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

July 10, 2017

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

Re: CHPRC SAF S17-006
Work Order: 425280
SDG: GEL425280

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 13, 2017. 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: S17-006-203, S17-006-204, S17-006-250, S17-006-256, S17-006-257, S17-006-258 and S17-006-268
Enclosures

Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....7

Data Review Qualifier Definitions.....16

Laboratory Certifications.....18

Metals Analysis.....20

Case Narrative.....21

Sample Data Summary.....24

Quality Control Summary.....33

Radiological Analysis.....42

Case Narrative.....43

Sample Data Summary.....50

Quality Control Summary.....65

# Case Narrative

**General Narrative**
**for**
**CH2MHill Plateau Remediation Company**
**CHPRC SAF S17-006**
**SDG: GEL425280**

**July 10, 2017**

**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 June 13, 2017, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

**Sample Identification**
The laboratory received the following samples:

| Laboratory Identification | Sample Description |
|---|---|
| 425280001 | B39PM6 |
| 425280002 | B39PM7 |
| 425280003 | B39T44 |
| 425280004 | B39T46 |
| 425280005 | B39T99 |
| 425280006 | B39T95 |
| 425280007 | B39TB0 |
| 425280008 | B39T96 |
| 425280009 | B39TB5 |
| 425280010 | B39TB2 |
| 425280011 | B39TM9 |

**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: 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 #: GEL425280**
**Work Order #: 425280**

# Metals

**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

**I129LL_SEP_LEPS_GS: COMMON (low level)**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**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.

**Quality Control (QC) Information**

**QC Information**
The sample and the duplicate, 1203815774 (B39R31DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.19.

**Technical Information**

**Recounts**
Samples 1203815774 (B39R31DUP) and 425280002 (B39PM7) 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.

**Quality Control (QC) Information**

**QC Information**
The matrix spike and matrix spike duplicate, 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD) , did not meet the alpha relative percent difference requirement; however, they do meet the recovery requirement.

**Technical Information**

**Sample Re-prep/Re-analysis**
Sample 425280003 (B39T44) was reprepped due to low recovery. The re-analysis is being reported.

**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**
Samples 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD) were recounted due to high recovery. The recounts are reported. Sample 1203825675 (Non SDG 426412007DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

**Miscellaneous Information**

**Additional Comments**
The matrix spike and matrix spike duplicate, 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD), aliquots were reduced to conserve sample volume.

**TC99_EIE_LSC: COMMON**

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.

**TRITIUM_DIST_LSC: COMMON**

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

**Technical Information**

**Recounts**
Sample 1203815893 (B39T96MS) was recounted due to low recovery. The recount is reported.

**Miscellaneous Information**

**Additional Comments**
The matrix spike, 1203815893 (B39T96MS), aliquot was reduced to conserve sample volume.

**SE79_SEP_IE_LSC: COMMON**

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

**Technical Information**

**Sample Re-prep/Re-analysis**
Samples were reprepped due to low recovery. The re-analysis is being reported.

**Recounts**
Sample 1203821238 (REF) was recounted due to low recovery. The recount is reported.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

# Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-203

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Daniel Klug CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 92 / 90 | Ice Chest No. | GWS-558 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 779365435232 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8027 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39PM6 | N | W | JUN 09 2017 | 0705 | 1x1-L G/P | SRISO_SEP_PRECIP_GPC: COMMON | 6 Months | HNO3 to pH <2 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| | Daniel Klug CHPRC | D. Klug | JUN 09 2017 1420 | | SSU-1 | | JUN 09 2017 1420 |
| | SSU-1 | | JUN 12 2017 0800 | | Janelle Zunker CHPRC | | JUN 12 2017 0800 |
| | Janelle Zunker CHPRC | | JUN 12 2017 1400 | | FEDEX | | |
| | | | FEDEX | | STACY BOONE | | 6/13/17 9:10 |

Matrix *

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

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

PRINTED ON 4/26/2017 FSR ID = FSR44177 A-6004-842 (REV 2)



July 10, 2017

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-204

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Daniel Klug CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 92/90 | Ice Chest No. | GWS-558 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7793 6543 5232 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8027 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39PM7 | N | W | JUN 09 2017 | 1345 | 1x1-L G/P | SRISO_SEP_PRECIP_GPC: COMMON | 6 Months | HNO3 to pH <2 |

July 10, 2017

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Daniel Klug CHPRC | D. Klug | | JUN 09 2017 1420 | SSU-1 | | | JUN 09 2017 1420 |
| SSU-1 | | | JUN 12 2017 0800 | Janelle Zunker CHPRC | | | JUN 12 2017 0800 |
| Janelle Zunker CHPRC | | | JUN 12 2017 1400 | FEDEX | | | |
| FED EX | | | | STACY BOOWE | | | 6/13/17 9:10 |

Matrix *

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

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

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-250

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Frank Hall /CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 93 / 51 | Ice Chest No. | GWS-532 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7793 7884 5276 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8025 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39T44 | N | W | JUN 12 2017 | 1038 | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39T44 | N | W | | | 1x1-L P | 9310_ALPHABETA_GPC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T44 | N | W | | | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T44 | N | W | | | 1x250-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |
| B39T46 | Y | W | | | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| | Frank Hall /CHPRC | | JUN 12 2017 1215 | | Janelle Zunker CHPRC | | JUN 12 2017 1215 |
| Relinquished By | Janelle Zunker CHPRC | | JUN 12 2017 1400 | Received By | FEDEX | | Date/Time |
| Relinquished By | | | FEDEX | Received By | STACY BOONE | | 6-13-17 9:10 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

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

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

PRINTED ON 4/26/2017 FSR ID = FSR44353 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-256

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Frank Hall /CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 931 51 | Ice Chest No. | GWS-539 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7793 7884 5278 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8028 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39T99 | Y | W | JUN 12 2017 | 0800 | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39T95 | N | W | | | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39T95 | N | W | | | 1x500-mL G/P | SE79_SEP_IE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T95 | N | W | | | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T95 | N | W | | | 1x250-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Frank Hall /CHPRC | | | JUN 12 2017 1215 | Janelle Zunker CHPRC | | | JUN 12 2017 1215 |
| Janelle Zunker CHPRC | | | JUN 12 2017 1400 | FEDEX | | | |
| FEDEX | | | | STACY BOONE | | | 6/13/17 9:10 |
| | | | | | | | |

Matrix *

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

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

PRINTED ON 4/26/2017 FSR ID = FSR44366 A-6004-842 (REV 2)

July 10, 2017

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-257

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Frank Hall /CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 93 / 51 | Ice Chest No. | GWS-532 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7793 7884 5278 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8028 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39TB0 | Y | W | JUN 1 2 2017 | 1205 | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39T96 | N | W | | | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39T96 | N | W | | | 1x500-mL G/P | SE79_SEP_IE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T96 | N | W | | | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |
| B39T96 | N | W | | | 1x250-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |

July 10, 2017

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| | Frank Hall JCHPRC | | JUN 1 2 2017 1215 | | Janelle Zunker CHPRC | | JUN 1 2 2017 1215 |
| Relinquished By | Janelle Zunker CHPRC | | JUN 1 2 2017 1400 | Received By | FEDEX | | Date/Time |
| Relinquished By | | | Date/Time FEDEX | Received By | STACY BOONE | | Date/Time 6/13/17 9:10 |
| Relinquished By | | | Date/Time | Received By | | | Date/Time |

Matrix *

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

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

PRINTED ON 4/26/2017 FSR ID = FSR31698 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-258

