

May 10, 2018

May 10, 2018

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

Re: CHPRC SAF F16-046
Work Order: 448737
SDG: GEL448737

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 25, 2018 and April 26, 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,



Heather Shaffer
Project Manager

Purchase Order: 304235 - 7C

Chain of Custody: F16-046-1656, F16-046-1657, F16-046-1660, F16-046-1661, F16-046-1666, F16-046-1667, F16-046-1673, F16-046-1674, F16-046-1724, F16-046-1725, F16-046-1726, F16-046-1727, F16-046-1728, F16-046-1729, F16-046-1730, F16-046-1731, F16-046-1732, F16-046-1733, F16-046-1736 and F16-046-1740
Enclosures



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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0652 Rev. Number: 0 Date Initiated: 04/30/2018
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F16-046	
LABORATORY:	GEL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	2	
SAMPLE NUMBERS:	B3J6W1, B3J741	
SAMPLE MATRIX:	WATER	
SDG NUM(S):	GEL448737	
<u>ISSUE BACKGROUND</u>		
CLASS:	Field Sampling Issue	
TYPE:	Incorrect Sample Preservation	
DESCRIPTION:	The Tc99 container for B3J6W1 was received unpreserved. The Metals & Tc99 container for B3J741 were received unpreserved.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	The lab will preserve to the correct pH and proceed.	
FINAL RESOLUTION:	Accept proposed resolution	
SUBMITTED BY:		
SHAFFER, H	04/27/2018	
ACCEPTED BY:		
FITZGERALD, SL	04/30/2018	

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-046
SDG: GEL448737**

May 10, 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 April 25, 2018 and April 26, 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:

<u>Laboratory Identification</u>	<u>Sample Description</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737008	B3J6V5
448737009	B3J6V6
448737010	B3J731
448737011	B3J732
448737012	B3J733
448737013	B3J734
448737014	B3J737
448737015	B3J738
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745

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, Metals and Radiochemistry.

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.



Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448737
Work Order #: 448737

Metals

Determination of Metals by ICP

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.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of calcium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 448737001 (B3J6V2), 448737002 (B3J6W2), 448737003 (B3J6W9), 448737004 (B3J729), 448737005 (B3J730), 448737006 (B3J735), 448737007 (B3J736), 448737016 (B3J6V1), 448737017 (B3J6W1), 448737018 (B3J6W8), 448737019 (B3J741) and 448737020 (B3J745).

Determination of Metals by ICP-MS

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

Sample 448737019 (B3J741) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument.

Analyte	448737
	019
Copper	20X
Molybdenum	5X

General Chemistry

Cyanide, Total

There are no exceptions, anomalies or deviations from the specified methods. 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.

Cyanide, Chlorinated

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 Re-analysis

Sample448737017 (B3J6W1) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Cyanide, Amenable to Chlorination

There are no exceptions, anomalies or deviations from the specified methods. 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.

Cyanide, Free

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.

Miscellaneous Information

Additional Comments

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP (GL-GC-E-073).

Cyanide, Free

There are no exceptions, anomalies or deviations from the specified methods. 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.

Radiochemistry

I129LL_SEP_LEPS_GS: COMMON (low level)

There are no exceptions, anomalies or deviations from the specified methods. 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.

TC99_EIE_LSC: COMMON

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**Recounts**

Sample 448737020 (B3J745) was recounted due to high MDC. The recount is reported.

TRITIUM_DIST_LSC: COMMON

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**Recounts**

Sample 1204016767 (LCS) was recounted due to low recovery. The recount is reported.

Miscellaneous Information**Additional Comments**

The matrix spike, 1204016766 (B3J6V1MS), aliquot was reduced to conserve sample volume.

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		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1657	PAGE 1 OF 1
COLLECTOR	Malcom Chumma CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	V12-Y30_*, 289-T, Influent Tank, Valve	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water		
ICE CHEST NO.	605-575	FIELD LOGBOOK NO.	491-17	ACTUAL SAMPLE DEPTH	N/A
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	810.4/2418 9356		
MATRIX*	A=Air DL=Drum L=Liquids DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	6 Months	14 Days	
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	G/P	ag	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	500mL	500mL	
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	B3J6V2	DATE	APR 24 2018	DATE/TIME	0925
FILTERED	Yes	MATRIX*	WATER		

PROJECT COORDINATOR	SUMNER, LC	SAF NO.	F16-046	PURCHASE ORDER/CHARGE CODE	304235	BILL OF LADING/AIR BILL NO.	772069147539
METHOD OF SHIPMENT	ORIGINAL	FEDERAL EXPRESS					448737

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chumma CHPRC	Mech	APR 24 2018 1400	Fed Ex	FEDEX	
			Chakeris Tarplin GEL Laboratories		4/20/18 910
SPECIAL INSTRUCTIONS					
TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field.					
(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};					
6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};					
(2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;					
9014_CN (FREE): COMMON;					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 3/23/2018				TRVL NUM = TRVL-18-108	A-6003-618 (REV 3)

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2M Hill Plateau Remediation Company
 COLLECTOR: Malcom Churm
 CHPRC

COMPANY CONTACT: SUMNER, LC
 TELEPHONE NO.: 376-3922

PROJECT COORDINATOR: SUMNER, LC

PROJECT DESIGNATION: 200W Pump & Treat - Treatment Plant Compliance Sampling - Water

FIELD LOGBOOK NO.: HNF-N-491-171

SAF NO.: F16-046

PURCHASE ORDER/CHARGE CODE: 304235

ICE CHEST NO.: GWS-411

ACTUAL SAMPLE DEPTH: N/A

OFFSITE PROPERTY NO.: 9354

BILL OF LADING/AIR BILL NO.: 7720 68592433

F16-046-1674 PAGE 1 OF 1

REQUIRED TAT: 15 Days

METHOD OF SHIPMENT: ORIGINAL
 FEDERAL EXPRESS

MATRIX*	PRESERVATION	HNO3 to pH	NaOH to pH
A=Air	<2	>=12/Cool	<=6C
DL=Drum	6 Months	14 Days	
Liquids	G/P	aG	
DS=Drum	1	1	
Solids	500mL	500mL	
L=Liquid	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
O=Oil			
S=Sediment			
T=Tissue			
V=Vegetation			
W=Water			
WI=Wipe			
X=Other			

SPECIAL HANDLING AND/OR STORAGE
N/A

SAMPLE NO. B316W9

FILTERED Yes

MATRIX* WATER

SAMPLE DATE APR 24 2018

SAMPLE TIME 0811

SHIPPED TO
GEL Laboratories, LLC

CHAIN OF POSSESSION
RELINQUISHED BY/REMOVED FROM: Malcom Churm, CHPRC
 DATE/TIME: APR 24 2018 0900

SIGN/PRINT NAMES
RECEIVED BY/STORED IN: Janelle Zunker, CHPRC
 DATE/TIME: APR 24 2018 0930

DISPOSAL METHOD
Fed Ex

DISPOSED BY
Chakeris Tarplin/
GEL Laboratories
 DATE/TIME: 4/25/18 905

FINAL SAMPLE DISPOSITION
PRINTED ON 3/23/2018

TRVL NUM = TRVL-18-108

FSR ID = FSR59294

A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1724	PAGE 1 OF 1
COLLECTOR	Malcom Churn CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, Air-Stripper Effluent, Valve V05-Y63	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	PROJECT COORDINATOR	SUMNER, LC
ICE CHEST NO.	6005-411	FIELD LOGBOOK NO.	HNF-N-491-17/1	SAF NO.	F16-046
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	PURCHASE ORDER/CHARGE CODE	304235
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C	ACTUAL SAMPLE DEPTH	N/A
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.	HOLDING TIME	14 Days	BILL OF LADING/AIR BILL NO.	7720 6859 2433
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
			SEE ITEM (2) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*			
B3J729	N/A	WATER			

448737

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Churn CHPRC	Malcom Churn CHPRC	APR 24 2018 0830	Janelle Zunker CHPRC	Janelle Zunker CHPRC	APR 24 2018 0830
	Janelle Zunker CHPRC	APR 26 2018 1400	Chakeris Tarplin/ GEL Laboratories	Chakeris Tarplin/ GEL Laboratories	4/25/18
	Fed Ex				
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME	SPECIAL INSTRUCTIONS		
PRINTED ON 3/30/2018			TRVL-18-108 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON; (2) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};		
FSR ID = FSR59315		TRVL NUM = TRVL-18-108		A-6003-618 (REV 3)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1725	PAGE 1 OF 1
COLLECTOR	Malcom Chumm CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, Air-Stripper Effluent, Valve V05-Y63	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	605-411	FIELD LOGBOOK NO.	HNF-N-491-171	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	772068592433
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C	ACTUAL SAMPLE DEPTH	N/A
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days		
		TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
SPECIAL HANDLING AND/OR STORAGE	N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
			SEE ITEM (2) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*	DATE/TIME		
B3J730	Yes	WATER	APR 24 2018 0756		

