

8/2/2016



August 02, 2016

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

Re: CHPRC SAF S16-006
Work Order: 400886
SDG: GEL400886

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 06, 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: 300071 - 7H
Chain of Custody: S16-006-262
Enclosures

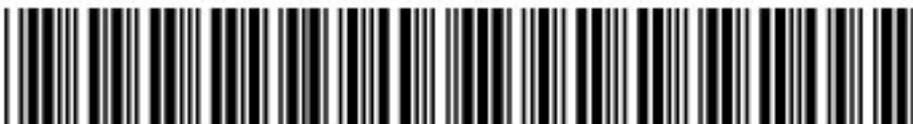


Table of Contents

| | |
|--|----|
| Case Narrative..... | 1 |
| Chain of Custody and Supporting Documentation..... | 7 |
| Data Review Qualifier Definitions..... | 11 |
| Laboratory Certifications..... | 13 |
| FID Diesel Range Organics Analysis..... | 15 |
| Case Narrative..... | 16 |
| Sample Data Summary..... | 20 |
| Quality Control Summary..... | 22 |
| Metals Analysis..... | 26 |
| Case Narrative..... | 27 |
| Sample Data Summary..... | 31 |
| Quality Control Summary..... | 36 |
| Radiological Analysis..... | 45 |
| Case Narrative..... | 46 |
| Sample Data Summary..... | 50 |
| Quality Control Summary..... | 53 |

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S16-006
SDG: GEL400886**

August 02, 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 06, 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 |
|--------------------------------------|-------------------------------|
| 400886001 | B35BY8 |
| 400886002 | B35C00 |

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: Diesel Range Organics, 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.

8/2/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL400886
Work Order #: 400886

Diesel Range Organics

Analysis of Diesel Range Organics by Flame Ionization Detector

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

Samples (See Below) did not meet acceptance criteria for surrogate recovery. However, there was no more sample aliquot available for re-extraction.

| Sample | Analyte | Value |
|--------------------|-------------|----------------|
| 1203579988 (MB) | o-Terphenyl | 55* (60%-140%) |
| 400886001 (B35BY8) | o-Terphenyl | 54* (60%-140%) |

Matrix Spike (MS/MSD) Recovery Statement

The MS and/or MSD did not meet spike recovery acceptance limits. However, there was no more sample aliquot available for re-extraction.

| Sample | Analyte | Value |
|-----------------------|-----------------------|----------------|
| 1203579990 (B35BY8MS) | Diesel Range Organics | 67* (70%-130%) |

Miscellaneous Information

Manual Integrations

Samples 1203579989 (LCS), 1203579990 (B35BY8MS) and 1203579991 (B35BY8MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

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 sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 400886001 (B35BY8) and 400886002 (B35C00).

Quality Control (QC) Information**Serial Dilution % Difference Statement**

Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

| Sample | Analyte | Value |
|--------------------------|---------|--------------|
| 1203579851 (B35BY8SDILT) | Sodium | 11 *(0%-10%) |

Determination of Metals by ICP-MS

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.

Determination of Metals by ICP-MS

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**SRISO_SEP_PRECIP_GPC: 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**

Samples 1203580406 (B35BH5DUP) and 400886001 (B35BY8) were verified by recounting at least five days from the separation date. The recounts are reported.

9310_ALPHABETA_GPC: 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**Gross Alpha/Beta Preparation Information**

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Sample 1203586590 (LCS) was recounted due to high recovery. The recount is reported.

Miscellaneous Information**Additional Comments**

The matrix spike and matrix spike duplicate, 1203586588 (B35BY8MS) and 1203586589 (B35BY8MSD), aliquots were 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

58165 70 0886

CH2M Hill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C.# **S16-006-262**
 Page 1 of 12

Collector: Dan Woehle CHPRC
 Contact/Requester: Karen Waters-Husted
 Telephone No. 509-376-4650
 SAF No. S16-006
 Sampling Origin: Hanford Site
 Purchase Order/Charge Code: 300071
 Project Title: SURV, JUNE 2016
 Logbook No. HNF-N-506 85/86
 Ice Chest No. GWS-293
 Shipped To (Lab): GEL Laboratories, LLC
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No. 77666 68533734
 Protocol: SURV
 Priority: 30 Days
 Priority: **PRIORITY**
 Offsite Property No. 6794

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

SPECIAL INSTRUCTIONS: N/A
 Hold Time: _____
 Holding Time: _____
 Preservative: _____
 Total Activity Exemption: Yes No

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|------------|--------|---|--------|------|-------------------|---|--------------|------------------------|
| B35BY8 | N | W | 7/1/14 | 1250 | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04 | 6 Months | HNO3 to pH <2 |
| B35BY8 | N | W | | | 2x1-L P | 9310_ALPHABETA_GPC: COMMON | 6 Months | HNO3 to pH <2 |
| B35BY8 | N | W | | | 3x1-L G/P | SRISO_SEP_PRECIP_GPC: COMMON | 6 Months | HNO3 to pH <2 |
| B35BY8 | N | W | | | 3x1-L aG | WTPH_DIESEL: COMMON | 14/40 Days | HCl to pH <2/Cool <=6C |
| B35C00 | Y | W | | | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04 | 6 Months | HNO3 to pH <2 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time | Matrix * |
|----------------------|--------------------|------|------------------|----------------------|--------------------|------|------------------|---|
| Dan Woehle CHPRC | <i>[Signature]</i> | | JUL 01 2016 1405 | Janelle Zunker CHPRC | <i>[Signature]</i> | | JUL 01 2016 1405 | DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other |
| Janelle Zunker CHPRC | <i>[Signature]</i> | | JUL 01 2016 1410 | SSU-1 | | | JUL 01 2016 1410 | SE = Soil SO = Sediment SL = Solid W = Sludge O = Water A = Air |
| SSU-1 | | | JUL 05 2016 0820 | Troy C. Bacon CHPRC | <i>[Signature]</i> | | JUL 05 2016 0820 | |
| Troy C. Bacon CHPRC | <i>[Signature]</i> | | JUL 05 2016 1400 | Received By: FEDEX | | | JUL 05 2016 1400 | |

FINAL SAMPLE DISPOSITION: _____
 Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____
 Disposed By: _____
 Date/Time: _____

