Ft. Collins, Colorado

LIMS Version: 6.843



Tuesday, July 18, 2017

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1706444
Project Name: RCRA, JUNE 2017
Project Number: W17-006

Dear Ms. Waters-Husted:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 6/20/2017. The samples were scheduled for the following analysis:

Metals

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Shiloh J. Summy
Project Manager

We certify that theis data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, an 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.

# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

**OrderNum:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**Client Project Name:** RCRA, JUNE 2017
**Client Project Number:** W17-006
**Client PO Number:** BOA 54854

| Client Sample Number | Lab Sample Number | COC Number | Matrix | Date Collected | Time Collected |
|---|---|---|---|---|---|
| B39NL8 | 1706444-1 | | WATER | 16-Jun-17 | 12:32 |
| B39NM3 | 1706444-2 | | WATER | 16-Jun-17 | 12:32 |

07/18/2017
ALS1706444

REV.0

7 LBS.

1706444

**CH2MHill Plateau Remediation Company**

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **W17-006-005**



| | | | | | |
|---|---|---|---|---|---|
| **Collector** | Malcom Chunn CHPRC | **Contact/Requester** | Karen Waters-Husted | **Telephone No.** | 509-376-4650 |
| **SAF No.** | W17-006 | **Sampling Origin** | Hanford Site | **Purchase Order/Charge Code** | 300071 |
| **Project Title** | RCRA, JUNE 2017 | **Logbook No.** | HNF-N-506 92 / 94 | **Ice Chest No.** | GWS-650 |
| **Shipped To (Lab)** | ALS Environmental Ft. Collins | **Method of Shipment** | Commercial Carrier | **Bill of Lading/Air Bill No.** | 7794 3621 6834 |
| **Protocol** | RCRA | **Priority:** | 30 Days **PRIORITY** | **Offsite Property No.** | 8064 |

**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 |
|---|---|---|---|---|---|---|---|---|
| B39NL8 ① | N | W | 6-16-17 | 1232 | 1x500-mL G/P | 7470_MERCURY_CV: COMMON (AQUEOUS); 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04 | 28 Days | HNO3 to pH <2 |
| B39NM3 ② | Y | W | 6-16-17 | 1232 | 1x500-mL G/P | 7470_MERCURY_CV: COMMON (AQUEOUS); 6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04 | 28 Days | HNO3 to pH <2 |

| Relinquished By | Print | Sign | Date/Time | Received By | Print | Sign | Date/Time |
|---|---|---|---|---|---|---|---|
| Malcom Chunn CHPRC | MRC | | JUN 16 2017 1410 | SSU-1 | | | JUN 16 2017 1410 |
| SSU-1 | | | JUN 19 2017 0930 | Troy Bacon CHPRC | Troy L. Bacon | | JUN 19 2017 0930 |
| Troy Bacon CHPRC | Troy L. Bacon | | JUN 19 2017 1400 | FEDEX | | | |
| FED EX | | | | CTrimble C Trimble | | | 6-20-17 0920 |

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 5/15/2017 FSR ID = FSR37532 A-6004-842 (REV 2)

3 of 30

**ALS Environmental - Fort Collins**
**CONDITION OF SAMPLE UPON RECEIPT FORM**

Client: CHPRC Workorder No: 1706444

Project Manager: _____ Initials: _____ Date: _____

| | | | |
|---|---|---|---|
| 1. Does this project require any special handling in addition to standard ALS procedures? | | YES | (NO) |
| 2. Are custody seals on shipping containers intact? | NONE | (YES) | NO |
| 3. Are Custody seals on sample containers intact? | NONE | (YES) | NO |
| 4. Is there a COC (Chain-of-Custody) present or other representative documents? | | (YES) | NO |
| 5. Are the COC and bottle labels complete and legible? | | (YES) | NO |
| 6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.) | | (YES) | NO |
| 7. Were airbills / shipping documents present and/or removable? | DROP OFF | (YES) | NO |
| 8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles) | N/A | (YES) | NO |
| 9. Are all aqueous non-preserved samples pH 4-9? | (N/A) | YES | NO |
| 10. Is there sufficient sample for the requested analyses? | | (YES) | NO |
| 11. Were all samples placed in the proper containers for the requested analyses? | | (YES) | NO |
| 12. Are all samples within holding times for the requested analyses? | | (YES) | NO |
| 13. Were all sample containers received intact? (not broken or leaking, etc.) | | (YES) | NO |
| 14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea | (N/A) | YES | NO |
| 15. Do any water samples contain sediment? Amount<br>Amount of sediment: ____ dusting ____ moderate ____ heavy | N/A | YES | (NO) |
| 16. Were the samples shipped on ice? | | YES | (NO) |
| 17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4 | RAD ONLY | YES | (NO) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Cooler #: | 1 | | | | | | | |
| Temperature (°C): | Amb | | | | | | | |
| No. of custody seals on cooler: | 2 | | | | | | | |
| DOT Survey/ Acceptance Information — External µR/hr reading: | 10 | | | | | | | |
| Background µR/hr reading: | 10 | | | | | | | |

