GEL Laboratories LLC
a member of The GEL Group INC

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

gel.com

August 04, 2016

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

Re: CHPRC SAF F16-043
Work Order: 402244
SDG: GEL402244

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 22, 2016. 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,

B. Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 304070 - 8C
Chain of Custody: F16-043-095, F16-043-096, F16-043-104 and F16-043-105
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-043
SDG: GEL402244

August 04, 2016

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 July 22, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER.

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
402244001	B36658
402244002	B36659
402244003	B36667
402244004	B36668

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: GC/MS Volatile, 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.

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402244
Work Order #: 402244

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

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.

Quality Control (QC) Information

Surrogate Recoveries
Surrogate recoveries, in samples 402244001 (B36658) and 402244003 (B36667) were outside the acceptance limits. Sample re-analysis confirmed matrix interference. The initial results are reported.

Internal Standard (ISTD) Acceptance
In sample 402244003 (B36667), internal standard response were outside the required acceptance criteria. Sample re-analysis confirmed matrix interference. The initial results are reported.

Technical Information

Sample Re-extraction/Re-analysis
Samples 402244001 (B36658) and 402244003 (B36667) were re-analyzed due to unacceptable surrogate or internal standard recoveries in the initial analysis. The re-analysis confirmed. The initial results are reported.

Miscellaneous Information

Additional Comments
The samples in this SDG varied in color and size. Ten milliliters of de-ionized water was added to the contents of the sample container at the time of analysis.

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 potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 402244002 (B36659).

Quality Control (QC) Information

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203591410 (B36659MS)	Sodium	138* (75%-125%)

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.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of chromium, zinc, and molybdenum. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203591201 (MB).

Matrix Spike (MS/MSD) Recovery Statement
The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analytes. The post spike recoveries were within the required control limits for some of the analytes. This verifies the absence of a matrix interference in the post-digested sample. For other analytes the post spike failed verifying the presence of a matrix interference in the post-digested sample. The failing spike recoveries may be attributed to possible matrix interference and/or sample non-homogeneity.

Sample	Analyte	Value
1203591204 (B36659MS)	Nickel	128* (75%-125%)
	Vanadium	369* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement
Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1203591203 (B36659DUP)	Molybdenum	26.4* (0%-20%)
	Vanadium	11270* (+/-1010 ug/kg)

Post Spike (PS) Recovery Statement
The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable

analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203593724 (B36659PS)	Vanadium	327* (80%-120%)

Technical Information

Sample Dilutions
Sample 402244002 (B36659) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	402244	
	002	004
Several	40X 2X 10X	2X

General Chemistry

Carbon, Total Organic

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
The following prep procedure was performed prior to analysis: A few drops of 5% Phosphoric acid (lot# 2353799 exp date:09/08/16) were added to all of the samples to check for the presence of inorganic carbon, which is indicated by a fizzing reaction. The samples did not react. 1203591073 (B36659DUP), 402244002 (B36659) and 402244004 (B36668).

pH

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

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value

1203591340 (B36654DUP)	pH	Received 21-JUL-16, out of holding 19-JUL-16
402244002 (B36659)	pH	Received 22-JUL-16, out of holding 20-JUL-16
402244004 (B36668)	pH	Received 22-JUL-16, out of holding 20-JUL-16

Radiochemistry

Dry Weight

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.

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-043-096	PAGE 1 OF 1
COLLECTOR: Ed Kauer, CHPRC	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: C9425, I-003	PROJECT DESIGNATION: 100-NR-2 Drilling - Soil		SAF NO.: F16-043	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.: G105-539	FIELD LOGBOOK NO.: HNF-N-645 5 -138	ACTUAL SAMPLE DEPTH: 65.91-68.41	COA: 304070	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 6850		BILL OF LADING/AIR BILL NO.: 7768 0935 0727		

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

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

SPECIAL HANDLING AND/OR STORAGE: N/A

PRESERVATION	None	Cool <=6C	None	None
HOLDING TIME	6 Months	28 Days	ASAP	None
TYPE OF CONTAINER	G/P	aG	G/P	Moisture Resistant Cont.
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	250mL	250mL	60mL	200g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9060_TOC: COMMON;	9045_pH (Non-Aqueous): COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B36659	SOIL	JUL 20 2016	1350	✓	✓	✓	✓

402244

8/4/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Ed Kauer, CHPRC	DATE/TIME: JUL 20 2016 1514	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUL 20 2016 1514
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 21 2016 0730	RECEIVED BY/STORED IN: Janelle Zunker, CHPRC	DATE/TIME: JUL 21 2016 0730
RELINQUISHED BY/REMOVED FROM: Janelle Zunker, CHPRC	DATE/TIME: JUL 21 2016 1100	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FX	DATE/TIME:	RECEIVED BY/STORED IN: M. Kaiser	DATE/TIME: 7-22-16 0830
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS

SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS;
(1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium};
6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc};
6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};
(2) Moisture Content - D2216 {Percent moisture (wet sample)};

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 7/12/2016 FSR ID = FSR33902 TRVL NUM = TRVL-16-186 A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-043-095	PAGE 1 OF 1
COLLECTOR: Ed Kauer, CHPRC	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: C9425, I-003	PROJECT DESIGNATION: 100-NR-2 Drilling - Soil		SAF NO.: F16-043	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.: GWS -539	FIELD LOGBOOK NO.: HNF-N-645 5 - 128	ACTUAL SAMPLE DEPTH: 65.91-68.41	COA: 304070	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 6850		BILL OF LADING/AIR BILL NO.: 7768 0938 0727		

402244

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS		
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.	PRESERVATION	Cool <-7C and >-20C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aGs
		NO. OF CONTAINER(S)	5
		VOLUME	40mL
	SPECIAL HANDLING AND/OR STORAGE: N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B36658	SOIL	JUL 2 0 2016	1350	✓

8/4/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Ed Kauer, CHPRC	DATE/TIME: JUL 2 0 2016 1514	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUL 2 0 2016 1514
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 2 1 2016 0730	RECEIVED BY/STORED IN: Janelle Zunker, CHPRC	DATE/TIME: JUL 2 1 2016 0730
RELINQUISHED BY/REMOVED FROM: Janelle Zunker, CHPRC	DATE/TIME: JUL 2 1 2016 1100	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FX	DATE/TIME:	RECEIVED BY/STORED IN: M. Knislow	DATE/TIME: 7-22-16 0850
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS

SPLIT SPOON PARTS B & A WILL BE COMBINED TO ENSURE ADEQUATE SAMPLE MATERIAL FOR ANALYSIS; ** All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis.** The laboratory is to use one of the low level VOA bottles for moisture content determination.** VOA bottles will be labeled with an appended suffix of K, L, M, N, or P. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages.