448737

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45um) filter while in the field.	
Malcom Chumm CHPRC	APR 24 2018 0830	Janelle Zunker CHPRC	APR 24 2018 0830	(1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;	
Janelle Zunker CHPRC	APR 24 2018 1400	Chakeris Tuppiah GEL Laboratories	APR 24 2018 1400	9014_CN (FREE): COMMON;	
Fed Ex				(2) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};	
				6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/30/2018					

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1730	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, MBR Effluent, Valve V15-Y50	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	6WS-405	FIELD LOGBOOK NO.	HNF-N-491-17/1	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	7720 6859 2558
MATRIX*	A=Air DL=Drum L=Liquids DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		
SPECIAL HANDLING AND/OR STORAGE	N/A	PRESERVATION	NaOH to pH >=12/Cool <=6C	HNO3 to pH <2	
		HOLDING TIME	14 Days	6 Months	
		TYPE OF CONTAINER	ag	G/P	
		NO. OF CONTAINER(S)	1	1	
		VOLUME	500mL	500mL	
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3J735	N/A	WATER	APR 24 2018	0846	

448737

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chunn CHPRC	Malcom Chunn CHPRC	APR 24 2018 0830	Janelle Zunker CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930
Janelle Zunker CHPRC	Janelle Zunker CHPRC	APR 24 2018 1400	Chakeris Tamplin GEL Laboratories	Chakeris Tamplin GEL Laboratories	4/26/18
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/30/2018					
FSR ID = FSR59318			TRVL NUM = TRVL-18-108		
A-6003-618 (REV 3)					

SPECIAL INSTRUCTIONS

TRVL-18-108
 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
 9014_CN (FREE): COMMON;
 (2) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};
 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1731	PAGE 1 OF 1
COLLECTOR	Malcom Churnt CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, MBR Effluent, Valve V15-Y50	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	605-405	FIELD LOGBOOK NO.	HNF-N-491-17/1	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	772068592558

MATRIX*	A=Air DL=Drum L=Liquids DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C	HNO3 to pH <2
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days	6 Months
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	500mL	500mL
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS
SAMPLE NO.	B3J736	SAMPLE DATE	APR 24 2018	APR 24 2018
FILTERED	Yes	MATRIX*	WATER	

448737

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Churnt CHPRC	Janella Zurker CHPRC	Janella Zurker CHPRC	Janella Zurker CHPRC	APR 24 2018 0830
	Janella Zurker CHPRC	FEDEX	FEDEX	APR 24 2018 1400
		Fed Ex	Chakeris Tamplin GEL Laboratories	4/26/18
				4/26/18
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME	

SPECIAL INSTRUCTIONS

TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field.
 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
 9014_CN (FREE): COMMON;
 (2) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};
 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1660	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	V12-Y30 * 289-T, Influent Tank, DUP	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water		
ICE CHEST NO.	605-595	FIELD LOGBOOK NO.	HNF-N-491-17/1	ACTUAL SAMPLE DEPTH	N/A
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9356	BILL OF LADING/AIR BILL NO.	772069147539
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C		
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.				
SPECIAL HANDLING AND/OR STORAGE	N/A	HOLDING TIME	14 Days		
		TYPE OF CONTAINER	aG		
		NO. OF CONTAINER(S)	1		
		VOLUME	500ml		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	B316V5	FILTERED	N/A	MATRIX*	WATER
		SAMPLE DATE	APR 24 2018	SAMPLE TIME	0925

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CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chunn CHPRC	Mal Cl	APR 24 2018 1400	Chakeris Tarplin GEL Laboratories	FEDEX	4/26/18
Fed Ex					916
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 3/23/2018			TRVL NUM = TRVL-18-108		
			FSR ID = FSR59291		
			A-6003-618 (REV 3)		

SPECIAL INSTRUCTIONS

TRVL-18-108
(1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
9014_CN (FREE): COMMON;

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F16-046-1661	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	REQUIRED TAT	15 Days	
SAMPLING LOCATION	V12-Y30 * 289-T, Influent Tank, DUP	PROJECT DESIGNATION	376-3922	SUMNER, LC	ORIGINAL		
ICE CHEST NO.	GWS-575	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	SAF NO.	METHOD OF SHIPMENT		
SHIPPED TO	GEL Laboratories, LLC	HNF-N-491-171	N/A	F16-046	FEDERAL EXPRESS		
MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	OFFSITE PROPERTY NO.	9356	PURCHASE ORDER/ CHARGE CODE	BILL OF LADING/AIR BILL NO.		
A=Air	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		NaOH to pH >=12/Cool <=6C	304235	7720 6914 7539		
DL=Drum			14 Days		448737		
Liquids			aG				
DS=Drum			1				
Solids			500ml				
L=Liquid			SEE ITEM (1) IN SPECIAL INSTRUCTIONS				
O=Oil							
S=Soil							
SE=Sediment							
T=Tissue							
V=Vegetation							
W=Water							
WI=Wipe							
X=Other							
SPECIAL HANDLING AND/OR STORAGE	N/A						
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B3J6V6	Yes	WATER	APR 24 2018	0925			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		DATE/TIME	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	Chakeris Tarplin		4/26/18	
Malcom Chunn CHPRC	FEDEX	GEL Laboratories		710	
Fed Ex					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/23/2018					
FSR ID = FSR59291	TRVL NUM = TRVL-18-108			A-6003-618 (REV 3)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1726	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, FBR-A Effluent, Valve V25-Y40A1	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	605-601	FIELD LOGBOOK NO.	HNF-N-491-171	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	7720 68592981
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION	NaOH to pH >=12/Cool <=6C	METHOD OF SHIPMENT	ORIGINAL FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days		
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	B3J731	FILTERED	N/A	SAMPLE DATE	APR 24 2018
		MATRIX*	WATER	SAMPLE TIME	0907

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CHAIN OF POSSESSION	RECEIVED BY/STORED IN	DATE/TIME	SIGN/ PRINT NAMES	DATE/TIME	SPECIAL INSTRUCTIONS
Malcom Chunn CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930	Janelle Zunker CHPRC	APR 24 2018 0930	TRVL-18-108 (L) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;
Janelle Zunker CHPRC	Chakeris Tarplin/ GEL Laboratories	APR 24 2018 1400	Chakeris Tarplin/ GEL Laboratories	4/25/18 905	
	Fed Ex				
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/23/2018	FSR ID = FSR59316	TRVL NUM = TRVL-18-108			A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1727	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, FBR-A Effluent, Valve V25-Y40A1	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	6005-405	FIELD LOGBOOK NO.	HNF-N-481-17/	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	7720 6859 2558
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION	NaOH to pH >=12/Cool <=6C	METHOD OF SHIPMENT	ORIGINAL FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days		
		TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
SPECIAL HANDLING AND/OR STORAGE	N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*	WATER	SAMPLE DATE	APR 24 2018
B3J732	Yes			SAMPLE TIME	0907

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		DATE/TIME	
RELINQUISHED BY/REMOVED FROM	Malcom Chunn CHPRC	RECEIVED BY/STORED IN	Janelle Zuniger CHPRC	APR 24 2018	0930
	Janelle Zuniger CHPRC		Chakeris Tarplin GEL Laboratories	APR 24 2018	0910
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 3/23/2018	FSR ID = FSR59316	TRVL NUM = TRVL-18-108			A-6003-618 (REV 3)

SPECIAL INSTRUCTIONS
 TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field.
 (1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
 9014_CN (FREE): COMMON;

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1728	PAGE 1 OF 1
COLLECTOR	Malcom Chuann CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, FBR-B Effluent, Valve V25-Y40B1	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water		
ICE CHEST NO.	605-411	FIELD LOGBOOK NO.	HNF-N-491-171	ACTUAL SAMPLE DEPTH	N/A
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	772068592433

MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C		
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days		
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500ml		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	SAMPLE TIME
B3J733	N/A	WATER	APR 24 2018	0915	✓

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CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
Malcom Chuann CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930	Janelle Zunker CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930	TRVL-18-108 (1) 9012_CYANIDE (TOTAL): COMMON; 9014_CN (FREE): COMMON;
Fed Ex	Janelle Zunker CHPRC	APR 24 2018 1110	Chakeris Tarplin/ GEL Laboratories	HEDEX	4/25/18	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME		
PRINTED ON 3/23/2018						

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1729	PAGE 1 OF 1
COLLECTOR	Malcom Churn CHPRC	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	REQUIRED TAT 15 Days
SAMPLING LOCATION	289-T, FBR-B Effluent, Valve V25-Y40B1	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SUMNER, LC	
ICE CHEST NO.	605-411	FIELD LOGBOOK NO.	HNF-N-491-171	SAF NO.	ORIGINAL
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	PURCHASE ORDER/CHARGE CODE	METHOD OF SHIPMENT FEDERAL EXPRESS
MATRIX*	A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION	NaOH to pH >=12/Cool <=6C	BILL OF LADING/AIR BILL NO.	
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days		
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	aG		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	3734	DATE	APR 24 2018		
FILTERED	Yes	SAMPLE TIME	0815		
MATRIX*	WATER				