SAMPLE RECEIPT & REVIEW FORM

| | | |
|--|---|--|
| Client: <u>CPRC</u> | | SDG/AR/COC/Work Order: <u>40-0886</u> |
| Received By: <u>[Signature]</u> | | Date Received: <u>7/6/16</u> |
| Suspected Hazard Information | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. |
| COC/Samples marked as radioactive? | <input checked="" type="checkbox"/> | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u> |
| Classified Radioactive II or III by RSO? | <input checked="" type="checkbox"/> | If yes, Were swipes taken of sample containers < action levels? |
| COC/Samples marked containing PCBs? | <input checked="" type="checkbox"/> | |
| Package, COC, and/or Samples marked as beryllium or asbestos containing? | <input checked="" type="checkbox"/> | If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group. |
| Shipped as a DOT Hazardous? | <input checked="" type="checkbox"/> | Hazard Class Shipped: UN#: . |
| Samples identified as Foreign Soil? | <input checked="" type="checkbox"/> | |

| Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|-------------------------------------|----|----|---|
| 1 Shipping containers received intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | | | Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>4°C</u> |
| 2a Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | | | Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>E5702009184</u> |
| 3 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | | | |
| 4 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 5 Samples requiring chemical preservation at proper pH? | <input checked="" type="checkbox"/> | | | Sample ID's, containers affected and observed pH: If Preservation added, Lot#: |
| 6 Do Low Level Perchlorate samples have headspace as required? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 7 VOA vials contain acid preservation? | <input checked="" type="checkbox"/> | | | (If unknown, select No) |
| 8 VOA vials free of headspace (defined as < 6mm bubble)? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 9 Are Encore containers present? | <input checked="" type="checkbox"/> | | | (If yes, immediately deliver to Volatiles laboratory) |
| 10 Samples received within holding time? | <input checked="" type="checkbox"/> | | | ID's and tests affected: |
| 11 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 12 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 13 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 14 Are sample containers identifiable as GEL provided? | <input checked="" type="checkbox"/> | | | |
| 15 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | | | |
| 16 Carrier and tracking number. | <input checked="" type="checkbox"/> | | | Circle Applicable: <input checked="" type="checkbox"/> FedEx Air <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7766 6853 5734</u> |

Comments (Use Continuation Form if needed):

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 associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq 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 \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples. | Inorganics | Metals |
| C | Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples. | General Chemistry | |
| < | Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide | General Chemistry | |
| UX | Gamma Spectroscopy--Uncertain identification | Radiological | |

Laboratory Certifications

List of current GEL Certifications as of 02 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 |

FID Diesel Range Organics Analysis

Case Narrative

**Diesel Range Organics
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL400886
Work Order #: 400886**

Product: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: NWTPH-Dx

Analytical Procedure: GL-OA-E-003 REV# 26

Analytical Batch: 1579715

Preparation Method: SW846 3535A

Preparation Procedure: GL-OA-E-013 REV# 29

Preparation Batch: 1579709

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 400886001 | B35BY8 |
| 1203579988 | Method Blank (MB) |
| 1203579989 | Laboratory Control Sample (LCS) |
| 1203579990 | 400886001(B35BY8) Matrix Spike (MS) |
| 1203579991 | 400886001(B35BY8) 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.

Quality Control (QC) Information

Surrogate Recoveries

Samples (See Below) did not meet acceptance criteria for surrogate recovery. However, there was no more sample aliquot available for re-extraction.

| Sample | Analyte | Value |
|--------------------|-------------|----------------|
| 1203579988 (MB) | o-Terphenyl | 55* (60%-140%) |
| 400886001 (B35BY8) | o-Terphenyl | 54* (60%-140%) |

Matrix Spike (MS/MSD) Recovery Statement

The MS and/or MSD did not meet spike recovery acceptance limits. However, there was no more sample aliquot available for re-extraction.

| Sample | Analyte | Value |
|-----------------------|-----------------------|----------------|
| 1203579990 (B35BY8MS) | Diesel Range Organics | 67* (70%-130%) |

Miscellaneous Information

Manual Integrations

Samples 1203579989 (LCS), 1203579990 (B35BY8MS) and 1203579991 (B35BY8MSD) required manual integration to correctly position the baseline as set in the calibration standard injections.

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: GEL400886 GEL Work Order: 400886

The Qualifiers in this report are defined as follows:

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.

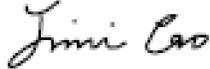
RA Indicates that sample is re-analyzed without re-extraction.

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: 

Name: Jimin Cao

Date: 15 JUL 2016

Title: Data Validator

Sample Data Summary

FID Diesel Range Organics
 Certificate of Analysis
 Sample Summary

| | | |
|---|---|-----------------------------|
| SDG Number: GEL400886 | Date Collected: 07/01/2016 12:50 | Matrix: WATER |
| Lab Sample ID: 400886001 | Date Received: 07/06/2016 09:10 | |
| | Client: CPRC001 | Project: CPRC0S16006 |
| Client ID: B35BY8 | Method: NWTPH-Dx | SOP Ref: GL-OA-E-003 |
| Batch ID: 1579715 | Inst: FID7.I | Dilution: 1 |
| Run Date: 07/08/2016 13:02 | Analyst: LXA1 | Inj. Vol: 1 uL |
| Prep Date: 07/07/2016 10:10 | Aliquot: 1000 mL | Final Volume: 1 mL |
| Data File: 070816DRO-MO\7g0808.D | Column: DB-5ms | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------|-----------|--------|-------|---------|---------|
| 68334-30-5 | Diesel Range Organics | TU | 50.0 | ug/L | 50.0 | 200 |

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 15, 2016

Page 1 of 1

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 400886

| Parname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|------------------------------|---------------|--------|--------|------|-------|------|------|------------|-------|----------|-------|
| Diesel Range Organics | | | | | | | | | | | |
| Batch | 1579715 | | | | | | | | | | |
| QC1203579989 | LCS | | | | | | | | | | |
| Diesel Range Organics | 2000 | | | 1630 | ug/L | | 82 | (70%–130%) | LXA1 | 07/08/16 | 11:00 |
| **o–Terphenyl | 20.0 | | | 16.5 | ug/L | | 83 | (60%–140%) | | | |
| QC1203579988 | MB | | | | | | | | | | |
| Diesel Range Organics | | | U | 50.0 | ug/L | | | | | 07/08/16 | 11:00 |
| **o–Terphenyl | 20.0 | | | 11.0 | ug/L | | 55 * | (60%–140%) | | | |
| QC1203579990 | 400886001 MS | | | | | | | | | | |
| Diesel Range Organics | 2000 | TU | 50.0 T | 1340 | ug/L | | 67 * | (70%–130%) | | 07/08/16 | 14:00 |
| **o–Terphenyl | 20.0 | | 10.8 | 12.5 | ug/L | | 62 | (60%–140%) | | | |
| QC1203579991 | 400886001 MSD | | | | | | | | | | |
| Diesel Range Organics | 2000 | TU | 50.0 | 1450 | ug/L | 8 | 73 | (0%–20%) | | 07/08/16 | 14:00 |
| **o–Terphenyl | 20.0 | | 10.8 | 13.6 | ug/L | | 68 | (60%–140%) | | | |

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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 2 of 2

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|---|--------|------|----|-------|------|------|-------|-------|------|------|
| o | Analyte failed to recover within LCS limits (Organics 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.