(1) 5035/8260_VOA: LOW LEVEL: COMMON {Chloroform, Ethylbenzene};

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 7/12/2016 FSR ID = FSR33902 TRVL NUM = TRVL-16-186 A-6003-618 (REV 2)

SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location: 100-NR-2 C9425 I-003

Sampler Initials and Date: ELK 7-20-16

Sample Number [1]	Sample Suffix	Initial Weight [2] (grams)	Total Weight [3] (grams)	Soil Weight [4] (grams)
B36658	K	29.2	36.4	7.2
	L	29.5	37.4	7.9
	M	29.3	36.5	7.2
	N	29.3	39.8	10.5
B36658	P	29.6	37.1	7.5

[1] Enter sample number associated with the sampling event.

[2] Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.

[3] Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.

[4] Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-043-104	PAGE 1 OF 1
COLLECTOR: Ed Kauer CHPRC	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8C	DATA TURNAROUND
SAMPLING LOCATION: C9425, I-003 EB	PROJECT DESIGNATION: 100-NR-2 Drilling - Soil		SAF NO.: F16-043	AIR QUALITY ☐	15 Days / 15 Days
ICE CHEST NO.: GWS-539	FIELD LOGBOOK NO.: HNF-N-645 5 - 8	ACTUAL SAMPLE DEPTH: N/A ft	COA: 304070	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: 68850		BILL OF LADING/AIR BILL NO.: 7768 0935 0727		

402244

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

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

SPECIAL HANDLING AND/OR STORAGE
N/A

PRESERVATION	Cool <-7C and >-20C
HOLDING TIME	14 Days
TYPE OF CONTAINER	aGs
NO. OF CONTAINER(S)	5
VOLUME	40mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B36667	SOIL	JUL 20 2016	0650	✓

8/4/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Ed Kauer CHPRC	DATE/TIME: JUL 20 2016 1514	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUL 20 2016 1514
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 21 2016 0730	RECEIVED BY/STORED IN: Janelle Zunker CHPRC	DATE/TIME: JUL 21 2016 0730
RELINQUISHED BY/REMOVED FROM: Janelle Zunker CHPRC	DATE/TIME: JUL 21 2016 1100	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: Fx	DATE/TIME:	RECEIVED BY/STORED IN: M. Kaston	DATE/TIME: 7-21-16 0850
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS
** All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis.** The laboratory is to use one of the low level VOA bottles for moisture content determination.** VOA bottles will be labeled with an appended suffix of K, L, M, N, or P. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages.
(1) 5035/8260_VOA: LOW LEVEL: COMMON {Chloroform, Ethylbenzene};

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 7/11/2016 FSR ID = FSR33904 TRVL NUM = TRVL-16-186 A-6003-618 (REV 2)

SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location: 100-NR-2 C 9425 I-003EB

Sampler Initials and Date: Ed Kauer CHPRC JUL 28 2016

	Sample Number [1]	Sample Suffix	Initial Weight [2] (grams)	Total Weight [3] (grams)	Soil Weight [4] (grams)
	B36667	K	29.2	36.2	7.0
		L	29.3	38.7	9.5
		M	29.2	36.9	7.7
		N	29.3	36.4	7.1
	B36667	P	29.5	40.0	10.8

[1] Enter sample number associated with the sampling event.

[2] Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.

[3] Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.

[4] Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F16-043-105	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8C	DATA TURNAROUND
Ed Kauer CHPRC	TODAK, D	376-6427	TODAK, D	AIR QUALITY ☐	15 Days / 15 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C9425, I-003 EB	100-NR-2 Drilling - Soil		F16-043		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
GWS-539	HNF-N-645 5 - 30	N/A FT	304070	FEDERAL EXPRESS	ORIGINAL
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
GEL Laboratories, LLC	68550		7768 0938 0727		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

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

SPECIAL HANDLING AND/OR STORAGE
N/A

PRESERVATION	None	Cool <=6C	None	None
HOLDING TIME	6 Months	28 Days	ASAP	None
TYPE OF CONTAINER	G/P	aG	G/P	Moisture Resistant Cont.
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	250mL	250mL	60mL	200g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9060_TOC: COMMON;	9045_pH (Non-Aqueous): COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B36668	SOIL	JUL 20 2016	0650	✓	✓	✓	✓

402244

8/4/2016

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Ed Kauer CHPRC	JUL 20 2016 1514	SSU-1	JUL 20 2016 1514
SSU-1	JUL 21 2016 0730	Janelle Zunker CHPRC	JUL 21 2016 0730
Janelle Zunker CHPRC	JUL 21 2016 1100	FEDEX	
FX		M. Kruslar	7-21-16 0850

SPECIAL INSTRUCTIONS
(1) 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Strontium, Vanadium, Zinc}; 6010_METALS_ICP: COMMON {Calcium, Iron, Magnesium, Potassium, Sodium}; 6010_METALS_ICP: COMMON (Add-on) {Phosphorus};
(2) Moisture Content - D2216 {Percent moisture (wet sample)};

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 7/11/2016 FSR ID = FSR33904 TRVL NUM = TRVL-16-186 A-6003-618 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order:
Received By: MK	Date Received: 7-22-16

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Cpm 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 1c 2c
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130462962 Secondary Temperature Device Serial #(If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7768 1444 7619 2c 7768 0935 0727 1c 7768 1188 2601 2c

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 7/23/16 Page 1 of 1

GL-CHL-SR-001 Rev 3

Data Review Qualifier Definitions

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 04−AUG−16

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 (0rganics 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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	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 04 August 2016

State	Certification
Alaska	UST−0110
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	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402244
Work Order #: 402244

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 5035A/8260C
Analytical Procedure: GL-OA-E-038 REV# 22
Analytical Batch: 1584772

Preparation Method: SW846 5035A
Preparation Procedure: GL-OA-E-039 REV# 10
Preparation Batch: 1584771

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

GEL Sample ID#	Client Sample Identification
402244001	B36658
402244003	B36667
1203592396	Method Blank (MB)
1203592398	Laboratory Control Sample (LCS)
1203592399	401766001(B36644) Post Spike (PS)
1203592400	401766001(B36644) Post Spike Duplicate (PSD)

The samples in this SDG were analyzed on a "dry weight" 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.

