



a member of **The GEL Group** INC



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

February 27, 2018

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

Re: CHPRC SAF S18-010  
Work Order: 444432  
SDG: GEL444432

Dear Mr. Fitzgerald:

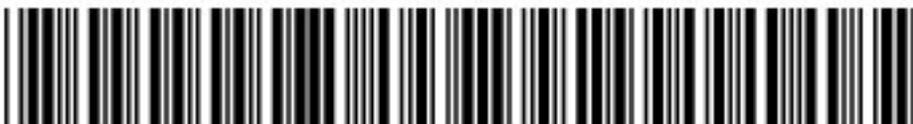
GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 22, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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,

Margo Herron for  
Heather Shaffer  
Project Manager

Purchase Order: 300071- 7H  
Chain of Custody: S18-010-567 and S18-010-570  
Enclosures



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# Case Narrative

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF S18-010  
SDG: GEL444432**

**February 27, 2018**

**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 February 22, 2018, 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.

**Sample Identification**

The laboratory received the following samples:

<b>Laboratory Identification</b>	<b>Sample Description</b>
444432001	B3D498
444432002	B3D499

**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.

We certify that this package 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.

3/13/2018

REV.0

*Margo Herron*

Margo Herron for  
Heather Shaffer  
Project Manager

**General Chemistry  
 Technical Case Narrative  
 CH2MHill Plateau Remediation Company (CPRC)  
 SDG #: GEL444432  
 Work Order #: 444432**

### **Ion Chromatography**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

### **Technical Information**

#### **Sample Dilutions**

The following samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) were diluted because target analyte concentrations exceeded the calibration range. The following samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) in this sample group were diluted due to matrix interference. Samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) were diluted based on historical data.

	<b>444432</b>	
Analyte	<b>001</b>	<b>002</b>
Sulfate	10X	10X

### **Miscellaneous Information**

#### **Manual Integrations**

Samples 1203977254 (B3D499DUP), 444432001 (B3D498) and 444432002 (B3D499) were manually integrated to correctly position the baseline as set in the calibration standards.

### **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.

# **Chain of Custody and Supporting Documentation**

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>444432</i>				C.O.C.# S18-010-567		
Collector: Juan Aguilar /CHPRC		Contact/Requester: Karen Waters-Husted		Telephone No.: 509-376-4650				
SAF No.: S18-010		Sampling Origin: Hanford Site		Purchase Order/Charge Code: 300071				
Project Title: SURV, OCTOBER 2017 <i>GEL</i>		Logbook No.: HNF-N-506 - 98143		Ice Chest No.: <i>N/A</i> <i>img 2-21-18</i> <i>GWS-412</i>				
Shipped To (Lab): <del>TestAmerica Incorporated, Rich</del> <i>RS 2/20/18</i>		Method of Shipment: GOVERNMENT VEHICLE		Bill of Lading/Air Bill No.: <i>N/A</i> <i>img 2-21-18</i> <i>771537614657</i>				
Protocol: CERCLA		Priority: 30 Days		Offsite Property No.: <i>N/A</i> <i>img 2-21-18</i> <i>9073</i>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</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> N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3D498	N	W	2-21-18	1153	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar /CHPRC <i>[Signature]</i>	- FEB 21 2018 1330	Received By: Mike Esparza /CHPRC <i>[Signature]</i>	FEB 21 2018 1330	<b>Matrix *</b> S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By: Mike Esparza /CHPRC <i>[Signature]</i>	FEB 21 2018	Received By: FEDEX		
Relinquished By: Fed Ex		Received By: C. Tarplin <i>[Signature]</i>	2/22/18 0920	
Relinquished By:		Received By:		
Print First and Last Name	Signature	Date/Time	Date/Time	
Print First and Last Name	Signature	Date/Time	Date/Time	
Print First and Last Name	Signature	Date/Time	Date/Time	
Print First and Last Name	Signature	Date/Time	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