**FID Diesel Range Organics
Surrogate Recovery Report****SDG Number: GEL400886****Matrix Type: LIQUID**

| Sample ID | Client ID | OTP %REC |
|------------------|-----------------------|---------------------|
| 1203579988 | MB for batch 1579709 | 55 * |
| 1203579989 | LCS for batch 1579709 | 83 |
| 400886001 | B35BY8 | 54 * |
| 1203579990 | B35BY8MS | 62 |
| 1203579991 | B35BY8MSD | 68 |

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(60%–140%)

* 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 #: GEL400886
Work Order #: 400886

Product: Determination of Metals by ICP-MS**Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batches:** 1579604 and 1580737**Product: Determination of Metals by ICP****Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1579613**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batches:** 1579603, 1579612 and 1580736

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 400886001 | B35BY8 |
| 400886002 | B35C00 |
| 1203579847 | Method Blank (MB) ICP |
| 1203579848 | Laboratory Control Sample (LCS) |
| 1203579851 | 400886001(B35BY8L) Serial Dilution (SD) |
| 1203579849 | 400886001(B35BY8S) Matrix Spike (MS) |
| 1203579850 | 400886001(B35BY8SD) Matrix Spike Duplicate (MSD) |
| 1203579827 | Method Blank (MB) ICP-MS |
| 1203582365 | Method Blank (MB) ICP-MS |
| 1203579828 | Laboratory Control Sample (LCS) |
| 1203582366 | Laboratory Control Sample (LCS) |
| 1203579831 | 400884001(NonSDGL) Serial Dilution (SD) |
| 1203582369 | 400886001(B35BY8L) Serial Dilution (SD) |
| 1203579829 | 400884001(NonSDGS) Matrix Spike (MS) |
| 1203582367 | 400886001(B35BY8S) Matrix Spike (MS) |
| 1203579830 | 400884001(NonSDGSD) Matrix Spike Duplicate (MSD) |
| 1203582368 | 400886001(B35BY8SD) 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 sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 400886001 (B35BY8) and 400886002 (B35C00)-ICP.

Quality Control (QC) Information

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. Not all the applicable analytes were within the established acceptance criteria. Matrix suppression may be suspected. The data has been qualified.

| Sample | Analyte | Value |
|--------------------------|----------------|--------------|
| 1203579851 (B35BY8SDILT) | Sodium | 11 *(0%-10%) |

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: GEL400886 GEL Work Order: 400886

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.
- M Duplicate precision not met.
- 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: 02 AUG 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL400886

CONTRACT: CPRC0S16006

METHOD TYPE: SW846

SAMPLE ID: 400886001

BASIS: As Received

DATE COLLECTED 01-JUL-16

CLIENT ID: B35BY8

LEVEL: Low

DATE RECEIVED 06-JUL-16

MATRIX: WATER

%SOLIDS: 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 36.2 | ug/L | B | 15 | 50 | 50 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-36-0 | Antimony | 1.91 | ug/L | B | 1 | 3 | 3 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-38-2 | Arsenic | 14.9 | ug/L | | 1.7 | 5 | 5 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-39-3 | Barium | 5.71 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-41-7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-42-8 | Boron | 15.2 | ug/L | B | 15 | 50 | 50 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7440-43-9 | Cadmium | 0.110 | ug/L | U | 0.11 | 1 | 1 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-70-2 | Calcium | 1510 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7440-47-3 | Chromium | 2 | ug/L | U | 2 | 10 | 10 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-48-4 | Cobalt | 0.148 | ug/L | B | 0.1 | 1 | 1 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-50-8 | Copper | 0.712 | ug/L | B | 0.35 | 1 | 1 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7439-89-6 | Iron | 34.3 | ug/L | B | 30 | 100 | 100 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7439-92-1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7439-95-4 | Magnesium | 332 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7439-96-5 | Manganese | 50 | ug/L | | 1 | 5 | 5 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7439-98-7 | Molybdenum | 1.55 | ug/L | | 0.165 | 0.5 | 0.5 | 1 | MS | BAJ | 07/08/16 17:20 | 160708-6 | 1579604 |
| 7440-02-0 | Nickel | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-09-7 | Potassium | 919 | ug/L | | 50 | 150 | 150 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7782-49-2 | Selenium | 1.5 | ug/L | U | 1.5 | 5 | 5 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-22-4 | Silver | 0.20 | ug/L | U | 0.2 | 1 | 1 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-23-5 | Sodium | 68000 | ug/L | M | 100 | 300 | 300 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7440-24-6 | Strontium | 9.8 | ug/L | B | 2 | 10 | 10 | 1 | MS | SKJ | 07/12/16 14:15 | 160712-7 | 1580737 |
| 7440-28-0 | Thallium | 0.624 | ug/L | B | 0.45 | 2 | 2 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |
| 7440-29-1 | Thorium | 0.661 | ug/L | B | 0.383 | 2 | 2 | 1 | MS | BAJ | 07/07/16 17:36 | 160707-2 | 1579604 |
| 7440-31-5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 07/07/16 17:36 | 160707-2 | 1579604 |
| 7440-61-1 | Uranium | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 07/08/16 09:43 | 160707-5 | 1579604 |
| 7440-62-2 | Vanadium | 41.8 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 07/13/16 11:40 | 071316-1 | 1579613 |
| 7440-66-6 | Zinc | 3.5 | ug/L | U | 3.5 | 10 | 10 | 1 | MS | BAJ | 07/07/16 20:58 | 160707-3 | 1579604 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1579604 | 1579603 | SW846 3005A | 50 | mL | 50 | mL | 07/06/16 | JP1 |
| 1579613 | 1579612 | SW846 3005A | 50 | mL | 50 | mL | 07/06/16 | JP1 |
| 1580737 | 1580736 | SW846 3005A | 50 | mL | 50 | mL | 07/11/16 | JP1 |