Quality Control (QC) Information

Surrogate Recoveries
Surrogate recoveries, in samples 402244001 (B36658) and 402244003 (B36667) were outside the acceptance limits. Sample re-analysis confirmed matrix interference. The initial results are reported.

Internal Standard (ISTD) Acceptance
In sample 402244003 (B36667), internal standard response were outside the required acceptance criteria. Sample re-analysis confirmed matrix interference. The initial results are reported.

Technical Information

Sample Re-extraction/Re-analysis
Samples 402244001 (B36658) and 402244003 (B36667) were re-analyzed due to unacceptable surrogate or internal standard recoveries in the initial analysis. The re-analysis confirmed. The initial results are reported.

Miscellaneous Information

Additional Comments
The samples in this SDG varied in color and size. Ten milliliters of de-ionized water was added to the contents of the sample container at the time of analysis.

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: GEL402244 GEL Work Order: 402244

The Qualifiers in this report are defined as follows:

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

T Spike and/or spike duplicate 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.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

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: Erin Haubert **Name: Erin Haubert**

Date: 29 JUL 2016 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Date Collected:**	**07/20/2016 13:50**	**Matrix:**	**SOIL**
Lab Sample ID:	**402244001**	**Date Received:**	**07/22/2016 08:50**	**%Moisture:**	**3.9**
		Client:	**CPRC001**	**Project:**	**CPRC0F16043**
Client ID:	**B36658**	**Method:**	**SW846 5035A/8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1584772**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**07/26/2016 12:27**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**07/20/2016 13:50**	**Aliquot:**	**7.2 g**	**Final Volume:**	**5 mL**
Data File:	**072616V3\3T211.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
67-66-3	Chloroform	U	0.217	ug/kg	0.217	1.44
100-41-4	Ethylbenzene	U	0.217	ug/kg	0.217	1.44

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Date Collected:**	**07/20/2016 06:50**	**Matrix:**	**SOIL**
Lab Sample ID:	**402244003**	**Date Received:**	**07/22/2016 08:50**	**%Moisture:**	**0**
		Client:	**CPRC001**	**Project:**	**CPRC0F16043**
Client ID:	**B36667**	**Method:**	**SW846 5035A/8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1584772**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**07/26/2016 12:57**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**07/20/2016 06:50**	**Aliquot:**	**9.5 g**	**Final Volume:**	**5 mL**
Data File:	**072616V3\3T212.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
67-66-3	Chloroform	U	0.158	ug/kg	0.158	1.05
100-41-4	Ethylbenzene	J	0.200	ug/kg	0.158	1.05

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 27, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1584772										
QC1203592398 LCS										
Chloroform	50.0			56.2	ug/kg		112	(70%-130%)	CDS1	07/26/16 08:53
Ethylbenzene	50.0			55.5	ug/kg		111	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			49.7	ug/L		99	(81%-124%)		
**Bromofluorobenzene	50.0			52.1	ug/L		104	(70%-130%)		
**Toluene-d8	50.0			49.3	ug/L		99	(81%-120%)		
QC1203592396 MB										
Chloroform			U	0.300	ug/kg					07/26/16 10:24
Ethylbenzene			U	0.300	ug/kg					
**1,2-Dichloroethane-d4	50.0			52.4	ug/L		105	(81%-124%)		
**Bromofluorobenzene	50.0			50.9	ug/L		102	(70%-130%)		
**Toluene-d8	50.0			51.3	ug/L		103	(81%-120%)		
QC1203592399 401766001 PS										
Chloroform	50.0	U	0.00	46.9	ug/L		94	(70%-130%)		07/26/16 15:31
Ethylbenzene	50.0	U	0.00	43.3	ug/L		87	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		61.0	50.3	ug/L		101	(81%-124%)		
**Bromofluorobenzene	50.0		55.2	51.9	ug/L		104	(70%-130%)		
**Toluene-d8	50.0		56.8	48.4	ug/L		97	(81%-120%)		
QC1203592400 401766001 PSD										
Chloroform	50.0	U	0.00	46.3	ug/L	1	93	(0%-20%)		07/26/16 16:02
Ethylbenzene	50.0	U	0.00	40.2	ug/L	7	80	(0%-20%)		
**1,2-Dichloroethane-d4	50.0		61.0	51.2	ug/L		102	(81%-124%)		

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

QC Summary

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1584772											
**Bromofluorobenzene	50.0	55.2		53.0	ug/L		106	(70%-130%)			
**Toluene-d8	50.0	56.8		48.1	ug/L		96	(81%-120%)	CDS1	07/26/16	16:02

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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
- o Analyte failed to recover within LCS limits (0rganics only)

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.