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Frank Hall /CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 93/51 | Ice Chest No. | CWS-532 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7793, 7884, 5278 |
| Protocol | SURV | Priority: | 30 Days PRIORITY | Offsite Property No. | 8028 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39TB5 | Y | W | JUN 12 2017 | 1318 | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39TB2 | N | W | ↓ | ↓ | 1x500-mL G/P | 6020_METALS_ICPMS: GW 01 | 6 Months | HNO3 to pH <2 |
| B39TB2 | N | W | ↓ | ↓ | 1x500-mL G/P | TC99_EIE_LSC: COMMON | 6 Months | HNO3 to pH <2 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Frank Hall /CHPRC | | | JUN 12 2017 1327 | Janelle Zunker CHPRC | | | JUN 12 2017 1327 |
| Janelle Zunker CHPRC | | | JUN 12 2017 1400 | FEDEX | | | |
| | | | FED EX | STACY BOGRE | | | 6/13/17 9:10 |

Matrix *

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

| Relinquished By | Date/Time | Received By | Date/Time |
|---|---|---|---|
| | | | |

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

PRINTED ON 5/11/2017 FSR ID = FSR44275 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

425280

C.O.C. # S17-006-268

Page 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Collector | Roger Friesz Jr. /CHPRC | Contact/Requester | Karen Waters-Husted | Telephone No. | 509-376-4650 |
| SAF No. | S17-006 | Sampling Origin | Hanford Site | Purchase Order/Charge Code | 300071 |
| Project Title | SURV, JUNE 2017 | Logbook No. | HNF-N-506 92191 | Ice Chest No. | GWS532 |
| Shipped To (Lab) | GEL Laboratories, LLC | Method of Shipment | Commercial Carrier | Bill of Lading/Air Bill No. | 7773 78845278 |
| Protocol | SURV | Priority: | 30 Days **PRIORITY** | Offsite Property No. | 8028 |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

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

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

N/A

| Sample No. | Filter | * | Date | Time | No/Type Container | Sample Analysis | Holding Time | Preservative |
|---|---|---|---|---|---|---|---|---|
| B39TM9 | N | W | 6-12-17 | 1218 | 4x1-L G/P | I129LL_SEP_LEPS_GS_LL: COMMON | 6 Months | None |
| B39TM9 | N | W | 6-12-17 | 1218 | 1x250-mL P | TRITIUM_DIST_LSC: COMMON | 6 Months | None |

July 10, 2017

| Relinquished By (Print / Sign) | Date/Time | Received By (Print / Sign) | Date/Time |
|---|---|---|---|
| Roger Friesz Jr. /CHPRC | JUN 12 2017 1336 | Janelle Zunker CHPRC | JUN 12 2017 1336 |
| Janelle Zunker CHPRC | JUN 12 2017 1400 | FEDEX | |
| | FED EX | STACY BOONE | 6/13/17 9:10 |
| | | | |

Matrix *

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

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

PRINTED ON 4/26/2017 FSR ID = FSR44846 A-6004-842 (REV 2)

GEL Laboratories LLC

# SAMPLE RECEIPT & REVIEW FORM

| | |
|---|---|
| **Client:** CPRC | **SDG/AR/COC/Work Order:** 425280 |
| **Received By:** Stacy Boone | **Date Received:** 6-13-17 |
| **Carrier and Tracking Number** | Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other<br>7793 6543 5232 - 1c<br>7793 7884 5278 - 1c |

| **Suspected Hazard Information** | **Yes** | **No** | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. |
|---|---|---|---|
| Shipped as a DOT Hazardous? | | ✓ | Hazard Class Shipped: UN#: |
| COC/Samples marked or classified as radioactive? | | ✓ | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Ø CPM / mR/Hr<br>**Classified as: Rad 1 Rad 2 Rad 3** |
| Is package, COC, and/or Samples marked HAZ? | | ✓ | If yes, select Hazards below, and contact the GEL Safety Group.<br>PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: |

| | **Sample Receipt Criteria** | **Yes** | **NA** | **No** | **Comments/Qualifiers (Required for Non-Conforming Items)** |
|---|---|---|---|---|---|
| 1 | Shipping containers received intact and sealed? | ✓ | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 | Chain of custody documents included with shipment? | ✓ | | | |
| 3 | Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | ✓ | | | Preservation Method: Wet Ice Ice Packs Dry ice None Other:<br>*all temperatures are recorded in Celsius TEMP:_____ |
| 4 | Daily check performed and passed on IR temperature gun? | ✓ | | | **Temperature Device Serial #:** IR3-17<br>Secondary Temperature Device Serial # (If Applicable): |
| 5 | Sample containers intact and sealed? | ✓ | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 6 | Samples requiring chemical preservation at proper pH? | ✓ | | | Sample ID's and Containers Affected:<br>If Preservation added, Lot#: |
| 7 | Do any samples require Volatile Analysis? | ✓ | | | If Yes, Are Encores or Soil Kits present? Yes___ No✓ (If yes, take to VOA Freezer)<br>Do VOA vials contain acid preservation? Yes✓ No___ N/A (If unknown, select No)<br>VOA vials free of headspace? Yes✓ No___ N/A<br>Sample ID's and containers affected: |
| 8 | Samples received within holding time? | ✓ | | | ID's and tests affected: |
| 9 | Sample ID's on COC match ID's on bottles? | ✓ | | | Sample ID's and containers affected: |
| 10 | Date & time on COC match date & time on bottles? | ✓ | | | Sample ID's affected: |
| 11 | Number of containers received match number indicated on COC? | ✓ | | | Sample ID's affected: |
| 12 | Are sample containers identifiable as GEL provided? | | | ✓ | |
| 13 | COC form is properly signed in relinquished/received sections? | ✓ | | | |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 6.14.17 Page 1 of 1

GL-CHL-SR-001 Rev 5

# Data Review Qualifier Definitions

# GEL LABORATORIES LLC

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

Report Date: 10−JUL−17

## 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 10 July 2017**

| 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 | LA170010 |
| Maryland | 270 |
| Massachusetts | M−SC012 |
| Michigan | 9976 |
| Mississippi | SC00012 |
| Nebraska | NE−OS−26−13 |
| Nevada | SC000122017−1 |
| 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 | T104704235−17−12 |
| Utah NELAP | SC000122017−22 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

# Metals Analysis

# Case Narrative

**Metals**
**Technical Case Narrative**
**CH2MHill Plateau Remediation Company (CPRC)**
**SDG #: GEL425280**
**Work Order #: 425280**

**Product:** **Determination of Metals by ICP-MS**
**Analytical Method:** SW846 3005A/6020B
**Analytical Procedure:** GL-MA-E-014 REV# 29
**Analytical Batch:** 1673773

**Preparation Method:** SW846 3005A
**Preparation Procedure:** GL-MA-E-006 REV# 13
**Preparation Batch:** 1673772

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280003 | B39T44 |
| 425280004 | B39T46 |
| 425280005 | B39T99 |
| 425280006 | B39T95 |
| 425280007 | B39TB0 |
| 425280008 | B39T96 |
| 425280009 | B39TB5 |
| 425280010 | B39TB2 |
| 1203810816 | Method Blank (MB)**ICP-MS** |
| 1203810817 | Laboratory Control Sample (LCS) |
| 1203810820 | 425280003(B39T44L) Serial Dilution (SD) |
| 1203810818 | 425280003(B39T44S) Matrix Spike (MS) |
| 1203810819 | 425280003(B39T44SD) 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**

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

**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: GEL425280 GEL Work Order: 425280

**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.

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: 27 JUN 2017** **Title: Data Validator**