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL400886

CONTRACT: CPRC0S16006

METHOD TYPE: SW846

SAMPLE ID: 400886002

BASIS: As Received

DATE COLLECTED 01-JUL-16

CLIENT ID: B35C00

LEVEL: Low

DATE RECEIVED 06-JUL-16

MATRIX: WATER

%SOLIDS: 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|------------|--------|-------|------|-------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 26.4 | ug/L | B | 15 | 50 | 50 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-36-0 | Antimony | 1.95 | ug/L | B | 1 | 3 | 3 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-38-2 | Arsenic | 14.7 | ug/L | | 1.7 | 5 | 5 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-39-3 | Barium | 5.25 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-41-7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-42-8 | Boron | 15.4 | ug/L | B | 15 | 50 | 50 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7440-43-9 | Cadmium | 0.110 | ug/L | U | 0.11 | 1 | 1 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-70-2 | Calcium | 1570 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7440-47-3 | Chromium | 2 | ug/L | U | 2 | 10 | 10 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-48-4 | Cobalt | 0.202 | ug/L | B | 0.1 | 1 | 1 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-50-8 | Copper | 0.699 | ug/L | B | 0.35 | 1 | 1 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7439-89-6 | Iron | 30 | ug/L | U | 30 | 100 | 100 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7439-92-1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7439-95-4 | Magnesium | 320 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7439-96-5 | Manganese | 50.2 | ug/L | | 1 | 5 | 5 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7439-98-7 | Molybdenum | 1.52 | ug/L | | 0.165 | 0.5 | 0.5 | 1 | MS | BAJ | 07/08/16 17:21 | 160708-6 | 1579604 |
| 7440-02-0 | Nickel | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-09-7 | Potassium | 934 | ug/L | | 50 | 150 | 150 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7782-49-2 | Selenium | 1.5 | ug/L | U | 1.5 | 5 | 5 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-22-4 | Silver | 0.20 | ug/L | U | 0.2 | 1 | 1 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-23-5 | Sodium | 61800 | ug/L | M | 100 | 300 | 300 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7440-24-6 | Strontium | 8.56 | ug/L | B | 2 | 10 | 10 | 1 | MS | SKJ | 07/12/16 14:27 | 160712-7 | 1580737 |
| 7440-28-0 | Thallium | 0.450 | ug/L | U | 0.45 | 2 | 2 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |
| 7440-29-1 | Thorium | 0.383 | ug/L | U | 0.383 | 2 | 2 | 1 | MS | BAJ | 07/07/16 17:39 | 160707-2 | 1579604 |
| 7440-31-5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 07/07/16 17:39 | 160707-2 | 1579604 |
| 7440-61-1 | Uranium | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 07/08/16 09:44 | 160707-5 | 1579604 |
| 7440-62-2 | Vanadium | 42.1 | ug/L | | 1 | 5 | 5 | 1 | P | HSC | 07/13/16 11:36 | 071316-1 | 1579613 |
| 7440-66-6 | Zinc | 3.5 | ug/L | U | 3.5 | 10 | 10 | 1 | MS | BAJ | 07/07/16 21:01 | 160707-3 | 1579604 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1579604 | 1579603 | SW846 3005A | 50 | mL | 50 | mL | 07/06/16 | JP1 |
| 1579613 | 1579612 | SW846 3005A | 50 | mL | 50 | mL | 07/06/16 | JP1 |
| 1580737 | 1580736 | SW846 3005A | 50 | mL | 50 | mL | 07/11/16 | JP1 |

METALS

-1-

INORGANICS ANALYSIS DATA PACKAGE

***Analytical Methods:**

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

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

Page 1 of 8

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 400886

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|---------|--------|------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1579604 | | | | | | | | | | |
| QC1203579828 | LCS | | | | | | | | | | |
| Aluminum | 2000 | | | 2140 | ug/L | | 107 | (80%-120%) | BAJ | 07/07/16 | 20:43 |
| Antimony | 50.0 | | | 49.0 | ug/L | | 98 | (80%-120%) | | | |
| Arsenic | 50.0 | | | 51.7 | ug/L | | 103 | (80%-120%) | | | |
| Barium | 50.0 | | | 48.2 | ug/L | | 96.3 | (80%-120%) | | | |
| Beryllium | 50.0 | | | 56.2 | ug/L | | 112 | (80%-120%) | | | |
| Cadmium | 50.0 | | | 50.8 | ug/L | | 102 | (80%-120%) | | | |
| Chromium | 50.0 | | | 50.0 | ug/L | | 100 | (80%-120%) | | | |
| Cobalt | 50.0 | | | 50.3 | ug/L | | 101 | (80%-120%) | | | |
| Copper | 50.0 | | | 52.4 | ug/L | | 105 | (80%-120%) | | | |
| Lead | 50.0 | | | 52.0 | ug/L | | 104 | (80%-120%) | | | |
| Manganese | 50.0 | | | 52.0 | ug/L | | 104 | (80%-120%) | | | |
| Molybdenum | 50.0 | | | 52.3 | ug/L | | 105 | (80%-120%) | | 07/08/16 | 17:14 |
| Nickel | 50.0 | | | 51.4 | ug/L | | 103 | (80%-120%) | | 07/07/16 | 20:43 |
| Selenium | 50.0 | | | 52.9 | ug/L | | 106 | (80%-120%) | | | |
| Silver | 50.0 | | | 52.3 | ug/L | | 105 | (80%-120%) | | | |
| Thallium | 50.0 | | | 51.3 | ug/L | | 103 | (80%-120%) | | | |
| Thorium | 50.0 | | | 47.5 | ug/L | | 95 | (80%-120%) | | 07/07/16 | 17:21 |
| Tin | 50.0 | | | 52.4 | ug/L | | 105 | (80%-120%) | | | |
| Uranium | 50.0 | | | 50.3 | ug/L | | 101 | (80%-120%) | | 07/08/16 | 09:36 |
| Zinc | 50.0 | | | 51.9 | ug/L | | 104 | (80%-120%) | | 07/07/16 | 20:43 |