Volatile

Surrogate Recovery Report

SDG Number: GEL402244

Matrix Type: SOLID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203592398	LCS for batch 1584771	99	99	104
1203592396	MB for batch 1584771	105	103	102
402244001	B36658	125 *	110	109
402244003	B36667	583 *	560 *	567 *
1203592399	B36644PS	101	97	104
1203592400	B36644PSD	102	96	106

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(81%-124%)
TOL	= Toluene-d8	(81%-120%)
BFB	= Bromofluorobenzene	(70%-130%)

* Recovery outside Acceptance Limits
\# Column to be used to flag recovery values
D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402244
Work Order #: 402244

Product: **Determination of Metals by ICP-MS**
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1584315

Product: **Determination of Metals by ICP**
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1584401

Preparation Method: SW846 3050B
Preparation Procedure: GL-MA-E-009 REV# 26
Preparation Batches: 1584314 and 1584400

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

GEL Sample ID#	Client Sample Identification
402244002	B36659
402244004	B36668
1203591407	Method Blank (MB)**ICP**
1203591408	Laboratory Control Sample (LCS)
1203591411	402244002(B36659L) Serial Dilution (SD)
1203591409	402244002(B36659D) Sample Duplicate (DUP)
1203591410	402244002(B36659S) Matrix Spike (MS)
1203592346	402244002(B36659PS) Post Spike (PS)
1203591201	Method Blank (MB)**ICP-MS**
1203591202	Laboratory Control Sample (LCS)
1203591205	402244002(B36659L) Serial Dilution (SD)
1203591203	402244002(B36659D) Sample Duplicate (DUP)
1203591204	402244002(B36659S) Matrix Spike (MS)
1203593724	402244002(B36659PS) Post Spike (PS)

The samples in this SDG were analyzed on a "dry weight" 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 potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 402244002 (B36659)-ICP.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of chromium, zinc, and molybdenum. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203591201 (MB)-ICP-MS.

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analyte. The post spike recovery was within the required control limits. This verifies the absence of a matrix interference in the post-spike digested sample. The recovery may be attributed to possible sample matrix interference and/or non-homogeneity.

Sample	Analyte	Value
1203591410 (B36659MS)	Sodium	138* (75%-125%)

The MS/MSD (See Below) did not meet the recommended quality control acceptance criteria for percent recoveries for the following applicable analytes. The post spike recoveries were within the required control limits for some of the analytes. This verifies the absence of a matrix interference in the post-digested sample. For other analytes the post spike failed verifying the presence of a matrix interference in the post-digested sample. The failing spike recoveries may be attributed to possible matrix interference and/or sample non-homogeneity.

Sample	Analyte	Value
1203591204 (B36659MS)	Nickel	128* (75%-125%)
	Vanadium	369* (75%-125%)

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1203591203 (B36659DUP)	Molybdenum	26.4* (0%-20%)
	Vanadium	11270* (+/-1010 ug/kg)

Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS did not meet the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the presence of matrix interferences.

Sample	Analyte	Value
1203593724 (B36659PS)	Vanadium	327* (80%-120%)

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Sample 402244002 (B36659)-ICP-MS was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times. ICP-MS.

Analyte	402244	
	002	004
Several	40X 2X 10X 1X	2X 1X

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: GEL402244 GEL Work Order: 402244

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).

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.

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: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 04 AUG 2016 **Title: Data Validator**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402244 **CONTRACT:** CPRC0F16043 **METHOD TYPE:** SW846

SAMPLE ID: 402244002 **BASIS:** Dry Weight **DATE COLLECTED** 20−JUL−16

CLIENT ID: B36659 **LEVEL:** Low **DATE RECEIVED** 22−JUL−16

MATRIX: SOIL **%SOLIDS:** 95.8

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	7220000	ug/kg	D	3060	10200	50	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7440−36−0	Antimony	332	ug/kg	U	332	1010	1010	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7440−38−2	Arsenic	204	ug/kg	UD	204	1020	10	2	MS	PRB	07/29/16 16:12	160729−4	1584315
7440−39−3	Barium	44900	ug/kg	D	510	2040	20	10	MS	SKJ	07/28/16 16:58	160728−6	1584315
7440−43−9	Cadmium	110	ug/kg	BD	20.4	204	5	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7440−70−2	Calcium	3480000	ug/kg		8050	25100	25100	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7440−47−3	Chromium	11900	ug/kg	D	204	612	10	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7440−48−4	Cobalt	6310	ug/kg	D	61.2	204	20	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7440−50−8	Copper	9400	ug/kg	D	67.3	204	8	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7439−89−6	Iron	9110000	ug/kg		8050	25100	25100	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7439−92−1	Lead	3270	ug/kg	D	102	408	15	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7439−95−4	Magnesium	2720000	ug/kg		8550	30200	30200	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7439−96−5	Manganese	305000	ug/kg	D	4080	20400	5	40	MS	SKJ	07/28/16 16:40	160728−6	1584315
7439−98−7	Molybdenum	1340	ug/kg	CD*	61.2	204	20	2	MS	SKJ	07/28/16 17:15	160728−6	1584315
7440−02−0	Nickel	9180	ug/kg	DN	102	408	40	2	MS	SKJ	07/27/16 19:26	160727−5	1584315
7723−14−0	Phosphorous	342000	ug/kg		5030	15100	15100	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7440−09−7	Potassium	1130000	ug/kg		6440	25100	25100	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7782−49−2	Selenium	336	ug/kg	UD	336	1020	50	2	MS	PRB	07/29/16 16:12	160729−4	1584315
7440−22−4	Silver	128	ug/kg	B	101	503	503	1	P	HSC	07/28/16 15:31	072816A−2	1584401
7440−23−5	Sodium	1690000	ug/kg	N	7040	25100	25100	1	P	HSC	08/03/16 10:32	080316−3	1584401
7440−24−6	Strontium	27700	ug/kg	D	2040	10200	10	10	MS	SKJ	07/28/16 16:58	160728−6	1584315
7440−62−2	Vanadium	3130	ug/kg	D*N	306	1020	1020	2	MS	PRB	07/29/16 16:12	160729−4	1584315
7440−66−6	Zinc	24700	ug/kg	D	408	2040	25	2	MS	SKJ	07/27/16 19:26	160727−5	1584315

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1584315	1584314	SW846 3050B	0.512	g	50	mL	07/25/16	SXW1
1584401	1584400	SW846 3050B	0.519	g	50	mL	07/25/16	SXW1

***Analytical Methods:**

P **SW846 3050B/6010C**

MS **SW846 3050B/6020A**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402244 **CONTRACT:** CPRC0F16043 **METHOD TYPE:** SW846

