			4750	ug/L		94.9	(80%-120%)			
Sodium	5000			4720	ug/L		94.3	(80%-120%)			
Vanadium	500			503	ug/L		101	(80%-120%)			
QC1203184883	MB										
Calcium			U	ND	ug/L					10/16/14	15:02
Iron			U	ND	ug/L						
Magnesium			U	ND	ug/L						
Potassium			U	ND	ug/L						
Sodium			U	ND	ug/L						
Vanadium			U	ND	ug/L						
QC1203184885	358687002 MS										
Calcium	5000	33400		39900	ug/L		N/A	(75%-125%)		10/16/14	15:14

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**QC Summary**

Workorder: 358687

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis-ICP</b>											
Batch	1426222										
Iron	5000	U	ND	5110	ug/L		102	(75%-125%)			
Magnesium	5000		10600	16100	ug/L		110	(75%-125%)	HSC	10/16/14	15:14
Potassium	5000		5810	10700	ug/L		97.4	(75%-125%)			
Sodium	5000		13300	18100	ug/L		95.5	(75%-125%)			
Vanadium	500		18.8	536	ug/L		103	(75%-125%)			
QC1203184886 358687002 MSD											
Calcium	5000		33400	38900	ug/L	2.47	N/A	(0%-20%)		10/16/14	15:16
Iron	5000	U	ND	5050	ug/L	1.14	101	(0%-20%)			
Magnesium	5000		10600	15800	ug/L	1.53	105	(0%-20%)			
Potassium	5000		5810	10500	ug/L	1.57	94.1	(0%-20%)			
Sodium	5000		13300	18000	ug/L	0.504	93.7	(0%-20%)			
Vanadium	500		18.8	527	ug/L	1.72	102	(0%-20%)			
QC1203184887 358687002 SDILT											
Calcium			33400	D	6770	ug/L	1.28	(0%-10%)		10/16/14	15:19
Iron		U	ND	DU	ND	ug/L	N/A	(0%-10%)			
Magnesium			10600	D	2170	ug/L	2.32	(0%-10%)			
Potassium			5810	D	1150	ug/L	.823	(0%-10%)			
Sodium			13300	D	2620	ug/L	1.48	(0%-10%)			
Vanadium			18.8	D	3.83	ug/L	2.02	(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 Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG GEL358687**

**Method/Analysis Information**

**Product:** Carbon and Total Organic

**Analytical Batch:** 1426820

**Method:** 9060\_TOC: COMMON

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
358687003	B2Y222
1203186213	Method Blank (MB)
1203186214	Laboratory Control Sample (LCS)
1203186215	358687003(B2Y222) Sample Duplicate (DUP)
1203186216	358844007(B2Y1P1) Sample Duplicate (DUP)
1203186217	358687003(B2Y222) Post Spike (PS)
1203186218	358844007(B2Y1P1) 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-093 REV# 12.

**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 Model 1010 Total Organic 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**

The following samples were selected for QC analysis: 358687003 (B2Y222) and 358844007 (B2Y1P1).

**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**

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.

**Method/Analysis Information**

**Product:** Ion Chromatography  
**Analytical Batch:** 1426107      **Method:** 9056\_ANIONS\_IC: COMMON

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
358687001	B2Y223
1203184593	Method Blank (MB)
1203184594	Laboratory Control Sample (LCS)
1203184595	358664001(B2XWB7) Sample Duplicate (DUP)
1203184596	358664001(B2XWB7) 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**

The following sample was selected for QC analysis: 358664001 (B2XWB7).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203184596 (B2XWB7). The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203184596 (B2XWB7).

**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**

Samples 1203184595 (B2XWB7) and 1203184596 (B2XWB7) were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples.

**Sample Dilutions**

The following samples in this sample group were diluted due to high concentration: 1203184595 (B2XWB7), 1203184596 (B2XWB7) and 358687001 (B2Y223). The following samples in this sample group were diluted due to matrix interference: 1203184595 (B2XWB7) and 1203184596 (B2XWB7). The following samples were diluted based on historical data: 358687001 (B2Y223).

**Sample Re-analysis**

The following sample was reanalyzed due to PS failure. The reanalysis data was reported. 1203184596 (B2XWB7).

**Miscellaneous Information****Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1344596. 1203184595 (B2XWB7), 1203184596 (B2XWB7) and 358687001 (B2Y223).

**Manual Integrations**

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1203184595 (B2XWB7), 1203184596 (B2XWB7) and 358687001 (B2Y223).