8/2/2016

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 2 of 8

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|------|-------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1579604 | | | | | | | | | | |
| QC1203579827 | MB | | | | | | | | | | |
| Aluminum | | | U | 15.0 | ug/L | | | | BAJ | 07/07/16 | 20:41 |
| Antimony | | | U | 1.00 | ug/L | | | | | | |
| Arsenic | | | U | 1.70 | ug/L | | | | | | |
| Barium | | | U | 0.600 | ug/L | | | | | | |
| Beryllium | | | U | 0.200 | ug/L | | | | | | |
| Cadmium | | | U | 0.110 | ug/L | | | | | | |
| Chromium | | | U | 2.00 | ug/L | | | | | | |
| Cobalt | | | U | 0.100 | ug/L | | | | | | |
| Copper | | | U | 0.350 | ug/L | | | | | | |
| Lead | | | U | 0.500 | ug/L | | | | | | |
| Manganese | | | U | 1.00 | ug/L | | | | | | |
| Molybdenum | | | U | 0.165 | ug/L | | | | | 07/08/16 | 17:13 |
| Nickel | | | U | 0.500 | ug/L | | | | | 07/07/16 | 20:41 |
| Selenium | | | U | 1.50 | ug/L | | | | | | |
| Silver | | | U | 0.200 | ug/L | | | | | | |
| Thallium | | | U | 0.450 | ug/L | | | | | | |
| Thorium | | | U | 0.383 | ug/L | | | | | 07/07/16 | 17:19 |
| Tin | | | U | 1.00 | ug/L | | | | | | |
| Uranium | | | U | 0.067 | ug/L | | | | | 07/08/16 | 09:35 |
| Zinc | | | U | 3.50 | ug/L | | | | | 07/07/16 | 20:41 |
| QC1203579829 | 400884001 | MS | | | | | | | | | |
| Aluminum | 2000 | U | 15.0 | 2120 | ug/L | | 105 | (75%-125%) | | 07/07/16 | 20:48 |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 3 of 8

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|-------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1579604 | | | | | | | | | | |
| Antimony | 50.0 | U | 1.00 | 48.0 | ug/L | | 95.5 | (75%-125%) | BAJ | 07/07/16 | 20:48 |
| Arsenic | 50.0 | B | 2.36 | 56.5 | ug/L | | 108 | (75%-125%) | | | |
| Barium | 50.0 | | 57.1 | 104 | ug/L | | 93.4 | (75%-125%) | | | |
| Beryllium | 50.0 | U | 0.200 | 56.2 | ug/L | | 112 | (75%-125%) | | | |
| Cadmium | 50.0 | U | 0.110 | 50.3 | ug/L | | 101 | (75%-125%) | | | |
| Chromium | 50.0 | | 66.7 | 114 | ug/L | | 95.1 | (75%-125%) | | | |
| Cobalt | 50.0 | | 2.49 | 51.3 | ug/L | | 97.6 | (75%-125%) | | | |
| Copper | 50.0 | | 1.93 | 50.7 | ug/L | | 97.5 | (75%-125%) | | | |
| Lead | 50.0 | U | 0.500 | 48.8 | ug/L | | 97.3 | (75%-125%) | | | |
| Manganese | 50.0 | | 38.5 | 86.0 | ug/L | | 94.9 | (75%-125%) | | | |
| Molybdenum | 50.0 | | 3.97 | 58.5 | ug/L | | 109 | (75%-125%) | | 07/08/16 | 17:17 |
| Nickel | 50.0 | | 13.7 | 62.4 | ug/L | | 97.4 | (75%-125%) | | 07/07/16 | 20:48 |
| Selenium | 50.0 | B | 2.98 | 57.3 | ug/L | | 109 | (75%-125%) | | | |
| Silver | 50.0 | U | 0.200 | 50.4 | ug/L | | 101 | (75%-125%) | | | |
| Thallium | 50.0 | U | 0.450 | 48.0 | ug/L | | 95.3 | (75%-125%) | | | |
| Thorium | 50.0 | B | 1.34 | 48.2 | ug/L | | 93.7 | (75%-125%) | | 07/07/16 | 17:26 |
| Tin | 50.0 | U | 1.00 | 53.9 | ug/L | | 107 | (75%-125%) | | | |
| Uranium | 50.0 | | 1.10 | 52.1 | ug/L | | 102 | (75%-125%) | | 07/08/16 | 09:39 |
| Zinc | 50.0 | B | 6.37 | 56.4 | ug/L | | 100 | (75%-125%) | | 07/07/16 | 20:48 |
| QC1203579830 | 400884001 | MSD | | | | | | | | | |
| Aluminum | 2000 | U | 15.0 | 2190 | ug/L | 3.11 | 109 | (0%-20%) | | 07/07/16 | 20:51 |
| Antimony | 50.0 | U | 1.00 | 50.0 | ug/L | 4.08 | 99.5 | (0%-20%) | | | |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 4 of 8