3/13/2018

REV.0

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<b>CH2MHill Plateau Remediation Company</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 1.5em; color: blue;">444432</span>	C.O.C. # <b>S18-010-570</b> Page 1 of 1
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<b>Collector:</b> Juan Aguilar ICHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650
<b>SAF No.:</b> S18-010	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071
<b>Project Title:</b> SURV, OCTOBER 2017 <span style="color: green;">GEL</span>	<b>Logbook No.:</b> HNF-N-506 - 98143	<b>Ice Chest No.:</b> <del>N/A</del> 6WS-412
<b>Shipped To (Lab):</b> <u>TestAmerica Incorporated, Rich</u>	<b>Method of Shipment:</b> GOVERNMENT VEHICLE	<b>Bill of Lading/Air Bill No.:</b> <del>N/A</del> 771537614651
<b>Protocol:</b> CERCLA <span style="color: green;">KS 2/20/18</span>	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> <del>N/A</del> 9073

<b>POSSIBLE SAMPLE HAZARDS/REMARK</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> N/A
---	------------------------------------

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3D499	N	W	2-21-18	1153	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By: Juan Aguilar ICHPRC Print First and Last Name Signature Date/Time	Received By: Mike Esparza ICHPRC Print First and Last Name Signature Date/Time	<b>Matrix *</b> S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other		
Relinquished By: Mike Esparza ICHPRC Print First and Last Name Signature Date/Time	Received By: FEDEX Print First and Last Name Signature Date/Time			
Relinquished By: Fed Ex Print First and Last Name Signature Date/Time	Received By: C. Tarplin Print First and Last Name Signature Date/Time			
Relinquished By: _____ Print First and Last Name Signature Date/Time	Received By: _____ Print First and Last Name Signature Date/Time			
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

3/13/2018

REV.0



**SAMPLE RECEIPT & REVIEW FORM**

HS

Client: CPRC

SDG/AR/COC/Work Order: 444382 Melt 2/23/18

Received By: Chakeris Tarplin

Date Received: 02-22-2018

Carrier and Tracking Number

Circle Applicable:  
 FedEx Express     FedEx Ground     UPS     Field Services     Courier     Other  
77537614657

Suspected Hazard Information

Yes     No    \*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

Shipped as a DOT Hazardous?

Yes     No    Hazard Class Shipped: \_\_\_\_\_ UN#: \_\_\_\_\_

COC/Samples marked or classified as radioactive?

Yes     No    Maximum Net Counts Observed\* (Observed Counts - Area Background Counts): 0 CPM / mR/Hr  
 Classified as: Rad 1    Rad 2    Rad 3

Is package, COC, and/or Samples marked HAZ?

Yes     No    If yes, select Hazards below, and contact the GEL Safety Group.  
 PCB's    Flammable    Foreign Soil    RCRA    Asbestos    Beryllium    Other: \_\_\_\_\_

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: <u>Wet Ice</u> Ice Packs    Dry Ice    None    Other: *all temperatures are recorded in Celsius <b>TEMP: 1C</b>
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: _____ IR4-17 Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken    Damaged container    Leaking container    Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's and Containers Affected: _____ If Preservation added Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>			If Yes, Are Encores or Soil Kits present? Yes _____ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No _____ N/A _____ (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No _____ N/A _____ Sample ID's and containers affected: _____
8	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected: _____
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected: _____
12	Are sample containers identifiable as GEL provided?		<input checked="" type="checkbox"/>		
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials MEH Date 02/23/18 Page 1 of 1

# **Data Review Qualifier Definitions**

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

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
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).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank $\geq$ MDC or $>$ 5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
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).	General Chemistry	
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.	Inorganics	Metals
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.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

# Laboratory Certifications

**List of current GEL Certifications as of 27 February 2018**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
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	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# General Chem Analysis

# Case Narrative

**General Chemistry  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL444432  
Work Order #: 444432**

**Product: Ion Chromatography****Analytical Method:** 9056\_ANIONS\_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batch:** 1741450

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
444432001	B3D498
444432002	B3D499
1203977252	Method Blank (MB)
1203977253	Laboratory Control Sample (LCS)
1203977254	444432002(B3D499) Sample Duplicate (DUP)
1203977255	444432002(B3D499) Post Spike (PS)

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

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information****Sample Dilutions**

The following samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) were diluted because target analyte concentrations exceeded the calibration range. The following samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) in this sample group were diluted due to matrix interference. Samples 1203977254 (B3D499DUP), 1203977255 (B3D499PS), 444432001 (B3D498) and 444432002 (B3D499) were diluted based on historical data. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	444432	
	001	002
Sulfate	10X	10X

**Miscellaneous Information****Manual Integrations**

Samples 1203977254 (B3D499DUP), 444432001 (B3D498) and 444432002 (B3D499) were manually integrated to correctly position the baseline as set in the calibration standards.