**Additional Comments**

More than ten samples (11) between bracketing QC. 1203184593 (MB), 1203184594 (LCS) and 1203184596 (B2XWB7).

**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:** 1427930      **Method:** 2320\_ALKALINITY: COMMON (Alkalinity only)

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
358687003	B2Y222
1203189008	Method Blank (MB)
1203189010	Laboratory Control Sample (LCS)
1203189014	358687003(B2Y222) Sample Duplicate (DUP)
1203189018	358687003(B2Y222) Matrix Spike (MS)

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

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 11.

**Preparation/Analytical Method Verification**

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

**Calibration Information**

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

**Initial Standardization**

The titrant was properly standardized

**Quality Control (QC) Information****Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recovery met the acceptance limits.

**Quality Control (QC) Designation**

The following sample was selected for QC analysis: 358687003 (B2Y222).

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

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

**Duplicate Relative Percent Difference (RPD) Statement**

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

**Technical Information**

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

**Holding Times**

All samples in this SDG met the specified holding time.

**Sample Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-analysis**

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

**Miscellaneous Information****Data Exception (DER) Documentation**

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

**Additional Comments**

50mL of this sample was used due to limited quantity. 1203189014 (B2Y222), 1203189018 (B2Y222) and 358687003 (B2Y222).

**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.

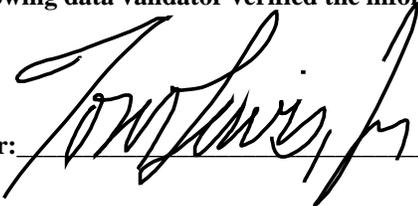
**Certification Statement**

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.

**Review Validation:**

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

**The following data validator verified the information presented in this case narrative:**

Reviewer:  Date: 10Nov14

# Sample Data Summary

**GEL LABORATORIES LLC**

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**Certificate of Analysis Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL358687 GEL Work Order: 358687

**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

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Heather Shaffer.

Reviewed by



---

March 9, 2015

## Certificate of Analysis

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 10, 2014

Client Sample ID:	B2Y223	Project:	CPRC0X15002
Sample ID:	358687001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	07-OCT-14 14:32		
Receive Date:	09-OCT-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Ion Chromatography</b>										
<i>9056_ANIONS_IC: COMMON "As Received"</i>										
Chloride 16887-00-6		7910	+/-265	67.0	200	ug/L	1	RXB5 10/09/14 1609	1426107	1
Fluoride 16984-48-8	B	309	+/-15.1	33.0	500	ug/L	1			
Nitrate-N 14797-55-8		1020	+/-35.6	33.0	250	ug/L	1			
Nitrite-N 14797-65-0	U	0.00	+/-12.7	38.0	250	ug/L	1			
Sulfate 14808-79-8	D	29500	+/-1010	665	2000	ug/L	5	RXB5 10/09/14 1946	1426107	2

**The following Analytical Methods were performed**

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

March 9, 2015

## Certificate of Analysis

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: **CHPRC SAF X15-002**

Report Date: November 10, 2014

Client Sample ID:	B2Y222	Project:	CPRC0X15002
Sample ID:	358687003	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	07-OCT-14 14:32		
Receive Date:	09-OCT-14		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
<b>Carbon Analysis</b>										
<i>9060_TOC: COMMON "As Received"</i>										
Total Organic Carbon #1	B	416	330	1000	ug/L	1	TSM 10/13/14	1715	1426820	1
Total Organic Carbon #2	B	495	330	1000	ug/L	1				
Total Organic Carbon #3	B	425	330	1000	ug/L	1				
Total Organic Carbon #4	B	349	330	1000	ug/L	1				
Total Organic Carbon Average	B	421	330	1000	ug/L	1				

**Titration and Ion Analysis**

*2320\_ALKALINITY: COMMON (Alkalinity only) "As Received"*

Alkalinity, Total as CaCO3	120000	1450	2000	ug/L	PXO1 10/16/14	1747	1427930	2
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**The following Analytical Methods were performed**