| Parname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|---------|--------|-------|------|-------|--------|------|----------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1579604 | | | | | | | | | | |
| Arsenic | 50.0 | B | 2.36 | 55.0 | ug/L | 2.62 | 105 | (0%-20%) | BAJ | 07/07/16 | 20:51 |
| Barium | 50.0 | | 57.1 | 103 | ug/L | 0.526 | 92.3 | (0%-20%) | | | |
| Beryllium | 50.0 | U | 0.200 | 56.0 | ug/L | 0.403 | 112 | (0%-20%) | | | |
| Cadmium | 50.0 | U | 0.110 | 50.0 | ug/L | 0.574 | 99.9 | (0%-20%) | | | |
| Chromium | 50.0 | | 66.7 | 118 | ug/L | 2.88 | 102 | (0%-20%) | | | |
| Cobalt | 50.0 | | 2.49 | 51.7 | ug/L | 0.848 | 98.5 | (0%-20%) | | | |
| Copper | 50.0 | | 1.93 | 50.6 | ug/L | 0.0869 | 97.4 | (0%-20%) | | | |
| Lead | 50.0 | U | 0.500 | 48.6 | ug/L | 0.548 | 96.8 | (0%-20%) | | | |
| Manganese | 50.0 | | 38.5 | 89.5 | ug/L | 4.01 | 102 | (0%-20%) | | | |
| Molybdenum | 50.0 | | 3.97 | 57.9 | ug/L | 0.964 | 108 | (0%-20%) | | 07/08/16 | 17:18 |
| Nickel | 50.0 | | 13.7 | 61.9 | ug/L | 0.867 | 96.3 | (0%-20%) | | 07/07/16 | 20:51 |
| Selenium | 50.0 | B | 2.98 | 55.5 | ug/L | 3.1 | 105 | (0%-20%) | | | |
| Silver | 50.0 | U | 0.200 | 51.0 | ug/L | 1.08 | 102 | (0%-20%) | | | |
| Thallium | 50.0 | U | 0.450 | 48.8 | ug/L | 1.76 | 97 | (0%-20%) | | | |
| Thorium | 50.0 | B | 1.34 | 50.3 | ug/L | 4.26 | 97.9 | (0%-20%) | | 07/07/16 | 17:29 |
| Tin | 50.0 | U | 1.00 | 51.4 | ug/L | 4.78 | 102 | (0%-20%) | | | |
| Uranium | 50.0 | | 1.10 | 52.9 | ug/L | 1.44 | 104 | (0%-20%) | | 07/08/16 | 09:40 |
| Zinc | 50.0 | B | 6.37 | 55.4 | ug/L | 1.76 | 98.1 | (0%-20%) | | 07/07/16 | 20:51 |
| QC1203579831 400884001 SDILT | | | | | | | | | | | |
| Aluminum | | U | 12.1 | DU | 75.0 | ug/L | N/A | (0%-10%) | | 07/07/16 | 20:56 |
| Antimony | | U | 0.291 | DU | 5.00 | ug/L | N/A | (0%-10%) | | | |
| Arsenic | | B | 2.36 | DU | 8.50 | ug/L | N/A | (0%-10%) | | | |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 5 of 8

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|------|-------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1579604 | | | | | | | | | | |
| Barium | | 57.1 | D | 11.5 | ug/L | 1.02 | | (0%-10%) | BAJ | 07/07/16 | 20:56 |
| Beryllium | U | 0.005 | DU | 1.00 | ug/L | N/A | | (0%-10%) | | | |
| Cadmium | U | 0.020 | DU | 0.550 | ug/L | N/A | | (0%-10%) | | | |
| Chromium | | 66.7 | D | 13.4 | ug/L | .33 | | (0%-10%) | | | |
| Cobalt | | 2.49 | BD | 0.535 | ug/L | 7.56 | | (0%-10%) | | | |
| Copper | | 1.93 | BD | 0.380 | ug/L | 1.61 | | (0%-10%) | | | |
| Lead | U | 0.190 | DU | 2.50 | ug/L | N/A | | (0%-10%) | | | |
| Manganese | | 38.5 | D | 7.88 | ug/L | 2.38 | | (0%-10%) | | | |
| Molybdenum | | 3.97 | D | 0.669 | ug/L | 15.8 | | (0%-10%) | | 07/08/16 | 17:24 |
| Nickel | | 13.7 | D | 2.70 | ug/L | 1.8 | | (0%-10%) | | 07/07/16 | 20:56 |
| Selenium | B | 2.98 | DU | 7.50 | ug/L | N/A | | (0%-10%) | | | |
| Silver | U | 0.063 | DU | 1.00 | ug/L | N/A | | (0%-10%) | | | |
| Thallium | U | 0.330 | BD | 0.822 | ug/L | N/A | | (0%-10%) | | | |
| Thorium | B | 1.34 | BD | 1.13 | ug/L | 322 | | (0%-10%) | | 07/07/16 | 17:34 |
| Tin | U | 0.517 | DU | 5.00 | ug/L | N/A | | (0%-10%) | | | |
| Uranium | | 1.10 | D | 0.225 | ug/L | 2.65 | | (0%-10%) | | 07/08/16 | 09:41 |
| Zinc | B | 6.37 | DU | 17.5 | ug/L | N/A | | (0%-10%) | | 07/07/16 | 20:56 |
| Batch | 1580737 | | | | | | | | | | |
| QC1203582366 | LCS | | | | | | | | | | |
| Strontium | 50.0 | | | 49.0 | ug/L | | 98 | (80%-120%) | SKJ | 07/12/16 | 14:12 |
| QC1203582365 | MB | | | | | | | | | | |
| Strontium | | | U | 2.00 | ug/L | | | | | 07/12/16 | 14:09 |
| QC1203582367 | 400886001 | MS | | | | | | | | | |
| Strontium | 50.0 | B | 9.80 | 59.3 | ug/L | | 99.1 | (75%-125%) | | 07/12/16 | 14:18 |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 6 of 8

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|---------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1580737 | | | | | | | | | | |
| QC1203582368 | 400886001 | MSD | | | | | | | | | |
| Strontium | 50.0 | B | 9.80 | 59.5 | ug/L | 0.276 | 99.4 | (0%-20%) | SKJ | 07/12/16 | 14:21 |
| QC1203582369 | 400886001 | SDILT | | | | | | | | | |
| Strontium | | B | 9.80 DU | 10.0 | ug/L | N/A | | (0%-10%) | | 07/12/16 | 14:24 |
| Metals Analysis-ICP | | | | | | | | | | | |
| Batch | 1579613 | | | | | | | | | | |
| QC1203579848 | LCS | | | | | | | | | | |
| Boron | 500 | | | 501 | ug/L | | 100 | (80%-120%) | HSC | 07/13/16 | 11:33 |
| Calcium | 5000 | | | 5000 | ug/L | | 100 | (80%-120%) | | | |
| Iron | 5000 | | | 4960 | ug/L | | 99.2 | (80%-120%) | | | |
| Magnesium | 5000 | | | 5000 | ug/L | | 100 | (80%-120%) | | | |
| Potassium | 5000 | | | 4770 | ug/L | | 95.4 | (80%-120%) | | | |
| Sodium | 5000 | | | 4690 | ug/L | | 93.8 | (80%-120%) | | | |
| Vanadium | 500 | | | 492 | ug/L | | 98.4 | (80%-120%) | | | |
| QC1203579847 | MB | | | | | | | | | | |
| Boron | | | U | 15.0 | ug/L | | | | | 07/13/16 | 11:29 |
| Calcium | | | U | 50.0 | ug/L | | | | | | |
| Iron | | | U | 30.0 | ug/L | | | | | | |
| Magnesium | | | U | 110 | ug/L | | | | | | |
| Potassium | | | U | 50.0 | ug/L | | | | | | |
| Sodium | | | U | 100 | ug/L | | | | | | |
| Vanadium | | | U | 1.00 | ug/L | | | | | | |
| QC1203579849 | 400886001 | MS | | | | | | | | | |
| Boron | 500 | B | 15.2 | 526 | ug/L | | 102 | (75%-125%) | | 07/13/16 | 11:43 |
| Calcium | 5000 | | 1510 | 6310 | ug/L | | 95.9 | (75%-125%) | | | |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 7 of 8