# Sample Data Summary

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280003 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39T44 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 37.3 | ug/L | B | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:12 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.87 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 39.8 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 30.9 | ug/L | | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:19 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1.36 | ug/L | B | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:19 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 12.4 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 2.34 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 3.67 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 00:50 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 110 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 1.3 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 00:50 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.33 | ug/L | B | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 22:50 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280004 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39T46 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:17 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.87 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 38.8 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 28.8 | ug/L | | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:28 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:28 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 12.3 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 3.59 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 3.54 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:13 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 111 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 1.41 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:13 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:13 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280005 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39T99 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:21 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 0.670 | ug/L | U | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 3 | ug/L | U | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:29 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:29 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:16 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 2 | ug/L | U | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:16 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:16 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280006 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39T95 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:22 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 0.670 | ug/L | U | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 3 | ug/L | U | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:31 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:31 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:20 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 2 | ug/L | U | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:20 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:19 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280007 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39TB0 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:24 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.69 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 46 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 203 | ug/L | | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:32 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:32 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 8.45 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:23 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 188 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 6.53 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:23 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:22 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280008 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39T96 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 54 | ug/L | | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:25 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.57 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 44.2 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 181 | ug/L | | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.339 | ug/L | B | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:34 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 2.66 | ug/L | B | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:34 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 8.27 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 0.649 | ug/L | B | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2.37 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:26 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 176 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 6.38 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:26 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:26 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280009 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39TB5 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:26 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.68 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 21.6 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 3 | ug/L | U | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.380 | ug/L | B | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:35 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1.4 | ug/L | B | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:35 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 10.1 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 2.74 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:29 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 81.9 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 2.95 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:29 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:29 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL425280 **CONTRACT:** CPRC0S17006 **METHOD TYPE:** SW846

**SAMPLE ID:** 425280010 **BASIS:** As Received **DATE COLLECTED** 12−JUN−17

**CLIENT ID:** B39TB2 **LEVEL:** Low **DATE RECEIVED** 13−JUN−17

**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 | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−36−0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 06/23/17 10:27 | 170622−8 | 1673773 |
| 7440−38−2 | Arsenic | 3.81 | ug/L | B | 2 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−39−3 | Barium | 22.1 | ug/L | | 0.67 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−41−7 | Beryllium | 0.20 | ug/L | U | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−43−9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−47−3 | Chromium | 7.58 | ug/L | B | 3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−48−4 | Cobalt | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−50−8 | Copper | 0.484 | ug/L | B | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/23/17 12:37 | 170623−9 | 1673773 |
| 7439−92−1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7439−96−5 | Manganese | 1.52 | ug/L | B | 1 | 5 | 5 | 1 | MS | BAJ | 06/23/17 12:37 | 170623−9 | 1673773 |
| 7439−98−7 | Molybdenum | 10.1 | ug/L | | 0.2 | 0.5 | 0.5 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−02−0 | Nickel | 4.64 | ug/L | | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7782−49−2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 06/23/17 01:32 | 170622−2 | 1673773 |
| 7440−22−4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−24−6 | Strontium | 83 | ug/L | | 2 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−28−0 | Thallium | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−29−1 | Thorium | 0.70 | ug/L | U | 0.7 | 2 | 2 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−31−5 | Tin | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |
| 7440−61−1 | Uranium | 3 | ug/L | | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 06/23/17 01:32 | 170622−2 | 1673773 |
| 7440−66−6 | Zinc | 3.3 | ug/L | U | 3.3 | 10 | 10 | 1 | MS | BAJ | 06/22/17 23:32 | 170622−1 | 1673773 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1673773 | 1673772 | SW846 3005A | 50 | mL | 50 | mL | 06/15/17 | SXW1 |