SAMPLE ID: 402244004 **BASIS:** Dry Weight **DATE COLLECTED** 20−JUL−16

CLIENT ID: B36668 **LEVEL:** Low **DATE RECEIVED** 22−JUL−16

MATRIX: SOIL **%SOLIDS:** 100

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	43300	ug/kg	D	2960	9880	50	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7440−36−0	Antimony	306	ug/kg	U	306	928	928	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7440−38−2	Arsenic	198	ug/kg	UD	198	988	10	2	MS	PRB	07/29/16 16:22	160729−4	1584315
7440−39−3	Barium	494	ug/kg	D	98.8	395	20	2	MS	SKJ	07/28/16 16:38	160728−6	1584315
7440−43−9	Cadmium	19.8	ug/kg	UD	19.8	198	5	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7440−70−2	Calcium	15300	ug/kg	B	7420	23200	23200	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7440−47−3	Chromium	618	ug/kg	CD	198	593	10	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7440−48−4	Cobalt	59.3	ug/kg	UD	59.3	198	20	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7440−50−8	Copper	186	ug/kg	BD	65.2	198	8	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7439−89−6	Iron	1010000	ug/kg		7420	23200	23200	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7439−92−1	Lead	136	ug/kg	BD	98.8	395	15	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7439−95−4	Magnesium	7880	ug/kg	U	7880	27800	27800	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7439−96−5	Manganese	505	ug/kg	BD	198	988	5	2	MS	SKJ	07/28/16 16:38	160728−6	1584315
7439−98−7	Molybdenum	59.3	ug/kg	UD*	59.3	198	20	2	MS	SKJ	07/28/16 16:38	160728−6	1584315
7440−02−0	Nickel	98.8	ug/kg	UDN	98.8	395	40	2	MS	SKJ	07/27/16 19:45	160727−5	1584315
7723−14−0	Phosphorous	11500	ug/kg	B	4640	13900	13900	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7440−09−7	Potassium	17000	ug/kg	B	5940	23200	23200	1	P	HSC	07/29/16 09:06	072916−1	1584401
7782−49−2	Selenium	326	ug/kg	UD	326	988	50	2	MS	PRB	07/29/16 16:22	160729−4	1584315
7440−22−4	Silver	92.8	ug/kg	U	92.8	464	464	1	P	HSC	07/28/16 15:28	072816A−2	1584401
7440−23−5	Sodium	13900	ug/kg	BN	6490	23200	23200	1	P	HSC	08/03/16 10:29	080316−3	1584401
7440−24−6	Strontium	395	ug/kg	UD	395	1980	10	2	MS	SKJ	07/28/16 16:38	160728−6	1584315
7440−62−2	Vanadium	296	ug/kg	UD*N	296	988	988	2	MS	PRB	07/29/16 16:22	160729−4	1584315
7440−66−6	Zinc	697	ug/kg	CBD	395	1980	25	2	MS	SKJ	07/27/16 19:45	160727−5	1584315

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1584315	1584314	SW846 3050B	0.506	g	50	mL	07/25/16	SXW1
1584401	1584400	SW846 3050B	0.539	g	50	mL	07/25/16	SXW1

***Analytical Methods:**

P **SW846 3050B/6010C**

MS **SW846 3050B/6020A**

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: August 4, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1584315										
QC1203591203 402244002 DUP										
Aluminum	D	7220000	D	6850000	ug/kg	5.24		(0%-20%)	SKJ	07/27/16 19:30
Arsenic	DU	204	BD	1000	ug/kg	144 ^		(+/-1010)	PRB	07/29/16 16:14
Barium	D	44900	D	49700	ug/kg	10.2		(0%-20%)	SKJ	07/28/16 17:00
Cadmium	BD	110	BD	103	ug/kg	6.9 ^		(+/-202)		07/27/16 19:30
Chromium	D	11900	D	10800	ug/kg	10.2		(0%-20%)		
Cobalt	D	6310	D	6580	ug/kg	4.33		(0%-20%)		
Copper	D	9400	D	9410	ug/kg	0.088		(0%-20%)		
Lead	D	3270	D	2890	ug/kg	12.4		(0%-20%)		
Manganese	D	305000	D	310000	ug/kg	1.65		(0%-20%)		07/28/16 16:43
Molybdenum	*CD	1340	*D	1030	ug/kg	26.4*		(0%-20%)		07/28/16 17:17
Nickel	DN	9180	D	10500	ug/kg	13.2		(0%-20%)		07/27/16 19:30
Selenium	DU	336	BD	615	ug/kg	92.9 ^		(+/-1010)	PRB	07/29/16 16:14
Strontium	D	27700	D	27400	ug/kg	1.12 ^		(+/-10100)	SKJ	07/28/16 17:00
Vanadium	*DN	3130	*D	14400	ug/kg	129*^		(+/-1010)	PRB	07/29/16 16:14
Zinc	D	24700	D	26400	ug/kg	6.51		(0%-20%)	SKJ	07/27/16 19:30
QC1203591202 LCS										
Aluminum	198000		D	208000	ug/kg		105	(80%-120%)		07/27/16 19:14
Arsenic	4940		D	4610	ug/kg		93.3	(80%-120%)	PRB	07/29/16 16:10
Barium	4940		D	5130	ug/kg		104	(80%-120%)	SKJ	07/28/16 16:35
Cadmium	4940		D	4890	ug/kg		99	(80%-120%)		07/27/16 19:14