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CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Churn CHPRC	Malcom Churn CHPRC	APR 24 2018 0930	Janelle Zunkler CHPRC	Janelle Zunkler CHPRC	APR 24 2018 0840
	Janelle Zunkler CHPRC	APR 24 2018 1400	Chakeris Tarplin/ GEL Laboratories	Chakeris Tarplin/ GEL Laboratories	4/25/18 9:05
	Fed Ex				
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME	SPECIAL INSTRUCTIONS		
PRINTED ON 3/23/2018			TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field. (1) 9012_CYANIDE (TOTAL); COMMON; 9012_CN (AMENABLE); COMMON; 9014_CN (FREE); COMMON;		
FSR ID = FSR59317	TRVL NUM = TRVL-18-108		DISPOSED BY		
			DATE/TIME		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1732	PAGE 1 OF 1
COLLECTOR	Malcom Chumt CHPRC	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	REQUIRED TAT
SAMPLING LOCATION	289-T, Re-circulation Tank, Valve V02-Y40C	SUMNER, LC	376-3922	SUMNER, LC	15 Days
ICE CHEST NO.	605-405	PROJECT DESIGNATION	SAF NO.	F16-046	ORIGINAL
SHIPPED TO	GEL Laboratories, LLC	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	PURCHASE ORDER/CHARGE CODE	304235	METHOD OF SHIPMENT
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	FIELD LOGBOOK NO. HNF-N-491-17/1	ACTUAL SAMPLE DEPTH	N/A	FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	OFFSITE PROPERTY NO.	9354	772068592558	
SPECIAL HANDLING AND/OR STORAGE	N/A	NaOH to pH	>= 12/Cool	<=6C	
		HOLDING TIME	14 Days		
		TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

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SAMPLE NO.	FILTERED	MATRIX*	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
B3J737	N/A	WATER	APR 24 2018	Janelle Zunker CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930
				Chakeris Tarplin GEL Laboratories	Chakeris Tarplin GEL Laboratories	4/26/18 910

SPECIAL INSTRUCTIONS

TRVL-18-108
(1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
9014_CN (FREE): COMMON;

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	DATE/TIME
Malcom Chumt CHPRC	Janelle Zunker CHPRC	APR 24 2018 0930	APR 24 2018 0930
	Janelle Zunker CHPRC	APR 24 2018 1400	
	Fed Ex		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1733	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, Re-circulation Tank, Valve V02-Y40C	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	PROJECT COORDINATOR	SUMNER, LC
ICE CHEST NO.	GWS-601	FIELD LOGBOOK NO.	HNF-N-491-17/1	SAF NO.	F16-046
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	PURCHASE ORDER/CHARGE CODE	304235
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	NaOH to pH >=12/Cool <=6C	METHOD OF SHIPMENT	FEDERAL EXPRESS
POSSIBLE SAMPLE HAZARDS/REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	14 Days	BILL OF LADING/AIR BILL NO.	7720 6859 2981
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	ag		
		NO. OF CONTAINER(S)	1		
		VOLUME	500ml		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*	WATER	SAMPLE DATE	SAMPLE TIME
B3J738	Yes			APR 24 2018	0900

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CHAIN OF POSSESSION		SIGN/PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-18-108; Filtering shall be performed by SGRP Field Sampling Services using a (0.45µm) filter while in the field.	
Malcom Chunn CHPRC	APR 24 2018 0900	Janelle Zunker CHPRC	APR 24 2018 0930	(1) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;	
Janelle Zunker CHPRC	APR 24 2018 1400	Chakeris Farplin/ GEL Laboratories	4/25/18 qcb	9014_CN (FREE): COMMON;	
Fed Ex					
DISPOSAL METHOD	DISPOSED BY	DATE/TIME			
PRINTED ON	3/23/2018	FRS ID =	FSR59319	TRVL NUM =	TRVL-18-108
A-6003-618 (REV 3)					

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		FLG-046-1656	PAGE 1 OF 1
COLLECTOR	Malcom Chum CHPRC	COMPANY CONTACT	TELEPHONE NO. 376-3922	PROJECT COORDINATOR	REQUIRED TAT 15 Days
SAMPLING LOCATION	V12-Y30, *, 289-T, Influent Tank, Valve	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO. F16-046	ORIGINAL
ICE CHEST NO.	605-575	FIELD LOGBOOK NO.	HNF-N-491-17/1	PURCHASE ORDER/CHARGE CODE	
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9350	BILL OF LADING/AIR BILL NO.	177206914 7539

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	None	HNO3 to pH <2
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.		6 Months	14 Days	6 Months	6 Months
		HOLDING TIME	G/P	ag	G/P	G/P
		TYPE OF CONTAINER	1	1	1	1
		NO. OF CONTAINER(S)	500mL	500mL	4L	500mL
		VOLUME	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	1129LL_SEP_LE COMMON PS_GS: COMMON (Tritium-129);	TC99_EE_LSC: COMMON (Technetium-99);
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS				
	N/A					
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B316V1	N/A	WATER	APR 24 2018	0925		

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CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chum CHPRC	Malcom Chum CHPRC	APR 24 2018 1400	Fed Ex	FEDEX	1400
			Chakeris Turpin GEL Laboratories	Chakeris Turpin GEL Laboratories	4/26/18
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	SPECIAL INSTRUCTIONS		DATE/TIME	
PRINTED ON 3/23/2018		TRVL-18-108			
		(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; (2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;			
		FSR ID = FSR59290		TRVL NUM = TRVL-18-108	
				A-6003-618 (REV 3)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1666	PAGE 1 OF 1
COLLECTOR	Malcom Chum CHPRC	COMPANY CONTACT	TELEPHONE NO. 376-3922	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, Effluent Tank, Valve V20-Y80	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	605-601	FIELD LOGBOOK NO.	HNF-N-491-17/1	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9354	BILL OF LADING/AIR BILL NO.	772068592981

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	NaOH to pH >= 12/Cool <= 6C	HNO3 to pH <2	None	HNO3 to pH <2
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.					
		HOLDING TIME	14 Days	6 Months	6 Months	6 Months
		TYPE OF CONTAINER	aG	P	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1	1
		VOLUME	500mL	250mL	4L	500mL
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	906.0 TRITIUM LSC COMMON (Tritium);	1129LL_SEP_LE PS_GS COMMON (Iodine-129);	TC99_EIE_LSC COMMON (Technetium-99);
	SPECIAL HANDLING AND/OR STORAGE N/A					
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B316W1	N/A	WATER	APR 24 2018	0811	✓	✓

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CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM	Malcom Chum CHPRC	DATE/TIME	APR 24 2018 0930
SIGN/ PRINT NAMES RECEIVED BY/STORED IN	Janelle Zunker CHPRC	DATE/TIME	APR 24 2018 0930
FEDEX			
Chakeris Tarplin GEL Laboratories		DATE/TIME	4/25/18 905
DISPOSAL METHOD			
FINAL SAMPLE DISPOSITION			
PRINTED ON	3/23/2018	FSR ID =	FSR59293
		TRVL NUM =	TRVL-18-108
			A-6003-618 (REV 3)

SPECIAL INSTRUCTIONS
TRVL-18-108
(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};
6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};
(2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON;
9014_CN (FREE): COMMON;

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

FILE-046-1673 PAGE 1 OF 1

REQUIRED TAT: 15 Days

PROJECT COORDINATOR: SUMNER, LC

PROJECT DESIGNATION: SAF NO. FL6-046

METHOD OF SHIPMENT: ORIGINAL

METHOD OF SHIPMENT: FEDERAL EXPRESS

PHONE NO.: 376-3922

ACTUAL SAMPLE DEPTH: N/A

FIELD LOGBOOK NO.: HNF-N-491-17

OFFSITE PROPERTY NO.: 9354

BILL OF LADING/AIR BILL NO.: 772068592981

MATRIX*	PRESERVATION	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	HNO3 to pH <2	None	HNO3 to pH <2
A=Air DL=Drum Liquids OS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	None	None	None	None	None	None
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	6 Months	6 Months	14 Days	6 Months	6 Months	6 Months
HOLDING TIME	G/P	G/P	ag	P	G/P	G/P
TYPE OF CONTAINER	1	1	1	1	1	1
NO. OF CONTAINER(S)	500mL	500mL	500mL	250mL	4L	500mL
VOLUME	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	906.0 TRITIUM LSC: COMMON (Tritium);	1129LL_SEP_LE PS GS: COMMON (Iodine-129);	TC99_EE_LSC: COMMON (Technetium-99);
SAMPLE ANALYSIS						
SPECIAL HANDLING AND/OR STORAGE N/A						
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B316W8	N/A	WATER	APR 24 2018	0811		

448737

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM: Malcom Chunn CHPRC APR 24 2018 0800

RECEIVED BY/STORED IN: Janelle Zunker CHPRC APR 24 2018 0930

DATE/TIME: APR 24 2018 1400

SIGN/ PRINT NAMES: Janelle Zunker CHPRC

RECEIVED BY/STORED IN: Janelle Zunker CHPRC APR 24 2018 0930

DATE/TIME: APR 24 2018 0930

FEDEX

Chakeris Tarplin/ GEL Laboratories

4/25/18 905

SPECIAL INSTRUCTIONS
TRVL-18-108
(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};
6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};
(2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD

DATE/TIME

PRINTED ON 3/23/2018

FRS ID = FSR59294

TRVL NUM = TRVL-18-108

A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1736	PAGE 1 OF 1
COLLECTOR	Malcom Chunn CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	289-T, Centrate Sample, Valve V11-Y95_* (A,B,C)	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water	SAF NO.	F16-046
ICE CHEST NO.	605-575	FIELD LOGBOOK NO.	HNF-N-491-17/1	PURCHASE ORDER/CHARGE CODE	304235
SHIPPED TO	GEL Laboratories, LLC	ACTUAL SAMPLE DEPTH	N/A	METHOD OF SHIPMENT	ORIGINAL FEDERAL EXPRESS
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION	None	BILL OF LADING/AIR BILL NO.	772069147539
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	NaOH to pH >=12/Cool <=6C	None	HN03 to pH	<2
SPECIAL HANDLING AND/OR STORAGE	N/A	HOLDING TIME	14 Days	6 Months	6 Months
		TYPE OF CONTAINER	aG	G/P	G/P
		NO. OF CONTAINER(S)	1	1	1
		VOLUME	500mL	250mL	4L
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	906.0 TRITIUM LSC: COMMON (Tritium);	TC99 EEL LSC: COMMON (Technetium-99);
SAMPLE NO.	FILTERED	MATRIX*	WATER	SAMPLE DATE	APR 24 2018
B3J741	N/A			SAMPLE TIME	1500

448737

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chunn CHPRC	<i>Malcom Chunn</i>	APR 24 2018 1400	Fed Ex	FEDEX	
			Chakeris Tarplin GEL Laboratories	<i>Chakeris Tarplin</i>	4/26/18 910
SPECIAL INSTRUCTIONS					
TRVL-18-108					
(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron}; 6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc}; (2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/23/2018					
FSR ID = FSR59320	TRVL NUM = TRVL-18-108			A-6003-618 (REV 3)	

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-046-1740	PAGE 1 OF 1
COLLECTOR	Malcom Chumm CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	289-T, Rotary Drum Thickener Filtrate, V12-Y70_* (A,B,D)	PROJECT DESIGNATION	200W Pump & Treat - Treatment Plant Compliance Sampling - Water		
ICE CHEST NO.	605-595	FIELD LOGBOOK NO.	HNF-N-491-121		
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9356		
MATRIX*	A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION	HNO3 to pH <2	NaOH to pH >=12/Cool <=6C	HNO3 to pH <2
POSSIBLE SAMPLE HAZARDS/ REMARKS	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HOLDING TIME	6 Months	14 Days	6 Months
SPECIAL HANDLING AND/ OR STORAGE	N/A	TYPE OF CONTAINER	G/P	ag	G/P
		NO. OF CONTAINER(S)	1	1	1
		VOLUME	500mL	500mL	4L
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	1129LL_SEP_LE PS_LCS: COMMON (Iodine-129);
			500mL	90% D. TRITIUM LSC: COMMON (Tritium);	TC99_EIE_LSC: COMMON (Technetium-99);
SAMPLE NO.	B3745	FILTERED	N/A	WATER	MATRIX*
		DATE	APR 24 2018	1007	DATE/TIME

448737

7730 6914 7535

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Malcom Chumm CHPRC	MALC	APR 24 2018 1400	Fed Ex	FEDEX	
			Chakeris Tarplin GEL Laboratories		4/26/18
					910
SPECIAL INSTRUCTIONS					
TRVL-18-108					
(1) 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Boron};					
6020_METALS_ICPMS: COMMON {Aluminum, Chromium, Cobalt, Copper, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Nickel, Uranium, Zinc};					
(2) 9012_CYANIDE (TOTAL): COMMON; 9012_CN (AMENABLE): COMMON; 9014_CN (FREE): COMMON;					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	
PRINTED ON 3/23/2018				TRVL NUM = TRVL-18-108	
				FSR ID = FSR59321	
				A-6003-618 (REV 3)	



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>448737</u>	
Received By: <u>C. Tarplin</u>		Date Received: <u>Apr 26, 2018</u> HS	
Carrier and Tracking Number		Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other <u>772078153734-1c</u> <u>772068592558-2c</u> <u>772069147539-3c</u> <u>772069914804(2)3c</u> <u>772094402276-1c</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> (CPM) mR/Hr Classified as: <u>Rad 1</u> Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	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 TEMP: _____
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>IR4-17</u> 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: <u>see below</u> If Preservation added, Lot#: <u>2633218 (Sulfuric) / 1803308P (Nitric)</u>
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: <u>B3H TN2 - Anions received out of hold time</u> <u>B3H TN3 - Anions received out of hold time</u>
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):
B3HRT1 > TOC bottles received
B3HRT2 Unpreserved - Preserved w/ H2SO4 upon arrival
B3H44 - both bottles (Metals TOC) received
B3J74 Unpreserved Preserved w/ HNO3 upon arrival

PM (or PMA) review: Initials DS Date 4/27/18 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 >= 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 >= 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 >= 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 10 May 2018

State	Certification
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 Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448737
Work Order #: 448737

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1758886**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1758897**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1758885 and 1758896

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204016499	Method Blank (MB) ICP
1204016500	Laboratory Control Sample (LCS)
1204016503	448713004(NonSDGL) Serial Dilution (SD)
1204016501	448713004(NonSDGS) Matrix Spike (MS)
1204016502	448713004(NonSDGSD) Matrix Spike Duplicate (MSD)
1204016519	Method Blank (MB) ICP-MS
1204016520	Laboratory Control Sample (LCS)
1204016523	448713004(NonSDGL) Serial Dilution (SD)
1204016521	448713004(NonSDGS) Matrix Spike (MS)
1204016522	448713004(NonSDGSD) Matrix Spike Duplicate (MSD)

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.

Calibration Information

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of calcium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 448737001 (B3J6V2), 448737002 (B3J6W2), 448737003 (B3J6W9), 448737004 (B3J729), 448737005 (B3J730), 448737006 (B3J735), 448737007 (B3J736), 448737016 (B3J6V1), 448737017 (B3J6W1), 448737018 (B3J6W8), 448737019 (B3J741) and 448737020 (B3J745)-ICP.

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Sample Dilutions

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. Sample 448737019 (B3J741)-ICP-MS was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument.

Analyte	448737
	019
Copper	20X
Molybdenum	5X

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: GEL448737 GEL Work Order: 448737

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Nik-Cole Elmore

Date: 10 MAY 2018

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737001

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6V2

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7440-42-8	Boron	48.6	ug/L	B	15	50	50	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7440-70-2	Calcium	60900	ug/L		50	200	200	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7440-47-3	Chromium	19.7	ug/L		3	10	10	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7439-95-4	Magnesium	20800	ug/L		110	300	300	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7439-98-7	Molybdenum	4.04	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:40	180508-14	1758897
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7440-09-7	Potassium	5460	ug/L		50	150	150	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7782-49-2	Selenium	3.73	ug/L	B	2	5	5	1	MS	PRB	05/07/18 19:42	180507-2	1758897
7440-23-5	Sodium	23600	ug/L		100	300	300	1	P	JWJ	05/10/18 15:31	051018-1	1758886
7440-61-1	Uranium	0.906	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 04:52	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 22:47	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737002

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6W2

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7440-42-8	Boron	57.5	ug/L		15	50	50	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7440-70-2	Calcium	52900	ug/L		50	200	200	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7440-48-4	Cobalt	6.92	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7440-50-8	Copper	2.7	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7439-95-4	Magnesium	18900	ug/L		110	300	300	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7439-96-5	Manganese	50.8	ug/L		1	5	5	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7439-98-7	Molybdenum	16.9	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:41	180508-14	1758897
7440-02-0	Nickel	5.51	ug/L		0.6	2	2	1	MS	PRB	05/07/18 19:45	180507-2	1758897
7440-09-7	Potassium	3890	ug/L		50	150	150	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7782-49-2	Selenium	3.18	ug/L	B	2	5	5	1	MS	PRB	05/08/18 04:55	180507-7	1758897
7440-23-5	Sodium	21100	ug/L		100	300	300	1	P	JWJ	05/10/18 15:34	051018-1	1758886
7440-61-1	Uranium	0.765	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 04:55	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 22:49	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737003

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6W9

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7440-42-8	Boron	54.5	ug/L		15	50	50	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7440-70-2	Calcium	53700	ug/L		50	200	200	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7440-48-4	Cobalt	7.21	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7440-50-8	Copper	2.78	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7439-95-4	Magnesium	18700	ug/L		110	300	300	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7439-96-5	Manganese	51.1	ug/L		1	5	5	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7439-98-7	Molybdenum	17.1	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:42	180508-14	1758897
7440-02-0	Nickel	5.53	ug/L		0.6	2	2	1	MS	PRB	05/07/18 19:49	180507-2	1758897
7440-09-7	Potassium	3810	ug/L		50	150	150	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7782-49-2	Selenium	3.17	ug/L	B	2	5	5	1	MS	PRB	05/08/18 04:58	180507-7	1758897
7440-23-5	Sodium	21400	ug/L		100	300	300	1	P	JWJ	05/10/18 15:38	051018-1	1758886
7440-61-1	Uranium	0.797	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 04:58	180507-7	1758897
7440-66-6	Zinc	4.28	ug/L	B	3.3	10	10	1	MS	PRB	05/08/18 22:51	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737004