Method	Description	Analyst Comments
1	SW846 9060A	
2	SM 2320B	

# Quality Control Summary

March 9, 2015

Rev. 2

GEL LABORATORIES LLC

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

QC Summary

Report Date: November 10, 2014

Page 1 of 3

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 358687

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Carbon Analysis</b>											
Batch	1426820										
QC1203186215	358687003	DUP									
Total Organic Carbon Average	B	421	B	450	ug/L	6.66	^	(+/-1000)	TSM	10/13/14	17:48
QC1203186216	358844007	DUP									
Total Organic Carbon Average	B	463	B	457	ug/L	1.30	^	(+/-1000)		10/13/14	21:45
QC1203186214	LCS										
Total Organic Carbon Average	10000			9570	ug/L			(85%-115%)		10/13/14	17:06
QC1203186213	MB										
Total Organic Carbon Average			U	330	ug/L					10/13/14	16:57
QC1203186217	358687003	PS									
Total Organic Carbon Average	10.0	B	0.421	10.8	mg/L			(65%-120%)		10/13/14	18:08
QC1203186218	358844007	PS									
Total Organic Carbon Average	10.0	B	0.463	10.5	mg/L			(65%-120%)		10/13/14	22:05
<b>Ion Chromatography</b>											
Batch	1426107										
QC1203184595	358664001	DUP									
Chloride	D	28000	D	28200	ug/L	0.602		(0%-20%)	RXB5	10/09/14	18:44
Fluoride	B	222	B	222	ug/L	0.180	^	(+/-500)		10/09/14	16:40
Nitrate-N	DX	24500	DX	24600	ug/L	0.293		(0%-20%)		10/09/14	18:44
Nitrite-N	U	38.0	UX	38.0	ug/L	N/A				10/09/14	16:40
Sulfate	D	117000	D	117000	ug/L	0.463		(0%-20%)		10/09/14	18:44
QC1203184594	LCS										
Chloride	5000			4690	ug/L			(90%-110%)		10/09/14	22:20
Fluoride	2500			2400	ug/L			(90%-110%)			
Nitrate-N	2500			2380	ug/L			(90%-110%)			
Nitrite-N	2500			2540	ug/L			(90%-110%)			
Sulfate	10000			9660	ug/L			(90%-110%)			

**GEL LABORATORIES LLC**

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**QC Summary**

Workorder: 358687

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1426107										
QC1203184593 MB											
Chloride			U	67.0	ug/L				RXB5	10/09/14	21:49
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						
QC1203184596 358664001 PS											
Chloride	5.00	D	2.80	D	8.06	mg/L	105	(90%-110%)		10/09/14	21:18
Fluoride	2.50	B	0.222		2.57	mg/L	94.1	(90%-110%)		10/09/14	17:11
Nitrate-N	2.50	DX	2.45	DX	5.22	mg/L	111 *	(90%-110%)		10/09/14	21:18
Nitrite-N	2.50	U	0.00	X	2.52	mg/L	101	(90%-110%)		10/09/14	17:11
Sulfate	10.0	D	11.7	D	22.7	mg/L	111 *	(90%-110%)		10/09/14	21:18
<b>Titration and Ion Analysis</b>											
Batch	1427930										
QC1203189014 358687003 DUP											
Alkalinity, Total as CaCO3				120000	121000	ug/L	0.830	(0%-20%)	PXO1	10/16/14	17:50
QC1203189010 LCS											
Alkalinity, Total as CaCO3	50000				51200	ug/L	102	(90%-110%)		10/16/14	17:09
QC1203189008 MB											
Alkalinity, Total as CaCO3			U		725	ug/L				10/16/14	17:09
QC1203189018 358687003 MS											
Alkalinity, Total as CaCO3	100000		120000		221000	ug/L	100	(80%-120%)		10/16/14	17:52

**Notes:**

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

**GEL LABORATORIES LLC**

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

**QC Summary**

Workorder: 358687

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is $\geq$ EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
N	Spike Sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

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

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

# Miscellaneous

**DATA EXCEPTION REPORT**

<b>Mo.Day Yr.</b> 15-OCT-14	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> IC	<b>Test / Method:</b> SW846 9056A	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> CPRC
<b>Batch ID:</b> 1426107	<b>Sample Numbers:</b> See Below		
<p><b>Potentially affected work order(s)(SDG): 358664(GEL358664),358687(GEL358687)</b></p> <p><b>Application Issues:</b> Sample Analyzed out of Holding</p>			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
<p>1. Sample Analyzed out of Holding:</p> <p>358664 001,002</p> <p>358687 001</p> <p>QC 1203184595DUP, 1203184596PS</p>		<p>1. Samples were initially analyzed within holding; however, the holding times had expired prior to reanalysis of diluted samples.</p>	

**Originator's Name:**  
Rachael Bell 15-OCT-14

**Data Validator/Group Leader:**  
Thomas Lewis 05-NOV-14