***Analytical Methods:**

**MS** **SW846 3005A/6020B**

# Quality Control Summary

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

# QC Summary

Report Date: June 27, 2017



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

**Contact:** Mr. Scot Fitzgerald

**Workorder:** 425280

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | |
| QC1203810817 LCS | | | | | | | | | | |
| Aluminum | 2000 | | | 2150 | ug/L | | 107 | (80%-120%) | BAJ | 06/22/17 22:47 |
| Antimony | 50.0 | | | 50.2 | ug/L | | 100 | (80%-120%) | | 06/23/17 10:11 |
| Arsenic | 50.0 | | | 53.4 | ug/L | | 107 | (80%-120%) | | 06/22/17 22:47 |
| Barium | 50.0 | | | 49.6 | ug/L | | 99.2 | (80%-120%) | | |
| Beryllium | 50.0 | | | 59.4 | ug/L | | 119 | (80%-120%) | | |
| Cadmium | 50.0 | | | 52.5 | ug/L | | 105 | (80%-120%) | | |
| Chromium | 50.0 | | | 53.5 | ug/L | | 107 | (80%-120%) | | |
| Cobalt | 50.0 | | | 52.6 | ug/L | | 105 | (80%-120%) | | |
| Copper | 50.0 | | | 47.1 | ug/L | | 94.1 | (80%-120%) | | 06/23/17 12:18 |
| Lead | 50.0 | | | 48.9 | ug/L | | 97.9 | (80%-120%) | | 06/22/17 22:47 |
| Manganese | 50.0 | | | 46.3 | ug/L | | 92.6 | (80%-120%) | | 06/23/17 12:18 |
| Molybdenum | 50.0 | | | 52.3 | ug/L | | 105 | (80%-120%) | | 06/22/17 22:47 |
| Nickel | 50.0 | | | 52.0 | ug/L | | 104 | (80%-120%) | | |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | |
| Selenium | 50.0 | | | 54.1 | ug/L | | 108 | (80%-120%) | BAJ | 06/23/17 00:47 |
| Silver | 50.0 | | | 52.9 | ug/L | | 106 | (80%-120%) | | 06/22/17 22:47 |
| Strontium | 50.0 | | | 51.9 | ug/L | | 104 | (80%-120%) | | |
| Thallium | 50.0 | | | 48.1 | ug/L | | 96.2 | (80%-120%) | | |
| Thorium | 50.0 | | | 47.1 | ug/L | | 94.1 | (80%-120%) | | |
| Tin | 50.0 | | | 52.7 | ug/L | | 105 | (80%-120%) | | |
| Uranium | 50.0 | | | 50.1 | ug/L | | 100 | (80%-120%) | | 06/23/17 00:47 |
| Zinc | 50.0 | | | 52.1 | ug/L | | 104 | (80%-120%) | | 06/22/17 22:47 |
| QC1203810816 MB | | | | | | | | | | |
| Aluminum | | | U | 19.3 | ug/L | | | | | 06/22/17 22:43 |
| Antimony | | | U | 1.00 | ug/L | | | | | 06/23/17 10:10 |
| Arsenic | | | U | 2.00 | ug/L | | | | | 06/22/17 22:43 |
| Barium | | | U | 0.670 | ug/L | | | | | |
| Beryllium | | | U | 0.200 | ug/L | | | | | |
| Cadmium | | | U | 0.300 | ug/L | | | | | |
| Chromium | | | U | 3.00 | ug/L | | | | | |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | | |
| Cobalt | | | | U | 0.300 | ug/L | | | | BAJ | 06/22/17 22:43 |
| Copper | | | | U | 0.300 | ug/L | | | | | 06/23/17 12:16 |
| Lead | | | | U | 0.500 | ug/L | | | | | 06/22/17 22:43 |
| Manganese | | | | U | 1.00 | ug/L | | | | | 06/23/17 12:16 |
| Molybdenum | | | | U | 0.200 | ug/L | | | | | 06/22/17 22:43 |
| Nickel | | | | U | 0.600 | ug/L | | | | | |
| Selenium | | | | U | 2.00 | ug/L | | | | | 06/23/17 00:44 |
| Silver | | | | U | 0.300 | ug/L | | | | | 06/22/17 22:43 |
| Strontium | | | | U | 2.00 | ug/L | | | | | |
| Thallium | | | | U | 0.600 | ug/L | | | | | |
| Thorium | | | | U | 0.700 | ug/L | | | | | |
| Tin | | | | U | 1.00 | ug/L | | | | | |
| Uranium | | | | U | 0.067 | ug/L | | | | | 06/23/17 00:44 |
| Zinc | | | | U | 3.30 | ug/L | | | | | 06/22/17 22:43 |
| QC1203810818 425280003 MS | | | | | | | | | | | |
| Aluminum | 2000 | B | 37.3 | | 2060 | ug/L | | 101 | (75%-125%) | | 06/22/17 22:53 |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | Qual | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | | |
| Antimony | 50.0 | U | 1.00 | | 50.8 | ug/L | | 101 | (75%-125%) | BAJ | 06/23/17 10:13 |
| Arsenic | 50.0 | B | 3.87 | | 56.6 | ug/L | | 106 | (75%-125%) | | 06/22/17 22:53 |
| Barium | 50.0 | | 39.8 | | 89.1 | ug/L | | 98.6 | (75%-125%) | | |
| Beryllium | 50.0 | U | 0.200 | | 58.8 | ug/L | | 117 | (75%-125%) | | |
| Cadmium | 50.0 | U | 0.300 | | 50.6 | ug/L | | 101 | (75%-125%) | | |
| Chromium | 50.0 | | 30.9 | | 81.9 | ug/L | | 102 | (75%-125%) | | |
| Cobalt | 50.0 | U | 0.300 | | 49.7 | ug/L | | 99.2 | (75%-125%) | | |
| Copper | 50.0 | U | 0.300 | | 46.5 | ug/L | | 92.4 | (75%-125%) | | 06/23/17 12:21 |
| Lead | 50.0 | U | 0.500 | | 47.9 | ug/L | | 95.5 | (75%-125%) | | 06/22/17 22:53 |
| Manganese | 50.0 | B | 1.36 | | 46.6 | ug/L | | 90.5 | (75%-125%) | | 06/23/17 12:21 |
| Molybdenum | 50.0 | | 12.4 | | 65.0 | ug/L | | 105 | (75%-125%) | | 06/22/17 22:53 |
| Nickel | 50.0 | | 2.34 | | 53.4 | ug/L | | 102 | (75%-125%) | | |
| Selenium | 50.0 | B | 3.67 | | 56.3 | ug/L | | 105 | (75%-125%) | | 06/23/17 00:53 |
| Silver | 50.0 | U | 0.300 | | 51.9 | ug/L | | 104 | (75%-125%) | | 06/22/17 22:53 |
| Strontium | 50.0 | | 110 | | 164 | ug/L | | 108 | (75%-125%) | | |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | | |
| Thallium | 50.0 | U | 0.600 | | 47.3 | ug/L | | 94.2 | (75%-125%) | BAJ | 06/22/17 22:53 |
| Thorium | 50.0 | U | 0.700 | | 48.4 | ug/L | | 95.9 | (75%-125%) | | |
| Tin | 50.0 | U | 1.00 | | 52.3 | ug/L | | 103 | (75%-125%) | | |
| Uranium | 50.0 | | 1.30 | | 50.7 | ug/L | | 98.7 | (75%-125%) | | 06/23/17 00:53 |
| Zinc | 50.0 | B | 3.33 | | 51.6 | ug/L | | 96.4 | (75%-125%) | | 06/22/17 22:53 |
| QC1203810819 425280003 MSD | | | | | | | | | | | |
| Aluminum | 2000 | B | 37.3 | | 2130 | ug/L | 3.59 | 105 | (0%-20%) | | 06/22/17 22:56 |
| Antimony | 50.0 | U | 1.00 | | 49.1 | ug/L | 3.4 | 97.7 | (0%-20%) | | 06/23/17 10:15 |
| Arsenic | 50.0 | B | 3.87 | | 56.4 | ug/L | 0.338 | 105 | (0%-20%) | | 06/22/17 22:56 |
| Barium | 50.0 | | 39.8 | | 94.5 | ug/L | 5.92 | 109 | (0%-20%) | | |
| Beryllium | 50.0 | U | 0.200 | | 60.6 | ug/L | 3.06 | 121 | (0%-20%) | | |
| Cadmium | 50.0 | U | 0.300 | | 52.1 | ug/L | 2.86 | 104 | (0%-20%) | | |
| Chromium | 50.0 | | 30.9 | | 86.5 | ug/L | 5.54 | 111 | (0%-20%) | | |
| Cobalt | 50.0 | U | 0.300 | | 53.9 | ug/L | 8.1 | 108 | (0%-20%) | | |
| Copper | 50.0 | U | 0.300 | | 45.2 | ug/L | 2.8 | 89.8 | (0%-20%) | | 06/23/17 12:22 |
| Lead | 50.0 | U | 0.500 | | 50.1 | ug/L | 4.41 | 99.8 | (0%-20%) | | 06/22/17 22:56 |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | | |
| Manganese | 50.0 | B | 1.36 | | 47.2 | ug/L | 1.19 | 91.6 | (0%-20%) | BAJ | 06/23/17 12:22 |
| Molybdenum | 50.0 | | 12.4 | | 66.8 | ug/L | 2.83 | 109 | (0%-20%) | | 06/22/17 22:56 |
| Nickel | 50.0 | | 2.34 | | 54.4 | ug/L | 1.82 | 104 | (0%-20%) | | |
| Selenium | 50.0 | B | 3.67 | | 55.3 | ug/L | 1.78 | 103 | (0%-20%) | | 06/23/17 00:57 |
| Silver | 50.0 | U | 0.300 | | 51.8 | ug/L | 0.114 | 104 | (0%-20%) | | 06/22/17 22:56 |
| Strontium | 50.0 | | 110 | | 172 | ug/L | 4.84 | 124 | (0%-20%) | | |
| Thallium | 50.0 | U | 0.600 | | 49.0 | ug/L | 3.62 | 97.7 | (0%-20%) | | |
| Thorium | 50.0 | U | 0.700 | | 49.3 | ug/L | 1.79 | 97.7 | (0%-20%) | | |
| Tin | 50.0 | U | 1.00 | | 53.3 | ug/L | 1.98 | 105 | (0%-20%) | | |
| Uranium | 50.0 | | 1.30 | | 51.6 | ug/L | 1.86 | 101 | (0%-20%) | | 06/23/17 00:57 |
| Zinc | 50.0 | B | 3.33 | | 53.0 | ug/L | 2.75 | 99.3 | (0%-20%) | | 06/22/17 22:56 |
| QC1203810820 425280003 SDILT | | | | | | | | | | | |
| Aluminum | | B | 37.3 | DU | 96.5 | ug/L | N/A | | (0%-20%) | | 06/22/17 23:03 |
| Antimony | | U | 0.282 | DU | 5.00 | ug/L | N/A | | (0%-20%) | | 06/23/17 10:16 |
| Arsenic | | B | 3.87 | DU | 10.0 | ug/L | N/A | | (0%-20%) | | 06/22/17 23:03 |
| Barium | | | 39.8 | D | 7.81 | ug/L | 1.81 | | (0%-20%) | | |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | |
| Beryllium | U | 0.025 | DU | 1.00 | ug/L | N/A | | (0%-20%) | BAJ | 06/22/17 23:03 |
| Cadmium | U | 0.028 | DU | 1.50 | ug/L | N/A | | (0%-20%) | | |
| Chromium | | 30.9 | BD | 6.34 | ug/L | 2.44 | | (0%-20%) | | |
| Cobalt | U | 0.077 | DU | 1.50 | ug/L | N/A | | (0%-20%) | | |
| Copper | U | 0.269 | DU | 1.50 | ug/L | N/A | | (0%-20%) | | 06/23/17 12:24 |
| Lead | U | 0.132 | DU | 2.50 | ug/L | N/A | | (0%-20%) | | 06/22/17 23:03 |
| Manganese | B | 1.36 | DU | 5.00 | ug/L | N/A | | (0%-20%) | | 06/23/17 12:24 |
| Molybdenum | | 12.4 | D | 2.39 | ug/L | 4.18 | | (0%-20%) | | 06/22/17 23:03 |
| Nickel | | 2.34 | DU | 3.00 | ug/L | N/A | | (0%-20%) | | |
| Selenium | B | 3.67 | DU | 10.0 | ug/L | N/A | | (0%-20%) | | 06/23/17 01:03 |
| Silver | U | 0.027 | DU | 1.50 | ug/L | N/A | | (0%-20%) | | 06/22/17 23:03 |
| Strontium | | 110 | D | 21.6 | ug/L | 1.93 | | (0%-20%) | | |
| Thallium | U | 0.156 | DU | 3.00 | ug/L | N/A | | (0%-20%) | | |
| Thorium | U | 0.447 | DU | 3.50 | ug/L | N/A | | (0%-20%) | | |
| Tin | U | 0.624 | DU | 5.00 | ug/L | N/A | | (0%-20%) | | |