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QC Summary

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1584315										
Chromium	4940		D	5660	ug/kg		115	(80%-120%)		
Cobalt	4940		D	5170	ug/kg		105	(80%-120%)	SKJ	07/27/16 19:14
Copper	4940		D	5120	ug/kg		104	(80%-120%)		
Lead	4940		D	5280	ug/kg		107	(80%-120%)		
Manganese	4940		D	5220	ug/kg		106	(80%-120%)		07/28/16 16:35
Molybdenum	4940		D	5020	ug/kg		102	(80%-120%)		
Nickel	4940		D	5190	ug/kg		105	(80%-120%)		07/27/16 19:14
Selenium	4940		D	4710	ug/kg		95.4	(80%-120%)	PRB	07/29/16 16:10
Strontium	4940		D	4970	ug/kg		101	(80%-120%)	SKJ	07/28/16 16:35
Vanadium	4940		D	5010	ug/kg		101	(80%-120%)	PRB	07/29/16 16:10
Zinc	4940		D	5610	ug/kg		114	(80%-120%)	SKJ	07/27/16 19:14
QC1203591201 MB										
Aluminum			DU	2900	ug/kg					07/27/16 19:10
Arsenic			DU	193	ug/kg				PRB	07/29/16 16:08
Barium			DU	96.7	ug/kg				SKJ	07/28/16 16:33
Cadmium			DU	19.3	ug/kg					07/27/16 19:10
Chromium			BD	460	ug/kg					
Cobalt			DU	58.0	ug/kg					
Copper			DU	63.8	ug/kg					
Lead			DU	96.7	ug/kg					
Manganese			DU	193	ug/kg					07/28/16 16:33
Molybdenum			BD	82.2	ug/kg					
Nickel			DU	96.7	ug/kg					07/27/16 19:10

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QC Summary

Workorder: **402244**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1584315											
Selenium				DU	319	ug/kg				PRB	07/29/16 16:08
Strontium				DU	387	ug/kg				SKJ	07/28/16 16:33
Vanadium				DU	290	ug/kg				PRB	07/29/16 16:08
Zinc				BD	634	ug/kg				SKJ	07/27/16 19:10
QC1203591204 402244002 MS											
Aluminum	197000	D	7220000	D	7510000	ug/kg		N/A	(75%-125%)		07/27/16 19:33
Arsenic	4920	DU	204	D	5360	ug/kg		106	(75%-125%)	PRB	07/29/16 16:16
Barium	4920	D	44900	D	55700	ug/kg		N/A	(75%-125%)	SKJ	07/28/16 17:02
Cadmium	4920	BD	110	D	4710	ug/kg		93.5	(75%-125%)		07/27/16 19:33
Chromium	4920	D	11900	D	16100	ug/kg		85	(75%-125%)		
Cobalt	4920	D	6310	D	11400	ug/kg		103	(75%-125%)		
Copper	4920	D	9400	D	14500	ug/kg		104	(75%-125%)		
Lead	4920	D	3270	D	7750	ug/kg		91.1	(75%-125%)		
Manganese	4920	D	305000	D	318000	ug/kg		N/A	(75%-125%)		07/28/16 16:45
Molybdenum	4920	*CD	1340	D	5790	ug/kg		90.5	(75%-125%)		07/28/16 17:20
Nickel	4920	DN	9180	DN	15500	ug/kg		128*	(75%-125%)		07/27/16 19:33
Selenium	4920	DU	336	D	5080	ug/kg		98.7	(75%-125%)	PRB	07/29/16 16:16
Strontium	4920	D	27700	D	34600	ug/kg		N/A	(75%-125%)	SKJ	07/28/16 17:02
Vanadium	4920	*DN	3130	DN	21200	ug/kg		369*	(75%-125%)	PRB	07/29/16 16:16
Zinc	4920	D	24700	D	31700	ug/kg		N/A	(75%-125%)	SKJ	07/27/16 19:33
QC1203593724 402244002 PS											
Nickel	25.0	DN	45.0	D	69.7	ug/L		98.5	(80%-120%)		07/27/16 19:37
Vanadium	25.0	*DN	15.4	D	97.1	ug/L		327*	(80%-120%)	PRB	07/29/16 16:18

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QC Summary

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1584315										
QC1203591205 402244002 SDILT										
Aluminum	D	35400	D	7060	ug/L	.324		(0%-10%)	SKJ	07/27/16 19:41
Arsenic	DU	0.806	DU	1020	ug/L	N/A		(0%-10%)	PRB	07/29/16 16:20
Barium	D	44.0	D	8.85	ug/L	.527		(0%-10%)	SKJ	07/28/16 17:05
Cadmium	BD	0.539	BD	0.111	ug/L	2.97		(0%-10%)		07/27/16 19:41
Chromium	D	58.5	D	13.2	ug/L	13		(0%-10%)		
Cobalt	D	30.9	D	6.34	ug/L	2.5		(0%-10%)		
Copper	D	46.1	D	9.98	ug/L	8.22		(0%-10%)		
Lead	D	16.1	D	3.30	ug/L	2.93		(0%-10%)		
Manganese	D	74.7	D	14.9	ug/L	.312		(0%-10%)		07/28/16 16:48
Molybdenum	*CD	6.57	D	1.40	ug/L	6.65		(0%-10%)		07/28/16 17:25
Nickel	DN	45.0	D	9.39	ug/L	4.31		(0%-10%)		07/27/16 19:41
Selenium	DU	1.10	DU	1680	ug/L	N/A		(0%-10%)	PRB	07/29/16 16:20
Strontium	D	27.2	BD	5.50	ug/L	1.33		(0%-10%)	SKJ	07/28/16 17:05
Vanadium	*DN	15.4	D	14.4	ug/L	369		(0%-10%)	PRB	07/29/16 16:20
Zinc	D	121	D	27.3	ug/L	12.7		(0%-10%)	SKJ	07/27/16 19:41
Metals Analysis-ICP										
Batch 1584401										
QC1203591409 402244002 DUP										
Antimony	U	332	U	342	ug/kg	N/A			HSC	07/28/16 15:34
Calcium		3480000		3310000	ug/kg	5.03		(0%-20%)		
Iron		9110000		7530000	ug/kg	19		(0%-20%)		
Magnesium		2720000		2320000	ug/kg	15.8		(0%-20%)		