**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: GEL444432 GEL Work Order: 444432

**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).

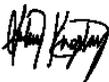
D Results are reported from a diluted aliquot of sample.

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: Aubrey Kingsbury****Date: 27 FEB 2018****Title: Analyst I**

# Sample Data Summary

**GEL LABORATORIES LLC**

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

**Certificate of Analysis**

Report Date: February 27, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-010

Client Sample ID: B3D498 Project: CPRC0S18010  
 Sample ID: 444432001 Client ID: CPRC001  
 Matrix: WATER  
 Collect Date: 21-FEB-18 11:53  
 Receive Date: 22-FEB-18  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride		8090	67.0	200	ug/L		1	LXA2	02/22/18	1506	1741450	1
Fluoride	B	406	33.0	500	ug/L		1					
Nitrate-N		3410	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	D	21500	1330	4000	ug/L		10	LXA2	02/22/18	1535	1741450	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
 DL: Detection Limit                      PF: Prep Factor  
 MDA: Minimum Detectable Activity      RL: Reporting Limit  
 MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

**GEL LABORATORIES LLC**

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

**Certificate of Analysis**

Report Date: February 27, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-010

Client Sample ID: B3D499 Project: CPRC0S18010  
 Sample ID: 444432002 Client ID: CPRC001  
 Matrix: WATER  
 Collect Date: 21-FEB-18 11:53  
 Receive Date: 22-FEB-18  
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride		8090	67.0	200	ug/L		1	LXA2	02/22/18	1604	1741450	1
Fluoride	B	405	33.0	500	ug/L		1					
Nitrate-N		3410	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	D	21200	1330	4000	ug/L		10	LXA2	02/22/18	1632	1741450	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
 DL: Detection Limit                      PF: Prep Factor  
 MDA: Minimum Detectable Activity      RL: Reporting Limit  
 MDC: Minimum Detectable Concentration    SQL: Sample Quantitation Limit

# Quality Control Summary

**GEL LABORATORIES LLC**

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

**QC Summary**

Report Date: February 27, 2018

CH2MHill Plateau Remediation Company  
 MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 444432

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1741450										
QC1203977254	444432002	DUP									
Chloride		8090		8130	ug/L	0.395		(0%-20%)	LXA2	02/22/18	17:59
Fluoride	B	405	B	393	ug/L	2.98 ^		(+/-500)			
Nitrate-N		3410		3420	ug/L	0.299		(0%-20%)			
Nitrite-N	U	33.0	U	33.0	ug/L	N/A					
Sulfate	D	21200	D	21100	ug/L	0.453		(0%-20%)		02/22/18	18:28
QC1203977253	LCS										
Chloride	5000			4630	ug/L		92.6	(80%-120%)		02/22/18	21:21
Fluoride	2500			2430	ug/L		97.2	(80%-120%)			
Nitrate-N	2500			2330	ug/L		93.1	(80%-120%)			
Nitrite-N	2500			2330	ug/L		93.3	(80%-120%)			
Sulfate	10000			9470	ug/L		94.7	(80%-120%)			
QC1203977252	MB										
Chloride			U	67.0	ug/L					02/22/18	20:52
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						

**GEL LABORATORIES LLC**

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

**QC Summary**

Workorder: 444432

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1741450										
Nitrite-N			U	33.0	ug/L				LXA2	02/22/18	20:52
Sulfate			U	133	ug/L						
QC1203977255 444432002 PS											
Chloride	5.00	8.09		13.5	mg/L		108	(75%-125%)		02/22/18	18:57
Fluoride	2.50	B 0.405		2.90	mg/L		99.8	(75%-125%)			
Nitrate-N	2.50	3.41		6.10	mg/L		108	(75%-125%)			
Nitrite-N	2.50	U 0.00		2.44	mg/L		97.6	(75%-125%)			
Sulfate	10.0	D 2.12	D	11.9	mg/L		97.3	(75%-125%)		02/22/18	19:26

**Notes:**

The Qualifiers in this report are defined as follows:

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

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**QC Summary**

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<b>Parmname</b>	<b>NOM</b>	<b>Sample</b>	<b>Qual</b>	<b>QC</b>	<b>Units</b>	<b>RPD%</b>	<b>REC%</b>	<b>Range</b>	<b>Anlst</b>	<b>Date</b>	<b>Time</b>
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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.