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

# QC Summary

**Workorder:** **425280**



| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis - ICPMS** | | | | | | | | | | |
| Batch 1673773 | | | | | | | | | | |
| Uranium | | 1.30 | D | 0.264 | ug/L | 1.38 | | (0%-20%) | BAJ | 06/23/17 01:03 |
| Zinc | B | 3.33 | DU | 16.5 | ug/L | N/A | | (0%-20%) | | 06/22/17 23:03 |

**Notes:**

The Qualifiers in this report are defined as follows:

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

**Product:** **I129LL_SEP_LEPS_GS: COMMON (low level)**
**Analytical Method:** DOE EML HASL-300,I-01 Modified
**Analytical Procedure:** GL-RAD-A-006 REV# 21
**Analytical Batch:** 1674807

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280011 | B39TM9 |
| 1203813188 | Method Blank (MB) |
| 1203813189 | 425282001(NonSDG) Sample Duplicate (DUP) |
| 1203813190 | 425282001(NonSDG) Matrix Spike (MS) |
| 1203813191 | Laboratory Control Sample (LCS) |

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

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product:** **SRISO_SEP_PRECIP_GPC: COMMON**
**Analytical Method:** SRISO_SEP_PRECIP_GPC
**Analytical Procedure:** GL-RAD-A-004 REV# 18
**Analytical Batch:** 1675923

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280001 | B39PM6 |
| 425280002 | B39PM7 |
| 1203815773 | Method Blank (MB) |
| 1203815774 | 425103020(B39R31) Sample Duplicate (DUP) |
| 1203815775 | 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.

**Quality Control (QC) Information**

**QC Information**
All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203815774 (B39R31DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.19.

**Technical Information**

**Recounts**
Samples 1203815774 (B39R31DUP) and 425280002 (B39PM7) 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# 19
**Analytical Batch:** 1680213

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280003 | B39T44 |
| 1203825674 | Method Blank (MB) |
| 1203825675 | 426412007(NonSDG) Sample Duplicate (DUP) |
| 1203825676 | 426412007(NonSDG) Matrix Spike (MS) |
| 1203825677 | 426412007(NonSDG) Matrix Spike Duplicate (MSD) |
| 1203825678 | 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.

**Quality Control (QC) Information**

**QC Information**
All of the QC samples meet the required acceptance limits with the following exceptions: The matrix spike and matrix spike duplicate, 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD) , did not meet the alpha relative percent difference requirement; however, they do meet the relative error ratio and spike recovery requirements.

**Technical Information**

**Sample Re-prep/Re-analysis**
Sample 425280003 (B39T44) was reprepped due to low recovery. The re-analysis is being reported.

**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**
Samples 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD) were recounted due to high recovery. The recounts are reported. Sample 1203825675 (Non SDG 426412007DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

**Miscellaneous Information**

**Additional Comments**
The matrix spike and matrix spike duplicate, 1203825676 (Non SDG 426412007MS) and 1203825677 (Non SDG 426412007MSD), aliquots were reduced to conserve sample volume.

**Product:** **TC99_EIE_LSC: COMMON**
**Analytical Method:** TC99_EIE_LSC
**Analytical Procedure:** GL-RAD-A-059 REV# 5
**Analytical Batch:** 1675454

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280003 | B39T44 |
| 425280006 | B39T95 |
| 425280008 | B39T96 |
| 425280010 | B39TB2 |
| 1203814689 | Method Blank (MB) |
| 1203814690 | 425280003(B39T44) Sample Duplicate (DUP) |
| 1203814691 | Laboratory Control Sample (LCS) |

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

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product:** **TRITIUM_DIST_LSC: COMMON**
**Analytical Method:** TRITIUM_DIST_LSC
**Analytical Procedure:** GL-RAD-A-002 REV# 22
**Analytical Batch:** 1675960

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280003 | B39T44 |
| 425280006 | B39T95 |
| 425280008 | B39T96 |
| 425280011 | B39TM9 |
| 1203815891 | Method Blank (MB) |
| 1203815892 | 425280008(B39T96) Sample Duplicate (DUP) |
| 1203815893 | 425280008(B39T96) Matrix Spike (MS) |
| 1203815894 | Laboratory Control Sample (LCS) |

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

**Data Summary:**

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

**Technical Information**

**Recounts**
Sample 1203815893 (B39T96MS) was recounted due to low recovery. The recount is reported.

**Miscellaneous Information**

**Additional Comments**
The matrix spike, 1203815893 (B39T96MS), aliquot was reduced to conserve sample volume.

**Product:** **SE79_SEP_IE_LSC: COMMON**
**Analytical Method:** SE79_SEP_IE_LSC
**Analytical Procedure:** GL-RAD-A-031 REV# 13
**Analytical Batch:** 1678200

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 425280006 | B39T95 |
| 425280008 | B39T96 |
| 1203821232 | Method Blank (MB) |
| 1203821233 | 425233002(NonSDG) Sample Duplicate (DUP) |
| 1203821234 | Laboratory Control Sample (LCS) |
| 1203821238 | Reference (REF) |

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

**Data Summary:**

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

applicable, with the following exceptions.

**Technical Information**

**Sample Re-prep/Re-analysis**
Samples were reprepped due to low recovery. The re-analysis is being reported.

**Recounts**
Sample 1203821238 (REF) was recounted due to low recovery. The recount is reported.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

# GEL LABORATORIES LLC

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

## Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL425280 GEL Work Order: 425280

**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: 10 JUL 2017** **Title: Group Leader**

# Sample Data Summary

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280001** | **Date Collected:** | **06/09/2017 07:05** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39PM6** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675923** | **Method:** | **SRISO_SEP_PRECIP_GPC** | **SOP Ref:** | **GL-RAD-A-004** |
| **Run Date:** | **07/01/2017 14:19** | **Analyst:** | **JXB7** | **Instrument:** | **PIC7C** |
| **Data File:** | **S1675923r1.xls** | **Aliquot:** | **300 mL** | **Count Time:** | **60 min** |
| **Prep Batch:** | **1675923** | **Prep Method:** | **EPA 905.0 Modified/DOE RP5** | | |
| **Prep Date:** | **06/28/2017 10:54** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10098-97-2 | Strontium-90 | U | -0.147 | pCi/L | +/-0.506 | 0.506 | 1.06 | 2.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Strontium Carrier | 5.50 | 7.75 | mg | 71 | (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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280002** | **Date Collected:** | **06/09/2017 13:45** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39PM7** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675923** | **Method:** | **SRISO_SEP_PRECIP_GPC** | **SOP Ref:** | **GL-RAD-A-004** |
| **Run Date:** | **07/05/2017 07:59** | **Analyst:** | **JXB7** | **Instrument:** | **PIC3D** |
| **Data File:** | **S1675923r1.xls** | **Aliquot:** | **300 mL** | **Count Time:** | **60 min** |
| **Prep Batch:** | **1675923** | **Prep Method:** | **EPA 905.0 Modified/DOE RP5** | | |
| **Prep Date:** | **06/28/2017 10:54** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10098-97-2 | Strontium-90 | | 15.8 | pCi/L | +/-2.10 | 3.38 | 1.42 | 2.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Strontium Carrier | 3.70 | 7.75 | mg | 47.7 | (40%-110%) |