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|------------------------------|---------|--------|-------|-------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis-ICP | | | | | | | | | | | |
| Batch | 1579613 | | | | | | | | | | |
| Iron | 5000 | B | 34.3 | 5080 | ug/L | | 101 | (75%-125%) | | | |
| Magnesium | 5000 | | 332 | 5270 | ug/L | | 98.8 | (75%-125%) | HSC | 07/13/16 | 11:43 |
| Potassium | 5000 | | 919 | 5810 | ug/L | | 97.9 | (75%-125%) | | | |
| Sodium | 5000 | M | 68000 | 71900 | ug/L | | N/A | (75%-125%) | | | |
| Vanadium | 500 | | 41.8 | 538 | ug/L | | 99.2 | (75%-125%) | | | |
| QC1203579850 400886001 MSD | | | | | | | | | | | |
| Boron | 500 | B | 15.2 | 517 | ug/L | 1.87 | 100 | (0%-20%) | | 07/13/16 | 11:47 |
| Calcium | 5000 | | 1510 | 6270 | ug/L | 0.638 | 95.1 | (0%-20%) | | | |
| Iron | 5000 | B | 34.3 | 5050 | ug/L | 0.604 | 100 | (0%-20%) | | | |
| Magnesium | 5000 | | 332 | 5230 | ug/L | 0.764 | 98 | (0%-20%) | | | |
| Potassium | 5000 | | 919 | 5740 | ug/L | 1.31 | 96.4 | (0%-20%) | | | |
| Sodium | 5000 | M | 68000 | 70400 | ug/L | 2.05 | N/A | (0%-20%) | | | |
| Vanadium | 500 | | 41.8 | 528 | ug/L | 1.93 | 97.2 | (0%-20%) | | | |
| QC1203579851 400886001 SDILT | | | | | | | | | | | |
| Boron | | B | 15.2 | DU | 75.0 | ug/L | N/A | (0%-10%) | | 07/13/16 | 12:25 |
| Calcium | | | 1510 | D | 394 | ug/L | 30.5 | (0%-10%) | | | |
| Iron | | B | 34.3 | DU | 150 | ug/L | N/A | (0%-10%) | | | |
| Magnesium | | | 332 | DU | 550 | ug/L | N/A | (0%-10%) | | | |
| Potassium | | | 919 | D | 206 | ug/L | 12.4 | (0%-10%) | | | |
| Sodium | | M | 68000 | DM | 12100 | ug/L | 11* | (0%-10%) | | | |
| Vanadium | | | 41.8 | D | 8.56 | ug/L | 2.54 | (0%-10%) | | | |

Notes:

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 8 of 8

| Parmname | NOM | Sample Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|----------|---|-------------|----|-------|--------|------|-------|-------|------|------|
| + | 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 | | | | | | | | | |
| 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 #: GEL400886
Work Order #: 400886

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 17

Analytical Batch: 1579902

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 400886001 | B35BY8 |
| 1203580405 | Method Blank (MB) |
| 1203580406 | 400517005(B35BH5) Sample Duplicate (DUP) |
| 1203580407 | 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

Samples 1203580406 (B35BH5DUP) and 400886001 (B35BY8) were verified by recounting at least five days from the separation date. The recounts are reported.

Product: 9310_ALPHABETA_GPC: COMMON

Analytical Method: 9310_ALPHABETA_GPC

Analytical Procedure: GL-RAD-A-001 REV# 18

Analytical Batch: 1582447

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 400886001 | B35BY8 |
| 1203586586 | Method Blank (MB) |
| 1203586587 | 400886001(B35BY8) Sample Duplicate (DUP) |
| 1203586588 | 400886001(B35BY8) Matrix Spike (MS) |
| 1203586589 | 400886001(B35BY8) Matrix Spike Duplicate (MSD) |
| 1203586590 | 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

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts

Sample 1203586590 (LCS) was recounted due to high recovery. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203586588 (B35BY8MS) and 1203586589 (B35BY8MSD), aliquots were 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: GEL400886 GEL Work Order: 400886

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: Heather McCarty

Date: 02 AUG 2016

Title: Analyst II

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

| | | |
|-----------------------------|---|---------------------------|
| SDG Number: GEL400886 | Client: CPRC001 | Project: CPRC0S16006 |
| Lab Sample ID: 400886001 | Date Collected: 07/01/2016 12:50 | Matrix: WATER |
| | Date Received: 07/06/2016 09:10 | |
| Client ID: B35BY8 | Method: SRISO_SEP_PRECIP_GPC | Prep Basis: "As Received" |
| Batch ID: 1579902 | Analyst: KSD1 | SOP Ref: GL-RAD-A-004 |
| Run Date: 07/18/2016 09:12 | Aliquot: 300 mL | Instrument: PIC10B |
| Data File: S1579902r2.xls | Prep Method: EPA 905.0 Modified/DOE RP5 | Count Time: 60 min |
| Prep Batch: 1579902 | | |
| Prep Date: 07/11/2016 00:00 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|----------|------|------|------|
| 10098-97-2 | Strontium-90 | | 3.34 | pCi/L | +/-0.909 | 1.05 | 1.03 | 2.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Strontium Carrier | 5.30 | 7.37 | mg | 72 | (40%-110%) |

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.