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J729

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7440-42-8	Boron	54.7	ug/L		15	50	50	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7440-70-2	Calcium	55400	ug/L		50	200	200	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7440-48-4	Cobalt	54.6	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7440-50-8	Copper	9.9	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7439-89-6	Iron	40.3	ug/L	B	30	100	100	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7439-95-4	Magnesium	19300	ug/L		110	300	300	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7439-96-5	Manganese	368	ug/L		1	5	5	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7439-98-7	Molybdenum	14.3	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:44	180508-14	1758897
7440-02-0	Nickel	14.1	ug/L		0.6	2	2	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7440-09-7	Potassium	3660	ug/L		50	150	150	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7782-49-2	Selenium	3.19	ug/L	B	2	5	5	1	MS	PRB	05/07/18 19:52	180507-2	1758897
7440-23-5	Sodium	22000	ug/L		100	300	300	1	P	JWJ	05/10/18 15:41	051018-1	1758886
7440-61-1	Uranium	0.823	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:02	180507-7	1758897
7440-66-6	Zinc	9.4	ug/L	B	3.3	10	10	1	MS	PRB	05/08/18 22:52	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID:448737005

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J730

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7440-42-8	Boron	57	ug/L		15	50	50	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7440-70-2	Calcium	56400	ug/L		50	200	200	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7440-48-4	Cobalt	5.83	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7440-50-8	Copper	2.85	ug/L		0.3	1	1	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7439-95-4	Magnesium	19600	ug/L		110	300	300	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7439-96-5	Manganese	39.8	ug/L		1	5	5	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7439-98-7	Molybdenum	17.4	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:45	180508-14	1758897
7440-02-0	Nickel	4.87	ug/L		0.6	2	2	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7440-09-7	Potassium	3810	ug/L		50	150	150	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7782-49-2	Selenium	2.83	ug/L	B	2	5	5	1	MS	PRB	05/07/18 19:55	180507-2	1758897
7440-23-5	Sodium	22500	ug/L		100	300	300	1	P	JWJ	05/10/18 15:45	051018-1	1758886
7440-61-1	Uranium	0.812	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:05	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 22:54	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737006

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J735

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7440-42-8	Boron	56	ug/L		15	50	50	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7440-70-2	Calcium	56000	ug/L		50	200	200	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7440-48-4	Cobalt	11.7	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7440-50-8	Copper	3.52	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7439-95-4	Magnesium	19400	ug/L		110	300	300	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7439-96-5	Manganese	135	ug/L		1	5	5	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7439-98-7	Molybdenum	19	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:47	180508-14	1758897
7440-02-0	Nickel	5.82	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7440-09-7	Potassium	4210	ug/L		50	150	150	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7782-49-2	Selenium	3.32	ug/L	B	2	5	5	1	MS	PRB	05/07/18 20:05	180507-2	1758897
7440-23-5	Sodium	22500	ug/L		100	300	300	1	P	JWJ	05/10/18 15:48	051018-1	1758886
7440-61-1	Uranium	0.788	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:14	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 22:56	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID:448737007

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J736

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7440-42-8	Boron	56.3	ug/L		15	50	50	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7440-70-2	Calcium	53800	ug/L		50	200	200	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7440-48-4	Cobalt	8.79	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7440-50-8	Copper	2.6	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7439-95-4	Magnesium	18600	ug/L		110	300	300	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7439-96-5	Manganese	93.3	ug/L		1	5	5	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7439-98-7	Molybdenum	18.5	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:51	180508-14	1758897
7440-02-0	Nickel	5.36	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7440-09-7	Potassium	4080	ug/L		50	150	150	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7782-49-2	Selenium	3.12	ug/L	B	2	5	5	1	MS	PRB	05/07/18 20:08	180507-2	1758897
7440-23-5	Sodium	21700	ug/L		100	300	300	1	P	JWJ	05/10/18 15:58	051018-1	1758886
7440-61-1	Uranium	0.786	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:18	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 23:01	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737016

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6V1

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7440-42-8	Boron	44.5	ug/L	B	15	50	50	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7440-70-2	Calcium	56700	ug/L		50	200	200	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7440-47-3	Chromium	20.2	ug/L		3	10	10	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7440-48-4	Cobalt	0.30	ug/L	U	0.3	1	1	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7440-50-8	Copper	0.30	ug/L	U	0.3	1	1	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7439-95-4	Magnesium	19500	ug/L		110	300	300	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7439-96-5	Manganese	1	ug/L	U	1	5	5	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7439-98-7	Molybdenum	3.81	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:53	180508-14	1758897
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7440-09-7	Potassium	5120	ug/L		50	150	150	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7782-49-2	Selenium	3.26	ug/L	B	2	5	5	1	MS	PRB	05/07/18 20:11	180507-2	1758897
7440-23-5	Sodium	22200	ug/L		100	300	300	1	P	JWJ	05/10/18 16:01	051018-1	1758886
7440-61-1	Uranium	0.908	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:21	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 23:03	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737017

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6W1

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7440-42-8	Boron	53.6	ug/L		15	50	50	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7440-70-2	Calcium	55000	ug/L		50	200	200	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7440-48-4	Cobalt	7.26	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7440-50-8	Copper	2.91	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7439-95-4	Magnesium	19100	ug/L		110	300	300	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7439-96-5	Manganese	52.7	ug/L		1	5	5	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7439-98-7	Molybdenum	17.7	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:54	180508-14	1758897
7440-02-0	Nickel	5.5	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7440-09-7	Potassium	3850	ug/L		50	150	150	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7782-49-2	Selenium	3.69	ug/L	B	2	5	5	1	MS	PRB	05/07/18 20:14	180507-2	1758897
7440-23-5	Sodium	21900	ug/L		100	300	300	1	P	JWJ	05/10/18 16:05	051018-1	1758886
7440-61-1	Uranium	0.806	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:24	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 23:05	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPRC0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737018

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J6W8

LEVEL: Low

DATE RECEIVED 25-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	19.3	ug/L	U	19.3	50	50	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7440-42-8	Boron	55.3	ug/L		15	50	50	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7440-70-2	Calcium	54600	ug/L		50	200	200	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7440-48-4	Cobalt	7.6	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7440-50-8	Copper	2.81	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7439-95-4	Magnesium	19100	ug/L		110	300	300	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7439-96-5	Manganese	53.2	ug/L		1	5	5	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7439-98-7	Molybdenum	16.8	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:55	180508-14	1758897
7440-02-0	Nickel	5.31	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7440-09-7	Potassium	3870	ug/L		50	150	150	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7782-49-2	Selenium	3	ug/L	B	2	5	5	1	MS	PRB	05/07/18 20:18	180507-2	1758897
7440-23-5	Sodium	21800	ug/L		100	300	300	1	P	JWJ	05/10/18 16:08	051018-1	1758886
7440-61-1	Uranium	0.757	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:27	180507-7	1758897
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	MS	PRB	05/08/18 23:07	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPCR0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737019

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J741

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	1630	ug/L		19.3	50	50	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7440-42-8	Boron	51.8	ug/L		15	50	50	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7440-70-2	Calcium	90900	ug/L		50	200	200	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7440-47-3	Chromium	668	ug/L		3	10	10	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7440-48-4	Cobalt	150	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7440-50-8	Copper	1700	ug/L	D	6	20	20	20	MS	PRB	05/08/18 15:52	180508-8	1758897
7439-89-6	Iron	343000	ug/L		30	100	100	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7439-95-4	Magnesium	23400	ug/L		110	300	300	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7439-96-5	Manganese	541	ug/L		1	5	5	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7439-98-7	Molybdenum	122	ug/L	D	1	2.5	2.5	5	MS	SKJ	05/08/18 12:01	180508-14	1758897
7440-02-0	Nickel	131	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7440-09-7	Potassium	46100	ug/L		50	150	150	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7782-49-2	Selenium	6.17	ug/L		2	5	5	1	MS	PRB	05/07/18 20:21	180507-2	1758897
7440-23-5	Sodium	14100	ug/L		100	300	300	1	P	JWJ	05/10/18 16:12	051018-1	1758886
7440-61-1	Uranium	10.2	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:30	180507-7	1758897
7440-66-6	Zinc	729	ug/L		3.3	10	10	1	MS	PRB	05/08/18 23:08	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL448737