**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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280003** | **Date Collected:** | **06/12/2017 10:38** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T44** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1680213** | **Method:** | **9310_ALPHABETA_GPC** | **SOP Ref:** | **GL-RAD-A-001** |
| **Run Date:** | **07/08/2017 11:05** | **Analyst:** | **LXB3** | **Instrument:** | **LB4100A1** |
| **Data File:** | **AB1680213r.xls** | **Aliquot:** | **150 mL** | **Count Time:** | **210 min** |
| **Prep Batch:** | **1680213** | **Prep Method:** | **EPA 900.0/SW846 9310** | | |
| **Prep Date:** | **07/07/2017 06:43** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 12587-46-1 | Alpha<br>*ALPHA* | U | 1.24 | pCi/L | +/-1.03 | 1.05 | 1.59 | 3.00 |
| 12587-47-2 | Beta<br>*BETA* | | 1460 | pCi/L | +/-13.0 | 242 | 1.91 | 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.**

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280003** | **Date Collected:** | **06/12/2017 10:38** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T44** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675454** | **Method:** | **TC99_EIE_LSC** | **SOP Ref:** | **GL-RAD-A-059** |
| **Run Date:** | **07/04/2017 09:04** | **Analyst:** | **CXS7** | **Instrument:** | **LSCGOLD** |
| **Data File:** | **E1675454.xls** | **Aliquot:** | **100 mL** | **Count Time:** | **25 min** |
| **Prep Batch:** | **1675454** | **Prep Method:** | **DOE EML HASL-300, Tc-02-** | | |
| **Prep Date:** | **06/29/2017 13:49** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 14133-76-7 | Technetium-99 | | 2230 | pCi/L | +/-58.6 | 254 | 35.1 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Technetium-99m Tracer | 36200 | 39600 | CPM | 91.6 | (30%-105%) |

**Comments:**

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

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280003** | **Date Collected:** | **06/12/2017 10:38** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T44** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675960** | **Method:** | **TRITIUM_DIST_LSC** | **SOP Ref:** | **GL-RAD-A-002** |
| **Run Date:** | **07/05/2017 16:01** | **Analyst:** | **BXM4** | **Instrument:** | **LSCGREEN** |
| **Data File:** | **T1675960R.xls** | **Aliquot:** | **50 mL** | **Count Time:** | **45 min** |
| **Prep Batch:** | **1675960** | **Prep Method:** | **EPA 906.0 Modified** | | |
| **Prep Date:** | **07/05/2017 09:31** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10028-17-8 | Tritium | | 6940 | pCi/L | +/-440 | 1410 | 363 | 400 |

| 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.**

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280006** | **Date Collected:** | **06/12/2017 08:00** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T95** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675454** | **Method:** | **TC99_EIE_LSC** | **SOP Ref:** | **GL-RAD-A-059** |
| **Run Date:** | **07/04/2017 09:31** | **Analyst:** | **CXS7** | **Instrument:** | **LSCGOLD** |
| **Data File:** | **E1675454.xls** | **Aliquot:** | **100 mL** | **Count Time:** | **25 min** |
| **Prep Batch:** | **1675454** | **Prep Method:** | **DOE EML HASL-300, Tc-02-** | | |
| **Prep Date:** | **06/29/2017 13:49** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 14133-76-7 | Technetium-99 | | 77.8 | pCi/L | +/-20.7 | 22.4 | 31.6 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Technetium-99m Tracer | 39800 | 39600 | CPM | 100 | (30%-105%) |

**Comments:**

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

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280006** | **Date Collected:** | **06/12/2017 08:00** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T95** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675960** | **Method:** | **TRITIUM_DIST_LSC** | **SOP Ref:** | **GL-RAD-A-002** |
| **Run Date:** | **07/05/2017 16:48** | **Analyst:** | **BXM4** | **Instrument:** | **LSCGREEN** |
| **Data File:** | **T1675960R.xls** | **Aliquot:** | **50 mL** | **Count Time:** | **45 min** |
| **Prep Batch:** | **1675960** | **Prep Method:** | **EPA 906.0 Modified** | | |
| **Prep Date:** | **07/05/2017 09:31** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10028-17-8 | Tritium | U | -89.6 | pCi/L | +/-196 | 196 | 353 | 400 |

| 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.**

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280006** | **Date Collected:** | **06/12/2017 08:00** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T95** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1678200** | **Method:** | **SE79_SEP_IE_LSC** | **SOP Ref:** | **GL-RAD-A-031** |
| **Run Date:** | **07/01/2017 06:39** | **Analyst:** | **CXS7** | **Instrument:** | **LSCBLUE** |
| **Data File:** | **SE1678200R3.xls** | **Aliquot:** | **0.08 L** | **Count Time:** | **60 min** |
| **Prep Batch:** | **1678200** | **Prep Method:** | **NERC ORD** | | |
| **Prep Date:** | **06/29/2017 09:29** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 15758-45-9 | Selenium-79 | U | -7.78 | pCi/L | +/-11.2 | 11.2 | 19.4 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Selenium Carrier | 20.4 | 20.0 | mg | 102 | (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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280008** | **Date Collected:** | **06/12/2017 12:05** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T96** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675454** | **Method:** | **TC99_EIE_LSC** | **SOP Ref:** | **GL-RAD-A-059** |
| **Run Date:** | **07/04/2017 09:58** | **Analyst:** | **CXS7** | **Instrument:** | **LSCGOLD** |
| **Data File:** | **E1675454.xls** | **Aliquot:** | **100 mL** | **Count Time:** | **25 min** |
| **Prep Batch:** | **1675454** | **Prep Method:** | **DOE EML HASL-300, Tc-02-** | | |
| **Prep Date:** | **06/29/2017 13:49** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 14133-76-7 | Technetium-99 | | 13700 | pCi/L | +/-149 | 1530 | 40.7 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Technetium-99m Tracer | 31900 | 39600 | CPM | 80.7 | (30%-105%) |

**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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280008** | **Date Collected:** | **06/12/2017 12:05** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T96** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675960** | **Method:** | **TRITIUM_DIST_LSC** | **SOP Ref:** | **GL-RAD-A-002** |
| **Run Date:** | **07/05/2017 17:35** | **Analyst:** | **BXM4** | **Instrument:** | **LSCGREEN** |
| **Data File:** | **T1675960R.xls** | **Aliquot:** | **50 mL** | **Count Time:** | **45 min** |
| **Prep Batch:** | **1675960** | **Prep Method:** | **EPA 906.0 Modified** | | |
| **Prep Date:** | **07/05/2017 09:31** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10028-17-8 | Tritium | | 9520 | pCi/L | +/-495 | 1910 | 357 | 400 |

| 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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280008** | **Date Collected:** | **06/12/2017 12:05** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39T96** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1678200** | **Method:** | **SE79_SEP_IE_LSC** | **SOP Ref:** | **GL-RAD-A-031** |
| **Run Date:** | **07/01/2017 07:42** | **Analyst:** | **CXS7** | **Instrument:** | **LSCBLUE** |
| **Data File:** | **SE1678200R3.xls** | **Aliquot:** | **0.08 L** | **Count Time:** | **60 min** |
| **Prep Batch:** | **1678200** | **Prep Method:** | **NERC ORD** | | |
| **Prep Date:** | **06/29/2017 09:29** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 15758-45-9 | Selenium-79 | | 98.7 | pCi/L | +/-13.9 | 14.1 | 20.9 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Selenium Carrier | 18.9 | 20.0 | mg | 94.5 | (40%-110%) |