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QC Summary

Workorder: **402244**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%		REC%	Range	Anlst	Date Time
Metals Analysis-ICP												
Batch 1584401												
Phosphorous			342000		304000	ug/kg	11.7			(0%-20%)		
Potassium			1130000		1010000	ug/kg	11.8			(0%-20%)	HSC	07/28/16 15:34
Silver		B	128	U	104	ug/kg	77.7	^		(+/-518)		
Sodium		N	1690000		1720000	ug/kg	1.57			(0%-20%)		08/03/16 10:34
QC1203591408 LCS												
Antimony	49700				49000	ug/kg			98.6	(80%-120%)		07/28/16 15:25
Calcium	497000				503000	ug/kg			101	(80%-120%)		
Iron	497000				507000	ug/kg			102	(80%-120%)		
Magnesium	497000				508000	ug/kg			102	(80%-120%)		
Phosphorous	49700				49900	ug/kg			100	(80%-120%)		
Potassium	497000				498000	ug/kg			100	(80%-120%)		
Silver	49700				48200	ug/kg			96.9	(80%-120%)		
Sodium	497000				524000	ug/kg			105	(80%-120%)		08/03/16 10:26
QC1203591407 MB												
Antimony				U	329	ug/kg						07/28/16 15:22
Calcium				U	7970	ug/kg						
Iron				U	7970	ug/kg						
Magnesium				U	8470	ug/kg						
Phosphorous				U	4980	ug/kg						
Potassium				U	6370	ug/kg						
Silver				U	99.6	ug/kg						
Sodium				U	6970	ug/kg						08/03/16 10:23
QC1203591410 402244002 MS												
Antimony	50400	U	332		44000	ug/kg			87.2	(75%-125%)		07/28/16 15:37

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QC Summary

Workorder: **402244**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1584401											
Calcium	504000		3480000		4330000	ug/kg		N/A	(75%-125%)		
Iron	504000		9110000		8460000	ug/kg		N/A	(75%-125%)	HSC	07/28/16 15:37
Magnesium	504000		2720000		3150000	ug/kg		N/A	(75%-125%)		
Phosphorous	50400		342000		407000	ug/kg		N/A	(75%-125%)		
Potassium	504000		1130000		1660000	ug/kg		105	(75%-125%)		
Silver	50400	B	128		47700	ug/kg		94.4	(75%-125%)		
Sodium	504000	N	1690000	N	2390000	ug/kg		138*	(75%-125%)		08/03/16 10:36
QC1203592346 402244002 PS											
Sodium	5000	N	16800		21700	ug/L		96.9	(80%-120%)		08/03/16 11:23
QC1203591411 402244002 SDILT											
Antimony		U	-2.85	DU	1660	ug/L	N/A		(0%-10%)		07/28/16 15:40
Calcium			34600	D	6910	ug/L	.162		(0%-10%)		
Iron			90500	D	18000	ug/L	.405		(0%-10%)		
Magnesium			27000	D	5470	ug/L	1.36		(0%-10%)		
Phosphorous			3400	D	694	ug/L	2.1		(0%-10%)		
Potassium			11300	D	2250	ug/L	.235		(0%-10%)		
Silver		B	1.28	DU	503	ug/L	N/A		(0%-10%)		
Sodium		N	16800	D	3590	ug/L	6.6		(0%-10%)		08/03/16 10:38

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.

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QC Summary

Workorder: **402244**

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

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
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 #: GEL402244
Work Order #: 402244

Product: **Carbon, Total Organic**
Analytical Method: SW846 9060A Modified
Analytical Procedure: GL-GC-E-093 REV# 14
Analytical Batch: 1584274

Preparation Method: SW846 9060A Modified Prep
Preparation Procedure: GL-GC-E-093 REV# 14
Preparation Batch: 1584273

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

GEL Sample ID#	Client Sample Identification
402244002	B36659
402244004	B36668
1203591071	Method Blank (MB)
1203591072	Laboratory Control Sample (LCS)
1203591073	402244002(B36659) Sample Duplicate (DUP)
1203591074	402244002(B36659) Post Spike (PS)

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

Data Summary:

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

Miscellaneous Information

Additional Comments
The following prep procedure was performed prior to analysis: A few drops of 5% Phosphoric acid (lot# 2353799 exp date:09/08/16) were added to all of the samples to check for the presence of inorganic carbon, which is indicated by a fizzing reaction. The samples did not react. 1203591073 (B36659DUP), 402244002 (B36659) and 402244004 (B36668).

Product: **pH**
Analytical Method: SW846 9045D
Analytical Procedure: GL-GC-E-008 REV# 21
Analytical Batch: 1584380

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

GEL Sample ID#	Client Sample Identification
402244002	B36659
402244004	B36668
1203591339	Laboratory Control Sample (LCS)
1203591340	402047002(B36654) 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

Holding Times
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203591340 (B36654DUP)	pH	Received 21-JUL-16, out of holding 19-JUL-16
402244002 (B36659)	pH	Received 22-JUL-16, out of holding 20-JUL-16
402244004 (B36668)	pH	Received 22-JUL-16, out of holding 20-JUL-16

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: GEL402244 GEL Work Order: 402244

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.

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

Review/Validation

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

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

Signature: **Name: Aubrey Kingsbury**

Date: 02 AUG 2016 **Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: August 2, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B36659
Sample ID: 402244002
Matrix: SOIL
Collect Date: 20-JUL-16 13:50
Receive Date: 22-JUL-16
Collector: Client
Moisture: 4.21%

Project: CPRC0F16043
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOC: COMMON "As Received"												
Total Organic Carbon #1		660000	200000	500000	ug/Kg	1.00	1	TSM	07/27/16	1552	1584274	1
Total Organic Carbon #2		580000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon #3		560000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon #4		550000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon Average		560000	200000	500000	ug/Kg	1.00	1					
Titration and Ion Analysis												
9045_pH (Non-Aqueous):COMMON "As Received"												
pH at Temp 22.7C	X	8.22	0.010	0.100	SU		1	RXB5	07/23/16	1749	1584380	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9060A Modified Prep	SW846 9060A Modified Total Organic Carbon	TSM	07/25/16	1505	1584273

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A Modified	
2	SW846 9045D	

Notes:

Column headers are defined as follows:

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

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

Certificate of Analysis

Report Date: August 2, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-043

Client Sample ID: B36668
Sample ID: 402244004
Matrix: SOIL
Collect Date: 20-JUL-16 06:50
Receive Date: 22-JUL-16
Collector: Client
Moisture: <0.1%