CONTRACT: CPCR0F16046

METHOD TYPE: SW846

SAMPLE ID: 448737020

BASIS: As Received

DATE COLLECTED 24-APR-18

CLIENT ID: B3J745

LEVEL: Low

DATE RECEIVED 26-APR-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	311	ug/L		19.3	50	50	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7440-42-8	Boron	49.8	ug/L	B	15	50	50	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7440-70-2	Calcium	54800	ug/L		50	200	200	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7440-47-3	Chromium	123	ug/L		3	10	10	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7440-48-4	Cobalt	31.9	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7440-50-8	Copper	309	ug/L		0.3	1	1	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7439-89-6	Iron	62400	ug/L		30	100	100	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7439-95-4	Magnesium	17500	ug/L		110	300	300	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7439-96-5	Manganese	145	ug/L		1	5	5	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7439-98-7	Molybdenum	20	ug/L		0.2	0.5	0.5	1	MS	SKJ	05/08/18 11:58	180508-14	1758897
7440-02-0	Nickel	24.5	ug/L		0.6	2	2	1	MS	PRB	05/07/18 20:24	180507-2	1758897
7440-09-7	Potassium	6570	ug/L		50	150	150	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7782-49-2	Selenium	3.04	ug/L	B	2	5	5	1	MS	PRB	05/08/18 05:34	180507-7	1758897
7440-23-5	Sodium	17300	ug/L		100	300	300	1	P	JWJ	05/10/18 16:15	051018-1	1758886
7440-61-1	Uranium	1.45	ug/L		0.067	0.2	0.2	1	MS	PRB	05/08/18 05:34	180507-7	1758897
7440-66-6	Zinc	132	ug/L		3.3	10	10	1	MS	PRB	05/08/18 23:10	180508-13	1758897

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1758886	1758885	SW846 3005A	50	mL	50	mL	04/27/18	JXM8
1758897	1758896	SW846 3005A	50	mL	50	mL	04/27/18	JXM8

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 10, 2018

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1758897										
QC1204016520	LCS										
Aluminum	2000			2250	ug/L		112	(80%-120%)	PRB	05/07/18	19:13
Chromium	50.0			49.8	ug/L		99.6	(80%-120%)			
Cobalt	50.0			51.8	ug/L		104	(80%-120%)			
Copper	50.0			51.8	ug/L		104	(80%-120%)			
Manganese	50.0			47.9	ug/L		95.7	(80%-120%)			
Molybdenum	50.0			51.0	ug/L		102	(80%-120%)	SKJ	05/08/18	11:27
Nickel	50.0			51.7	ug/L		103	(80%-120%)	PRB	05/07/18	19:13
Selenium	50.0			52.6	ug/L		105	(80%-120%)			
Uranium	50.0			48.0	ug/L		95.9	(80%-120%)		05/08/18	04:23
Zinc	50.0			53.3	ug/L		107	(80%-120%)		05/08/18	22:31
QC1204016519	MB										
Aluminum			U	19.3	ug/L					05/07/18	19:10
Chromium			U	3.00	ug/L						
Cobalt			U	0.300	ug/L						

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1758897										
Copper			U	0.300	ug/L				PRB	05/07/18	19:10
Manganese			U	1.00	ug/L						
Molybdenum			U	0.200	ug/L				SKJ	05/08/18	11:25
Nickel			U	0.600	ug/L				PRB	05/07/18	19:10
Selenium			U	2.00	ug/L						
Uranium			U	0.067	ug/L					05/08/18	04:20
Zinc			U	3.30	ug/L					05/08/18	22:30
QC1204016521 448713004 MS											
Aluminum	2000	U	19.3	2080	ug/L		104	(75%-125%)		05/07/18	19:20
Chromium	50.0		13.2	63.6	ug/L		101	(75%-125%)			
Cobalt	50.0	U	0.300	47.0	ug/L		93.8	(75%-125%)			
Copper	50.0	U	0.300	45.1	ug/L		89.7	(75%-125%)			
Manganese	50.0	U	1.00	45.4	ug/L		89	(75%-125%)			
Molybdenum	50.0		6.21	58.4	ug/L		104	(75%-125%)	SKJ	05/08/18	11:30
Nickel	50.0		3.22	49.5	ug/L		92.6	(75%-125%)	PRB	05/07/18	19:20
Selenium	50.0	B	3.45	51.8	ug/L		96.8	(75%-125%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

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Parname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1758897										
Uranium	50.0	6.54		53.6	ug/L		94.2	(75%-125%)	PRB	05/08/18	04:29
Zinc	50.0	U	3.30	52.3	ug/L		105	(75%-125%)		05/08/18	22:35
QC1204016522 448713004 MSD											
Aluminum	2000	U	19.3	1870	ug/L	11	93	(0%-20%)		05/07/18	19:23
Chromium	50.0		13.2	60.1	ug/L	5.75	93.7	(0%-20%)			
Cobalt	50.0	U	0.300	43.1	ug/L	8.48	86.2	(0%-20%)			
Copper	50.0	U	0.300	41.6	ug/L	8.28	82.5	(0%-20%)			
Manganese	50.0	U	1.00	42.2	ug/L	7.41	82.5	(0%-20%)			
Molybdenum	50.0		6.21	50.9	ug/L	13.7	89.4	(0%-20%)	SKJ	05/08/18	11:31
Nickel	50.0		3.22	46.8	ug/L	5.65	87.2	(0%-20%)	PRB	05/07/18	19:23
Selenium	50.0	B	3.45	51.1	ug/L	1.41	95.3	(0%-20%)			
Uranium	50.0		6.54	52.3	ug/L	2.48	91.5	(0%-20%)		05/08/18	04:33
Zinc	50.0	U	3.30	46.8	ug/L	11.1	93.6	(0%-20%)		05/08/18	22:37
QC1204016523 448713004 SDILT											
Aluminum		U	5.60	DU	96.5	ug/L	N/A	(0%-20%)		05/07/18	19:29
Chromium			13.2	DU	15.0	ug/L	N/A	(0%-20%)			
Cobalt		U	0.064	DU	1.50	ug/L	N/A	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

Paramname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1758897										
Copper	U	0.298	DU	1.50	ug/L	N/A		(0%-20%)	PRB	05/07/18	19:29
Manganese	U	0.885	DU	5.00	ug/L	N/A		(0%-20%)			
Molybdenum		6.21	D	1.15	ug/L	7.15		(0%-20%)	SKJ	05/08/18	11:34
Nickel		3.22	BD	0.700	ug/L	8.83		(0%-20%)	PRB	05/07/18	19:29
Selenium	B	3.45	DU	10.0	ug/L	N/A		(0%-20%)			
Uranium		6.54	D	1.34	ug/L	2.48		(0%-20%)		05/08/18	04:39
Zinc	U	-0.344	DU	16.5	ug/L	N/A		(0%-20%)		05/08/18	22:40

Metals Analysis-ICP

Batch 1758886

QC1204016500	LCS										
Boron	500			465	ug/L		93.1	(80%-120%)	JWJ	05/10/18	15:04
Calcium	5000			4720	ug/L		94.4	(80%-120%)			
Iron	5000			4860	ug/L		97.3	(80%-120%)			
Magnesium	5000			4740	ug/L		94.7	(80%-120%)			
Potassium	5000			4890	ug/L		97.9	(80%-120%)			
Sodium	5000			4590	ug/L		91.8	(80%-120%)			
QC1204016499	MB										
Boron			U	15.0	ug/L					05/10/18	15:01

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1758886										
Calcium			U	50.0	ug/L				JWJ	05/10/18	15:01
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Potassium			U	50.0	ug/L						
Sodium			U	100	ug/L						
QC1204016501 448713004 MS											
Boron	500	B	27.6	553	ug/L		105	(75%-125%)		05/10/18	15:10
Calcium	5000		68700	76400	ug/L		N/A	(75%-125%)			
Iron	5000	B	51.8	5110	ug/L		101	(75%-125%)			
Magnesium	5000		16800	21700	ug/L		98	(75%-125%)			
Potassium	5000		7330	12600	ug/L		106	(75%-125%)			
Sodium	5000		22200	26200	ug/L		N/A	(75%-125%)			
QC1204016502 448713004 MSD											
Boron	500	B	27.6	526	ug/L	4.98	99.7	(0%-20%)		05/10/18	15:13
Calcium	5000		68700	77900	ug/L	1.96	N/A	(0%-20%)			
Iron	5000	B	51.8	4830	ug/L	5.57	95.6	(0%-20%)			
Magnesium	5000		16800	22000	ug/L	1.28	104	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

Page 6 of 7

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1758886										
Potassium	5000	7330		12500	ug/L	1.27	102	(0%-20%)	JWJ	05/10/18	15:13
Sodium	5000	22200		27100	ug/L	3.31	N/A	(0%-20%)			
QC1204016503 448713004 SDILT											
Boron	B	27.6	DU	75.0	ug/L	N/A		(0%-20%)		05/10/18	15:18
Calcium		68700	D	14200	ug/L	3.26		(0%-20%)			
Iron	B	51.8	DU	150	ug/L	N/A		(0%-20%)			
Magnesium		16800	D	3700	ug/L	10		(0%-20%)			
Potassium		7330	D	1490	ug/L	1.83		(0%-20%)			
Sodium		22200	D	4540	ug/L	2.11		(0%-20%)			

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 concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

GEL LABORATORIES LLC

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

QC Summary

Workorder: 448737

Page 7 of 7

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

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448737
Work Order #: 448737**

Product: Cyanide, Free

Analytical Method: 9014_CYANIDE

Analytical Procedure: GL-GC-E-073 REV# 9

Analytical Batches: 1759220 and 1760281

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737008	B3J6V5
448737009	B3J6V6
448737010	B3J731
448737011	B3J732
448737012	B3J733
448737013	B3J734
448737014	B3J737
448737015	B3J738
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204017163	Method Blank (MB)
1204017164	Laboratory Control Sample (LCS)
1204017165	448737001(B3J6V2) Sample Duplicate (DUP)
1204017166	448737004(B3J729) Sample Duplicate (DUP)

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.