**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:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280010** | **Date Collected:** | **06/12/2017 13:18** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39TB2** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675454** | **Method:** | **TC99_EIE_LSC** | **SOP Ref:** | **GL-RAD-A-059** |
| **Run Date:** | **07/04/2017 10:25** | **Analyst:** | **CXS7** | **Instrument:** | **LSCGOLD** |
| **Data File:** | **E1675454.xls** | **Aliquot:** | **100 mL** | **Count Time:** | **25 min** |
| **Prep Batch:** | **1675454** | **Prep Method:** | **DOE EML HASL-300, Tc-02-** | | |
| **Prep Date:** | **06/29/2017 13:49** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 14133-76-7 | Technetium-99 | U | 6.02 | pCi/L | +/-24.9 | 24.9 | 42.7 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---|---|---|---|---|---|
| Technetium-99m Tracer | 30600 | 39600 | CPM | 77.3 | (30%-105%) |

**Comments:**

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

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

**The MDC is a sample specific MDC.**

**Rad**

**Certificate of Analysis**

**Sample Summary**

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280011** | **Date Collected:** | **06/12/2017 12:18** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39TM9** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1674807** | **Method:** | **DOE EML HASL-300,I-01 Mo** | **SOP Ref:** | **GL-RAD-A-006** |
| **Run Date:** | **06/22/2017 12:25** | **Analyst:** | **MJH1** | **Instrument:** | **XRAY5** |
| **Data File:** | **I425280011.CNF;1** | **Aliquot:** | **1.6 L** | **Count Time:** | **90 min** |
| **Prep Batch:** | **1674807** | **Prep Method:** | **DOE EML HASL-300,I-01 M** | | |
| **Prep Date:** | **06/21/2017 00:00** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 15046-84-1 | Iodine-129 | U | 0.364 | pCi/L | +/-0.368 | 0.405 | 0.969 | 1.00 |

| 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.**

**Rad**

## Certificate of Analysis
## Sample Summary

| | | | | | |
|---|---|---|---|---|---|
| **SDG Number:** | **GEL425280** | **Client:** | **CPRC001** | **Project:** | **CPRC0S17006** |
| **Lab Sample ID:** | **425280011** | **Date Collected:** | **06/12/2017 12:18** | **Matrix:** | **WATER** |
| | | **Date Received:** | **06/13/2017 09:10** | | |
| **Client ID:** | **B39TM9** | | | **Prep Basis:** | **"As Received"** |
| **Batch ID:** | **1675960** | **Method:** | **TRITIUM_DIST_LSC** | **SOP Ref:** | **GL-RAD-A-002** |
| **Run Date:** | **07/05/2017 18:22** | **Analyst:** | **BXM4** | **Instrument:** | **LSCGREEN** |
| **Data File:** | **T1675960R.xls** | **Aliquot:** | **50 mL** | **Count Time:** | **45 min** |
| **Prep Batch:** | **1675960** | **Prep Method:** | **EPA 906.0 Modified** | | |
| **Prep Date:** | **07/05/2017 09:31** | | | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---|---|---|---|---|---|---|---|---|
| 10028-17-8 | Tritium | | 21300 | pCi/L | +/-704 | 4170 | 357 | 400 |

| 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 10, 2017


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

**Contact:** Mr. Scot Fitzgerald

**Workorder:** 425280

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|---|---|---|---|---|---|---|---|---|---|
| **Rad Gamma Spec** | | | | | | | | | |
| Batch 1674807 | | | | | | | | | |
| QC1203813188 MB | | | | | | | | | |
| Iodine-129 | | | U | -0.125 | pCi/L | | | MJH1 | 06/22/1714:58 |
| Uncert: | | | | +/-0.259 | | | | | |
| TPU: | | | | +/-0.265 | | | | | |
| QC1203813189 425282001 DUP | | | | | | | | | |
| Iodine-129 | | 2.31 | | 2.38 | pCi/L | | | | 06/22/1715:13 |
| Uncert: | | +/-1.14 | | +/-1.09 | | RPD: 3 | (0% - 100%) | | |
| TPU: | | +/-1.16 | | +/-1.11 | | RER: 0.0916 | (0-2) | | |
| QC1203813190 425282001 MS | | | | | | | | | |
| Iodine-129 | 32.0 | 2.31 | | 30.9 | pCi/L | REC: 89 | (75%-125%) | | 06/22/1716:03 |
| Uncert: | | +/-1.14 | | +/-4.37 | | | | | |
| TPU: | | +/-1.16 | | +/-5.35 | | | | | |
| QC1203813191 LCS | | | | | | | | | |
| Iodine-129 | 26.0 | | | 28.9 | pCi/L | REC: 111 | (80%-120%) | | 06/22/1716:42 |
| Uncert: | | | | +/-3.92 | | | | | |
| TPU: | | | | +/-4.97 | | | | | |
| **Rad Gas Flow** | | | | | | | | | |
| Batch 1675923 | | | | | | | | | |
| QC1203815773 MB | | | | | | | | | |
| Strontium-90 | | | U | -0.266 | pCi/L | | | JXB7 | 07/01/1714:19 |
| Uncert: | | | | +/-0.572 | | | | | |
| TPU: | | | | +/-0.572 | | | | | |
| **Strontium Carrier | 7.75 | | | 5.80 | mg | REC: 75 | (40%-110%) | | |
| QC1203815774 425103020 DUP | | | | | | | | | |
| Strontium-90 | | 5.98 | | 4.83 | pCi/L | | | | 07/05/1708:00 |
| Uncert: | | +/-1.06 | | +/-1.02 | | RPD: 21* | (0% - 20%) | | |
| TPU: | | +/-1.43 | | +/-1.27 | | RER: 1.19 | (0-2) | | |
| **Strontium Carrier | 7.75 | 5.50 | | 7.20 | mg | REC: 93 | (40%-110%) | | |
| QC1203815775 LCS | | | | | | | | | |
| Strontium-90 | 72.8 | | | 83.3 | pCi/L | REC: 114 | (80%-120%) | | 07/01/1714:20 |
| Uncert: | | | | +/-4.35 | | | | | |
| TPU: | | | | +/-14.1 | | | | | |
| **Strontium Carrier | 7.75 | | | 5.20 | mg | REC: 67 | (40%-110%) | | |
| Batch 1680213 | | | | | | | | | |
| QC1203825674 MB | | | | | | | | | |
| Alpha | | | U | 0.592 | pCi/L | | | LXB3 | 07/08/1711:09 |
| Uncert: | | | | +/-1.12 | | | | | |
| TPU: | | | | +/-1.13 | | | | | |
| Beta | | | U | 1.75 | pCi/L | | | | |
| Uncert: | | | | +/-1.60 | | | | | |
| TPU: | | | | +/-1.62 | | | | | |
| QC1203825675 426412007 DUP | | | | | | | | | |
| Alpha | U | -0.378 | U | -1.19 | pCi/L | | | | 07/10/1711:55 |
| Uncert: | | +/-1.14 | | +/-1.13 | | RPD: 0 | N/A | | |