Rad
Certificate of Analysis
Sample Summary

| | | |
|-----------------------------|-----------------------------------|---------------------------|
| SDG Number: GEL400886 | Client: CPRC001 | Project: CPRC0S16006 |
| Lab Sample ID: 400886001 | Date Collected: 07/01/2016 12:50 | Matrix: WATER |
| | Date Received: 07/06/2016 09:10 | |
| Client ID: B35BY8 | | Prep Basis: "As Received" |
| Batch ID: 1582447 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 07/28/2016 06:25 | Analyst: JXC9 | Instrument: LB4100B1 |
| Data File: AB1582447r.xls | Aliquot: 150 mL | Count Time: 190 min |
| Prep Batch: 1582447 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 07/26/2016 16:51 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|-----------------------|------|--------|-------|---------|------|------|------|
| 12587-46-1 | Alpha <i>ALPHA</i> | U | -0.462 | pCi/L | +/-1.24 | 1.24 | 2.53 | 3.00 |
| 12587-47-2 | Beta <i>BETA</i> | | 11.5 | pCi/L | +/-1.91 | 2.69 | 2.48 | 4.00 |

| 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: August 2, 2016

Page 1 of 3

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 400886

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|---------------------|-----------|--------|-----------------|------------------|-------|-------------|------------|------------|---------------|
| Rad Gas Flow | | | | | | | | | |
| Batch | 1579902 | | | | | | | | |
| QC1203580405 | MB | | | | | | | | |
| Strontium-90 | | | U | -1.82 | pCi/L | | | KSD1 | 07/12/1613:05 |
| | | | | Uncert: +/-0.756 | | | | | |
| | | | | TPU: +/-0.756 | | | | | |
| **Strontium Carrier | | 7.37 | | 6.50 | mg | REC: 88 | (40%-110%) | | |
| QC1203580406 | 400517005 | DUP | | | | | | | |
| Strontium-90 | | | 6.92 | 6.32 | pCi/L | | | | 07/18/1611:13 |
| | | | Uncert: +/-1.11 | +/-0.984 | | RPD: 9 | (0% - 20%) | | |
| | | | TPU: +/-1.57 | +/-1.40 | | RER: 0.551 | (0-2) | | |
| **Strontium Carrier | | 7.37 | 6.50 | 6.60 | mg | REC: 90 | (40%-110%) | | |
| QC1203580407 | LCS | | | | | | | | |
| Strontium-90 | | | 72.9 | 77.9 | pCi/L | REC: 107 | (80%-120%) | | 07/12/1613:05 |
| | | | Uncert: +/-4.43 | | | | | | |
| | | | TPU: +/-13.5 | | | | | | |
| **Strontium Carrier | | 7.37 | | 6.60 | mg | REC: 90 | (40%-110%) | | |
| Batch | 1582447 | | | | | | | | |
| QC1203586586 | MB | | | | | | | | |
| Alpha | | | U | -0.0251 | pCi/L | | | JXC9 | 07/28/1606:22 |
| | | | | Uncert: +/-0.906 | | | | | |
| | | | | TPU: +/-0.907 | | | | | |
| Beta | | | U | -1.68 | pCi/L | | | | |
| | | | | Uncert: +/-1.97 | | | | | |
| | | | | TPU: +/-1.97 | | | | | |
| QC1203586587 | 400886001 | DUP | | | | | | | |
| Alpha | | U | -0.462 | U | 0.411 | pCi/L | | | 07/28/1606:36 |
| | | | Uncert: +/-1.24 | +/-1.52 | | RPD: 0 | N/A | | |
| | | | TPU: +/-1.24 | +/-1.52 | | RER: 0.874 | (0-2) | | |
| Beta | | | 11.5 | 12.0 | pCi/L | | | | |
| | | | Uncert: +/-1.91 | +/-1.76 | | RPD: 4 | (0% - 20%) | | |
| | | | TPU: +/-2.69 | +/-2.62 | | RER: 0.252 | (0-2) | | |
| QC1203586588 | 400886001 | MS | | | | | | | |
| Alpha | | 240 | U | -0.462 | 214 | pCi/L | REC: 89 | (75%-125%) | 07/28/1606:18 |
| | | | Uncert: +/-1.24 | +/-24.8 | | | | | |
| | | | TPU: +/-1.24 | +/-42.9 | | | | | |
| Beta | | 874 | | 11.5 | 1020 | pCi/L | REC: 115 | (75%-125%) | |
| | | | Uncert: +/-1.91 | +/-38.0 | | | | | |
| | | | TPU: +/-2.69 | +/-170 | | | | | |
| QC1203586589 | 400886001 | MSD | | | | | | | |
| Alpha | | 240 | U | -0.462 | 234 | pCi/L | REC: 98 | (75%-125%) | 07/28/1606:18 |
| | | | Uncert: +/-1.24 | +/-25.0 | | RPD: 9 | (0%-20%) | | |
| | | | TPU: +/-1.24 | +/-45.7 | | RER: 0.625 | (0-2) | | |
| Beta | | 874 | | 11.5 | 990 | pCi/L | REC: 112 | (75%-125%) | |
| | | | Uncert: +/-1.91 | +/-36.4 | | RPD: 3 | (0%-20%) | | |
| | | | TPU: +/-2.69 | +/-166 | | RER: 0.253 | (0-2) | | |
| QC1203586590 | LCS | | | | | | | | |

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 2 of 3

| Parname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|---------------------|---------|--------|------|---------|-------|-------------|------------|---------|------|------|
| Rad Gas Flow | | | | | | | | | | |
| Batch | 1582447 | | | | | | | | | |
| Alpha | 79.9 | | | 71.0 | pCi/L | REC: 89 | (80%-120%) | | | |
| | Uncert: | | | +/-7.54 | | | | | | |
| | TPU: | | | +/-13.9 | | | | | | |
| Beta | 291 | | | 324 | pCi/L | REC: 111 | (80%-120%) | | | |
| | Uncert: | | | +/-12.2 | | | | | | |
| | TPU: | | | +/-55.1 | | | | | | |

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
- 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 $\geq 2X$ the MDA and, after corrections, result is \geq 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 \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- 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 (Organics only)

8/2/2016

GEL LABORATORIES LLC

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

QC Summary

Workorder: 400886

Page 3 of 3

| <u>Parmname</u> | <u>NOM</u> | <u>Sample</u> | <u>Qual</u> | <u>QC</u> | <u>Units</u> | <u>QC Criteria</u> | <u>Range</u> | <u>Analyst</u> | <u>Date</u> | <u>Time</u> |
|-----------------|------------|---------------|-------------|-----------|--------------|--------------------|--------------|----------------|-------------|-------------|
|-----------------|------------|---------------|-------------|-----------|--------------|--------------------|--------------|----------------|-------------|-------------|

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.