Miscellaneous Information

Additional Comments

Total CN levels above the MDL for Free CN were detected in samples . Free CN was performed per SOP

(GL-GC-E-073).

Product: Cyanide, Amenable to Chlorination
Analytical Method: 9012_CYANIDE
Analytical Procedure: GL-GC-E-107 REV# 10
Analytical Batches: 1759219, 1759218 and 1759217

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737008	B3J6V5
448737009	B3J6V6
448737010	B3J731
448737011	B3J732
448737012	B3J733
448737013	B3J734
448737014	B3J737
448737015	B3J738
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. 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.

Product: Cyanide, Total**Analytical Method:** 9012_CYANIDE**Analytical Procedure:** GL-GC-E-095 REV# 22**Analytical Batches:** 1759216 and 1759215

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737008	B3J6V5
448737009	B3J6V6
448737010	B3J731
448737011	B3J732
448737012	B3J733
448737013	B3J734
448737014	B3J737
448737015	B3J738
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204017153	Method Blank (MB)
1204017154	Laboratory Control Sample (LCS)
1204017155	448737001(B3J6V2) Sample Duplicate (DUP)
1204017156	448737002(B3J6W2) Sample Duplicate (DUP)
1204017157	448737001(B3J6V2) Matrix Spike (MS)
1204017158	448737002(B3J6W2) Matrix Spike (MS)

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

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. 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.

Product: Cyanide, Chlorinated**Analytical Method:** 9012_CYANIDE**Analytical Procedure:** GL-GC-E-095 REV# 22**Analytical Batches:** 1759218 and 1759217

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737001	B3J6V2
448737002	B3J6W2
448737003	B3J6W9
448737004	B3J729
448737005	B3J730
448737006	B3J735
448737007	B3J736
448737008	B3J6V5
448737009	B3J6V6
448737010	B3J731
448737011	B3J732
448737012	B3J733
448737013	B3J734
448737014	B3J737
448737015	B3J738
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204017159	Method Blank (MB)
1204017160	Laboratory Control Sample (LCS)
1204017161	448737001(B3J6V2) Sample Duplicate (DUP)
1204017162	448737002(B3J6W2) Sample Duplicate (DUP)

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 Re-analysis**

Sample 448737017 (B3J6W1) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL448737 GEL Work Order: 448737

The Qualifiers in this report are defined as follows:

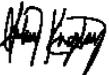
B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

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: 02 MAY 2018

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6V2 Project: CPRC0F16046
 Sample ID: 448737001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:25
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.89	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0608	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	1.01	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.89	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6W2 Project: CPRC0F16046
 Sample ID: 448737002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:11
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0611	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/01/18	0643	1760281	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Report Date: May 2, 2018

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6W9 Project: CPRC0F16046
 Sample ID: 448737003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:11
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0614	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/01/18	0643	1760281	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J729 Project: CPRC0F16046
 Sample ID: 448737004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 07:56
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.11	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0615	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	1.76	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.11	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J730 Project: CPRC0F16046
 Sample ID: 448737005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 07:56
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0620	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/01/18	0643	1760281	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J735 Project: CPRC0F16046
 Sample ID: 448737006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:46
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.96	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0621	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		3.45	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.96	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J736 Project: CPRC0F16046
 Sample ID: 448737007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:46
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.79	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0622	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		2.14	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.79	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6V5 Project: CPRC0F16046
 Sample ID: 448737008 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:25
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.17	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0623	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.17	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6V6 Project: CPRC0F16046
 Sample ID: 448737009 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:25
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.31	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0624	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.31	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J731 Project: CPRC0F16046
 Sample ID: 448737010 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:07
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.01	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0625	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	1.39	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.01	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J732 Project: CPRC0F16046
 Sample ID: 448737011 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:07
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.18	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0626	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		3.08	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.18	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J733 Project: CPRC0F16046
 Sample ID: 448737012 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:15
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.05	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0627	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	B	1.39	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.05	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J734 Project: CPRC0F16046
 Sample ID: 448737013 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:15
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0628	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/01/18	0643	1760281	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J737 Project: CPRC0F16046
 Sample ID: 448737014 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:00
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	2.22	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0630	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		2.70	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	2.22	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J738 Project: CPRC0F16046
 Sample ID: 448737015 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:00
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.85	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0635	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		3.08	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.85	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6V1 Project: CPRC0F16046
 Sample ID: 448737016 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 09:25
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.94	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0636	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.94	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6W1 Project: CPRC0F16046
 Sample ID: 448737017 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:11
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	U	1.67	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0637	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide	U	1.00	1.00	2.00	ug/L		1	AXH3	05/01/18	0643	1760281	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	U	1.67	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J6W8 Project: CPRC0F16046
 Sample ID: 448737018 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 08:11
 Receive Date: 25-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	1.92	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0638	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		2.14	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	1.92	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J741 Project: CPRC0F16046
 Sample ID: 448737019 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 10:00
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total		10.6	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0639	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		4.01	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination		10.6	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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

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Certificate of Analysis

Report Date: May 2, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-046

Client Sample ID: B3J745 Project: CPRC0F16046
 Sample ID: 448737020 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 24-APR-18 10:17
 Receive Date: 26-APR-18
 Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Flow Injection Analysis												
9012_CYANIDE (TOTAL): COMMON "As Received"												
Cyanide, Total	B	3.12	1.67	5.00	ug/L	1.00	1	AXH3	05/01/18	0640	1759216	1
9014_CN (FREE): COMMON "As Received"												
Free Cyanide		3.08	1.00	2.00	ug/L		1	AXH3	05/02/18	1037	1759220	2
9012_CN (AMENABLE): COMMON "See Parent Products"												
Cyanide amenable to chlorination	B	3.12	1.67	5.00	ug/L		1	AXH3	05/01/18	0857	1759219	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9010C Distillation	SW846 9010C Prep	AXH3	04/30/18	0758	1759215
SW846 9012B	SW846 9012B Cyanide, Chlorinated Prep	AXH3	04/30/18	0956	1759217

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9012_CYANIDE	
2	9014_CYANIDE	
3	9012_CYANIDE	

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: May 2, 2018

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1759216										
QC1204017155	448737001	DUP									
Cyanide, Total	B	1.89	B	2.03	ug/L	7.14	^	(+/-5.00)	AXH3	05/01/18	06:09
QC1204017156	448737002	DUP									
Cyanide, Total	U	1.67	U	1.67	ug/L	N/A				05/01/18	06:12
QC1204017154	LCS										
Cyanide, Total	50.0			51.0	ug/L			102 (80%-120%)		05/01/18	06:07
QC1204017153	MB										
Cyanide, Total			U	1.67	ug/L					05/01/18	06:06
QC1204017157	448737001	MS									
Cyanide, Total	100	B	1.89	106	ug/L			104 (75%-125%)		05/01/18	06:10
QC1204017158	448737002	MS									
Cyanide, Total	100	U	1.67	108	ug/L			106 (75%-125%)		05/01/18	06:13
Batch	1759218										
QC1204017161	448737001	DUP									
Cyanide, Chlorinated	U	1.67	U	1.67	ug/L	N/A			AXH3	05/01/18	07:24
QC1204017162	448737002	DUP									
Cyanide, Chlorinated	U	1.67	U	1.67	ug/L	N/A				05/01/18	07:26
QC1204017160	LCS										
Cyanide, Chlorinated	50.0		U	1.67	ug/L			0 (-200%-200%)		05/01/18	07:22
QC1204017159	MB										
Cyanide, Chlorinated			U	1.67	ug/L					05/01/18	07:21

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QC Summary

Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1759220										
QC1204017165		448737001	DUP								
Free Cyanide	B	1.01	U	1.00	ug/L	45.6 ^		(+/-2.00)	AXH3	05/02/18	10:37
QC1204017166		448737004	DUP								
Free Cyanide	B	1.76		2.51	ug/L	35.1 ^		(+/-2.00)		05/02/18	10:37
QC1204017164		LCS									
Free Cyanide		25.0		24.5	ug/L		97.9	(80%-120%)		05/02/18	10:37
QC1204017163		MB									
Free Cyanide			U	1.00	ug/L					05/02/18	10:37

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

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

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

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

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL448737
Work Order #: 448737

Product: I129LL_SEP_LEPS_GS: COMMON (low level)

Analytical Method: DOE EML HASL-300,I-01 Modified

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1759222

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204017172	Method Blank (MB)
1204017173	448737016(B3J6V1) Sample Duplicate (DUP)
1204017174	448737016(B3J6V1) Matrix Spike (MS)
1204017175	Laboratory Control Sample (LCS)

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

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. 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.