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

# QC Summary

**Workorder: 425280**



| Parmname | NOM | | Sample | Qual | QC | Units | QC Criteria | | Range | Analyst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Gas Flow** | | | | | | | | | | | |
| Batch 1680213 | | | | | | | | | | | |
| | TPU: | | +/-1.15 | | +/-1.13 | | | | | | |
| | | | | | | | RER: | 0.986 | (0-2) | | |
| Beta | | | 529 | | 540 | pCi/L | | | | | |
| | Uncert: | | +/-11.6 | | +/-11.7 | | RPD: | 2 | (0% - 20%) | | |
| | TPU: | | +/-87.0 | | +/-88.4 | | RER: | 0.185 | (0-2) | | |
| QC1203825676 426412007 MS | | | | | | | | | | | |
| Alpha | 242 | U | -0.378 | | 209 | pCi/L | REC: | 87 | (75%-125%) | | 07/10/1710:10 |
| | Uncert: | | +/-1.14 | | +/-23.6 | | | | | | |
| | TPU: | | +/-1.15 | | +/-45.4 | | | | | | |
| Beta | 874 | | 529 | | 1430 | pCi/L | REC: | 104 | (75%-125%) | | |
| | Uncert: | | +/-11.6 | | +/-41.1 | | | | | | |
| | TPU: | | +/-87.0 | | +/-236 | | | | | | |
| QC1203825677 426412007 MSD | | | | | | | | | | | |
| Alpha | 242 | U | -0.378 | | 280 | pCi/L | REC: | 116 | (75%-125%) | | 07/10/1710:10 |
| | Uncert: | | +/-1.14 | | +/-25.6 | | RPD: | 29* | (0%-20%) | | |
| | TPU: | | +/-1.15 | | +/-52.8 | | RER: | 1.99 | (0-2) | | |
| Beta | 874 | | 529 | | 1590 | pCi/L | REC: | 122 | (75%-125%) | | |
| | Uncert: | | +/-11.6 | | +/-45.0 | | RPD: | 10 | (0%-20%) | | |
| | TPU: | | +/-87.0 | | +/-262 | | RER: | 0.863 | (0-2) | | |
| QC1203825678 LCS | | | | | | | | | | | |
| Alpha | 80.6 | | | | 81.6 | pCi/L | REC: | 101 | (80%-120%) | | 07/08/1710:45 |
| | Uncert: | | | | +/-7.55 | | | | | | |
| | TPU: | | | | +/-15.6 | | | | | | |
| Beta | 291 | | | | 323 | pCi/L | REC: | 111 | (80%-120%) | | |
| | Uncert: | | | | +/-11.3 | | | | | | |
| | TPU: | | | | +/-53.6 | | | | | | |
| **Rad Liquid Scintillation** | | | | | | | | | | | |
| Batch 1675454 | | | | | | | | | | | |
| QC1203814689 MB | | | | | | | | | | | |
| Technetium-99 | | | | U | -20.9 | pCi/L | | | | CXS7 | 07/04/1710:52 |
| | Uncert: | | | | +/-18.5 | | | | | | |
| | TPU: | | | | +/-18.5 | | | | | | |
| **Technetium-99m Tracer | 39600 | | | | 37900 | CPM | REC: | 96 | (30%-105%) | | |
| QC1203814690 425280003 DUP | | | | | | | | | | | |
| Technetium-99 | | | 2230 | | 2370 | pCi/L | | | | | 07/04/1711:18 |
| | Uncert: | | +/-58.6 | | +/-58.7 | | RPD: | 6 | (0% - 20%) | | |
| | TPU: | | +/-254 | | +/-269 | | RER: | 0.76 | (0-2) | | |
| **Technetium-99m Tracer | 39600 | | 36200 | | 37300 | CPM | REC: | 94 | (30%-105%) | | |
| QC1203814691 LCS | | | | | | | | | | | |
| Technetium-99 | 861 | | | | 726 | pCi/L | REC: | 84 | (80%-120%) | | 07/04/1711:45 |
| | Uncert: | | | | +/-34.5 | | | | | | |
| | TPU: | | | | +/-87.6 | | | | | | |
| **Technetium-99m Tracer | 39600 | | | | 40200 | CPM | REC: | 102 | (30%-105%) | | |
| Batch 1675960 | | | | | | | | | | | |
| QC1203815891 MB | | | | | | | | | | | |
| Tritium | | | | U | 66.7 | pCi/L | | | | BXM4 | 07/06/1708:59 |
| | Uncert: | | | | +/-205 | | | | | | |
| | TPU: | | | | +/-206 | | | | | | |
| QC1203815892 425280008 DUP | | | | | | | | | | | |

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

# QC Summary

**Workorder: 425280**



| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | | Range | Analyst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Rad Liquid Scintillation** | | | | | | | | | | |
| Batch 1675960 | | | | | | | | | | |
| Tritium | | 9520 | | 8980 | pCi/L | | | | | |
| | Uncert: | +/-495 | | +/-485 | | RPD: | 6 | (0% - 20%) | | |
| | TPU: | +/-1910 | | +/-1800 | | RER: | 0.403 | (0-2) | | |
| QC1203815893 425280008 MS | | | | | | | | | | |
| Tritium | 4480 | 9520 | | 13900 | pCi/L | REC: | 97 | (75%-125%) | | 07/07/1706:22 |
| | Uncert: | +/-495 | | +/-1500 | | | | | | |
| | TPU: | +/-1910 | | +/-3070 | | | | | | |
| QC1203815894 LCS | | | | | | | | | | |
| Tritium | 2230 | | | 2110 | pCi/L | REC: | 94 | (80%-120%) | | 07/06/1710:48 |
| | Uncert: | | | +/-470 | | | | | | |
| | TPU: | | | +/-622 | | | | | | |
| Batch 1678200 | | | | | | | | | | |
| QC1203821232 MB | | | | | | | | | | |
| Selenium-79 | | | U | 2.09 | pCi/L | | | | CXS7 | 07/01/1709:46 |
| | Uncert: | | | +/-12.0 | | | | | | |
| | TPU: | | | +/-12.0 | | | | | | |
| **Selenium Carrier | 20.0 | | | 19.4 | mg | REC: | 97 | (40%-110%) | | |
| QC1203821233 425233002 DUP | | | | | | | | | | |
| Selenium-79 | U | -13.7 | U | 11.4 | pCi/L | | | | | 07/01/1710:49 |
| | Uncert: | +/-22.7 | | +/-11.2 | | RPD: | 0 | N/A | | |
| | TPU: | +/-22.7 | | +/-11.2 | | RER: | 1.95 | (0-2) | | |
| **Selenium Carrier | 20.0 | 10.1 | | 21.1 | mg | REC: | 106 | (40%-110%) | | |
| QC1203821234 LCS | | | | | | | | | | |
| Selenium-79 | 19600 | | | 16300 | pCi/L | REC: | 83 | (80%-120%) | | 07/01/1711:50 |
| | Uncert: | | | +/-320 | | | | | | |
| | TPU: | | | +/-463 | | | | | | |
| **Selenium Carrier | 20.0 | | | 19.9 | mg | REC: | 100 | (40%-110%) | | |
| QC1203821238 REF | | | | | | | | | | |
| Selenium-79 | | | | 19600 | pCi/L | | | | | 07/03/1721:02 |
| | Uncert: | | | +/-388 | | | | | | |
| | TPU: | | | +/-560 | | | | | | |
| **Selenium Carrier | 20.0 | | | 20.0 | mg | REC: | 100 | (40%-110%) | | |

**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
- 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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- 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)

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

# QC Summary

**Workorder:** **425280**



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

| | |
|---|---|
| U | Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. |
| UX | Gamma Spectroscopy--Uncertain identification |
| W | Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency. |
| X | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier |
| Y | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier |
| Z | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier |

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