Project: CPRC0F16043
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
9060_TOC: COMMON "As Received"												
Total Organic Carbon #1	U	200000	200000	500000	ug/Kg	1.00	1	TSM	07/27/16	1710	1584274	1
Total Organic Carbon #2	U	200000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon #3	U	200000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon #4	U	200000	200000	500000	ug/Kg	1.00	1					
Total Organic Carbon Average	U	200000	200000	500000	ug/Kg	1.00	1					
Titration and Ion Analysis												
9045_pH (Non-Aqueous):COMMON "As Received"												
pH at Temp 22.8C	X	6.98	0.010	0.100	SU		1	RXB5	07/23/16	1753	1584380	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9060A Modified Prep	SW846 9060A Modified Total Organic Carbon	TSM	07/25/16	1505	1584273

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060A Modified	
2	SW846 9045D	

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
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: August 2, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Carbon Analysis										
Batch 1584274										
QC1203591073 402244002 DUP										
Total Organic Carbon Average		560000		560000	ug/Kg	0 ^		(+/-500000)	TSM	07/27/16 16:19
QC1203591072 LCS										
Total Organic Carbon Average	3470000			3200000	ug/Kg		92.2	(80%-120%)		07/27/16 15:35
QC1203591071 MB										
Total Organic Carbon Average			U	200000	ug/Kg					07/27/16 15:17
QC1203591074 402244002 PS										
Total Organic Carbon Average	5000	560		5510	mg/kg		99	(75%-125%)		07/27/16 16:45
Titration and Ion Analysis										
Batch 1584380										
QC1203591340 402047002 DUP										
pH	X	11.4	X	11.4	SU	0.176		(0%-30%)	RXB5	07/23/16 17:31
QC1203591339 LCS										
pH	7.00			6.99	SU		99.9	(70%-130%)		07/23/16 17:27

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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QC Summary

Workorder: **402244**

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ 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 #: GEL402244
Work Order #: 402244

Product: **Dry Weight**
Analytical Method: ASTM D 2216 (Modified)
Analytical Procedure: GL-OA-E-020 REV# 10
Analytical Batch: 1584043

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

GEL Sample ID#	Client Sample Identification
402244001	B36658
402244002	B36659
402244003	B36667
402244004	B36668
1203591095	402168001(NonSDG) Sample Duplicate (DUP)

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.

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: GEL402244 GEL Work Order: 402244

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: Theresa L Austin **Name: Theresa Austin**

Date: 26 JUL 2016 **Title: Group Leader**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Client:**	**CPRC001**	**Project:**	**CPRC0F16043**
Lab Sample ID:	**402244001**	**Date Collected:**	**07/20/2016 13:50**	**Matrix:**	**SOIL**
		Date Received:	**07/22/2016 08:50**	**%Moisture:**	**3.9**

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Client:**	**CPRC001**	**Project:**	**CPRC0F16043**
Lab Sample ID:	**402244002**	**Date Collected:**	**07/20/2016 13:50**	**Matrix:**	**SOIL**
		Date Received:	**07/22/2016 08:50**	**%Moisture:**	**4.2**
Client ID:	**B36659**			**Prep Basis:**	**"As Received"**
Batch ID:	**1584043**	**Method:**	**ASTM D 2216 (Modified)**	**SOP Ref:**	**GL-OA-E-020**
Run Date:	**07/22/2016 15:22**	**Analyst:**	**CXC1**	**Instrument:**	**SP-39020004**
Data File:				**Count Time:**	
Prep Batch:	**1584043**				
Prep Date:	**07/22/2016 15:22**				

CAS No.	Parmname	Qual	Result	Units		MDC	
%MOISTURE	Moisture		4.21	percent	+/-		

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Client:**	**CPRC001**	**Project:**	**CPRC0F16043**
Lab Sample ID:	**402244003**	**Date Collected:**	**07/20/2016 06:50**	**Matrix:**	**SOIL**
		Date Received:	**07/22/2016 08:50**	**%Moisture:**	**0**

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL402244**	**Client:**	**CPRC001**	**Project:**	**CPRC0F16043**
Lab Sample ID:	**402244004**	**Date Collected:**	**07/20/2016 06:50**	**Matrix:**	**SOIL**
		Date Received:	**07/22/2016 08:50**	**%Moisture:**	**0**
Client ID:	**B36668**			**Prep Basis:**	**"As Received"**
Batch ID:	**1584043**	**Method:**	**ASTM D 2216 (Modified)**	**SOP Ref:**	**GL-OA-E-020**
Run Date:	**07/22/2016 15:22**	**Analyst:**	**CXC1**	**Instrument:**	**SP-39020004**
Data File:				**Count Time:**	
Prep Batch:	**1584043**				
Prep Date:	**07/22/2016 15:22**				

CAS No.	Parmname	Qual	Result	Units	MDC		
%MOISTURE	Moisture	U	0.00	percent	+/-		

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

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.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 26, 2016
Page 1 of 2

Client : **CH2MHill Plateau Remediation Company**
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Contact: **Mr. Scot Fitzgerald**

Workorder: **402244**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Gravimetric Solids									
Batch 1584043									
QC1203591095 402168001 DUP									
Moisture		10.2		11.0	percent			CXC1	07/22/1615:22
						RPD:	7 (0%-20%)		

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
A	The TIC is a suspected aldol-condensation product
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 both the associated QC blank and in the sample.
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
C	Analyte has been confirmed by GC/MS analysis
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	Concentration exceeds the calibration range of the instrument
E	Reported value is estimated due to interferences. See comment in narrative.
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
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
P	Aroclor target analyte with greater than 25% difference between column analyses.
S	Reported value determined by the Method of Standard Additions (MSA)
T	Spike and/or spike duplicate sample recovery is outside control limits.
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
UX	Gamma Spectroscopy--Uncertain identification
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
o	Analyte failed to recover within LCS limits (0rganics only)

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QC Summary

Workorder: **402244**

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence 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.