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1759020

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204016712	Method Blank (MB)
1204016713	448737016(B3J6V1) Sample Duplicate (DUP)
1204016714	Laboratory Control Sample (LCS)

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

Recounts

Sample 448737020 (B3J745) was recounted due to high MDC. The recount is reported.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22

Analytical Batch: 1759042

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
448737016	B3J6V1
448737017	B3J6W1
448737018	B3J6W8
448737019	B3J741
448737020	B3J745
1204016764	Method Blank (MB)
1204016765	448737016(B3J6V1) Sample Duplicate (DUP)
1204016766	448737016(B3J6V1) Matrix Spike (MS)
1204016767	Laboratory Control Sample (LCS)

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

Recounts

Sample 1204016767 (LCS) was recounted due to low recovery. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1204016766 (B3J6V1MS), aliquot was reduced to conserve sample volume.

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: GEL448737 GEL Work Order: 448737

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Kate Gellatly

Date: 08 MAY 2018

Title: Analyst I

Sample Data Summary

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737016	Date Collected: 04/24/2018 09:25	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J6V1	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1759222	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 04/30/2018 08:45	Aliquot: 1.2 L	Instrument: XRAY1
Data File: I448737016.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1759222		
Prep Date: 04/27/2018 07:22		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.332	pCi/L	+/-0.337	0.371	0.698	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737016	Date Collected: 04/24/2018 09:25	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J6V1	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1759020	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 05/06/2018 06:25	Aliquot: 100 mL	Instrument: LSCMOCHA
Data File: E1759020R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1759020		
Prep Date: 05/02/2018 11:35		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		83.6	pCi/L	+/-28.1	29.5	43.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	40900	47500	CPM	86.1	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737016	Date Collected: 04/24/2018 09:25	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J6V1	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1759042	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 04/28/2018 07:57	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1759042R.xls	Prep Method: EPA 906.0 Modified	Count Time: 60 min
Prep Batch: 1759042		
Prep Date: 04/27/2018 07:23		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1370	pCi/L	+/-200	332	262	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Certificate of Analysis
Sample Summary

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737017	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W1	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1759222	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 04/30/2018 08:46	Aliquot: 1.2 L	Instrument: XRAY4
Data File: I448737017.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1759222		
Prep Date: 04/27/2018 07:22		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.153	pCi/L	+/-0.379	0.386	0.669	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737017	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W1	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1759020	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 05/06/2018 06:46	Aliquot: 100 mL	Instrument: LSCMOCHA
Data File: E1759020R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1759020		
Prep Date: 05/02/2018 11:35		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-5.48	pCi/L	+/-23.2	23.2	40.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	43300	47500	CPM	91.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737017	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W1	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1759042	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 04/28/2018 08:59	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1759042R.xls	Prep Method: EPA 906.0 Modified	Count Time: 60 min
Prep Batch: 1759042		
Prep Date: 04/27/2018 07:23		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1630	pCi/L	+/-209	379	265	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Certificate of Analysis
Sample Summary

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737018	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W8	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1759222	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 04/30/2018 08:47	Aliquot: 1.2 L	Instrument: XRAY5
Data File: I448737018.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1759222		
Prep Date: 04/27/2018 07:22		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.118	pCi/L	+/-0.442	0.445	0.796	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737018	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W8	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1759020	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 05/06/2018 07:08	Aliquot: 100 mL	Instrument: LSCMOCHA
Data File: E1759020R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1759020		
Prep Date: 05/02/2018 11:35		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	15.9	pCi/L	+/-25.3	25.3	42.9	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	41200	47500	CPM	86.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Certificate of Analysis
Sample Summary

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737018	Date Collected: 04/24/2018 08:11	Matrix: WATER
	Date Received: 04/25/2018 09:05	
Client ID: B3J6W8	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1759042	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 04/28/2018 10:02	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1759042R.xls	Prep Method: EPA 906.0 Modified	Count Time: 60 min
Prep Batch: 1759042		
Prep Date: 04/27/2018 07:23		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1530	pCi/L	+/-206	361	264	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737019	Date Collected: 04/24/2018 10:00	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J741		Prep Basis: "As Received"
Batch ID: 1759222	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 04/30/2018 08:47	Analyst: BSW1	Instrument: XRAY6
Data File: I448737019.CNF;1	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1759222	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 04/27/2018 07:22		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.16	pCi/L	+/-0.885	0.893	0.605	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737019	Date Collected: 04/24/2018 10:00	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J741	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1759020	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 05/06/2018 07:29	Aliquot: 100 mL	Instrument: LSCMOCHA
Data File: E1759020R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1759020		
Prep Date: 05/02/2018 11:35		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		299	pCi/L	+/-34.8	47.9	44.7	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	41000	47500	CPM	86.3	(30%-105%)

Comments:

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

The MDC is a sample specific MDC.

Certificate of Analysis
Sample Summary

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737019	Date Collected: 04/24/2018 10:00	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J741	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1759042	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 04/28/2018 11:04	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1759042R.xls	Prep Method: EPA 906.0 Modified	Count Time: 60 min
Prep Batch: 1759042		
Prep Date: 04/27/2018 07:23		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		689	pCi/L	+/-181	225	270	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737020	Date Collected: 04/24/2018 10:17	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J745	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1759222	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 04/30/2018 10:59	Aliquot: 1.2 L	Instrument: XRAY1
Data File: I448737020.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1759222		
Prep Date: 04/27/2018 07:22		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		0.657	pCi/L	+/-0.514	0.519	0.493	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

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

The MDC is a sample specific MDC.

**Certificate of Analysis
Sample Summary**

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737020	Date Collected: 04/24/2018 10:17	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J745	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1759020	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 05/07/2018 10:35	Aliquot: 100 mL	Instrument: LSCMOCHA
Data File: E1759020R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 30 min
Prep Batch: 1759020		
Prep Date: 05/02/2018 11:35		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		80.2	pCi/L	+/-24.7	26.2	38.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	41800	47500	CPM	88.1	(30%-105%)

Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Certificate of Analysis
Sample Summary

SDG Number: GEL448737	Client: CPRC001	Project: CPRC0F16046
Lab Sample ID: 448737020	Date Collected: 04/24/2018 10:17	Matrix: WATER
	Date Received: 04/26/2018 09:10	
Client ID: B3J745	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1759042	Analyst: MXH8	SOP Ref: GL-RAD-A-002
Run Date: 04/28/2018 12:06	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1759042R.xls	Prep Method: EPA 906.0 Modified	Count Time: 60 min
Prep Batch: 1759042		
Prep Date: 04/27/2018 07:23		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1160	pCi/L	+/-193	296	262	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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Comments:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 8, 2018
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 448737

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1759222								
QC1204017172	MB								
Iodine-129			U	0.0321	pCi/L			BSW1	04/30/1810:59
				Uncert: +/-0.297					
				TPU: +/-0.298					
QC1204017173	448737016	DUP							
Iodine-129		U	0.332	U	0.361				04/30/1811:00
				Uncert: +/-0.337		RPD: 0	N/A		
				TPU: +/-0.371		RER: 0.0887	(0-2)		
QC1204017174	448737016	MS							
Iodine-129		U	0.332		37.3	REC: 98	(75%-125%)		04/30/1811:00
				Uncert: +/-0.337					
				TPU: +/-0.371					
QC1204017175	LCS								
Iodine-129					37.5	REC: 109	(80%-120%)		04/30/1811:36
				Uncert: +/-3.44					
				TPU: +/-5.32					
Rad Liquid Scintillation									
Batch	1759020								
QC1204016712	MB								
Technetium-99			U	-17.2	pCi/L			CXS7	05/06/1808:13
				Uncert: +/-24.9					
				TPU: +/-24.9					
**Technetium-99m Tracer				47500	40400	CPM	REC: 85	(30%-105%)	
QC1204016713	448737016	DUP							
Technetium-99			83.6		87.1	pCi/L			05/06/1808:35
				Uncert: +/-28.1		RPD: 4	(0% - 100%)		
				TPU: +/-29.5		RER: 0.163	(0-2)		
**Technetium-99m Tracer				47500	40900	CPM	REC: 89	(30%-105%)	
QC1204016714	LCS								
Technetium-99			888		869	pCi/L	REC: 98	(80%-120%)	05/06/1808:56
				Uncert: +/-45.0					
				TPU: +/-106					
**Technetium-99m Tracer				47500	42300	CPM	REC: 89	(30%-105%)	
Batch	1759042								
QC1204016764	MB								
Tritium			U	-150	pCi/L			MXH8	04/28/1813:08
				Uncert: +/-140					
				TPU: +/-140					
QC1204016765	448737016	DUP							
Tritium			1370		1500	pCi/L			04/28/1814:11
				Uncert: +/-200		RPD: 9	(0%-20%)		
				TPU: +/-332		RER: 0.528	(0-2)		
QC1204016766	448737016	MS							
Tritium			5110	1370	6490	pCi/L	REC: 100	(75%-125%)	04/28/1815:13

QC Summary

Workorder: 448737

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch										
				Uncert:						
			+/-200							
				TPU:						
			+/-332							
QC1204016767	LCS									
Tritium	2550				2120	pCi/L	REC: 83 (80%-120%)		04/29/18	12:43
				Uncert:						
					+/-438					
				TPU:						
					+/-600					

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in the associated method blank >= MDC or >5% sample activity.
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

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

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