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **(YES) / NO / NA** (If no, see Form 008.)

**Additional Information:** PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

**Project Manager Signature / Date:** Shiloh Lemmy 6/20/17

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

10-L 170 b744

**After printing this label**:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning**: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

# Metals

## Case Narrative

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## CH2M HILL Plateau Remediation Company

RCRA, JUNE 2017 – W17-006

Work Order Number: 1706444

1. This report consists of 2 water samples for total recoverable and dissolved metals.

2. The samples were received intact at ambient temperature by ALS on 06/20/17.

3. The samples for dissolved metals had been filtered prior to receipt. All samples had a pH less than 2 upon receipt.

4. The samples were prepared and analyzed based on SW-846, 3rd Edition procedures.

   For analysis by Trace ICP and ICP-MS, the samples were digested following method 3005A and the current revision of SOP 806.

   For analysis by Cold Vapor AA (CVAA), the samples were digested following method 7470A and the current revision of SOP 812.

5. Analysis by Trace ICP followed method 6010B and the current revision of SOP 834

   Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.

   Analysis by CVAA followed method 7470A and the current revision of SOP 812.

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.

7. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.

- A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in each digestion batch.
- The preparation (method) blank associated with each digestion batch was below the reporting limit for the requested analytes. Aluminum was detected above the MDL. Sample results have been compared to the blank results.
- All laboratory control sample criteria were met.
- All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.
- The interference check samples and high standard read-backs associated with Method 6010B were within acceptance criteria.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

   Sample 1706444-2 was designated as the quality control sample for each ICP analysis. Sample 1706444-1 was designated as the quality control sample for the mercury analysis.

   Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

   - A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were me. with the following exception:

     | Analyte | Sample ID |
     |---|---|
     | Mercury | -1MSD |

     The mercury laboratory control sample indicates that the digestion and analysis were in control.

   - A serial dilution was analyzed with each ICP batch. All acceptance criteria for precision were met with the following exception:

     | Analyte | Sample ID |
     |---|---|
     | Mercury | -1MS/MSD |

     The associated sample results are flagged for duplicate failure. Where spike duplicate precision was outside control limits only the duplicate page shows the flag.

10. It is a standard practice that samples for ICP-MS are analyzed at a dilution. The 10X factor can be considered an artifact of the prep and does not indicate a secondary dilution and is therefore not flagged as a dilution.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Emily Lyons — 7/18/17
Emily Lyons, Organics Primary Data Reviewer — Date

7/18/17
Organics Final Data Reviewer — Date

**Inorganic Data Reporting Qualifiers**

The following qualifiers are used as needed by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- A “B” is entered if the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL). If the analyte was analyzed for but not detected a “U” is entered. For samples, negative values are reported as non-detects (“U” flagged). For blanks, if the absolute value of the negative value is above the MDL and below the reporting limit, then the result is “B” flagged.

- QC qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

  M - Duplicate injection precision was not met.

  N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

  Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

  * - Duplicate analysis (relative percent difference) not within control limits.

  S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

  C - The analyte was detected in both the sample and the associated QC blank, and the sample concentration was <=20X the blank concentration.

  D - Analyte was reported at a secondary dilution factor, typically DF>1 (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.

# Total Recoverable ICP Metals

## Method SW6010B

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NL8
**Lab ID:** 1706444-1

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 07-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** As Received
**File Name:** 170707A.

**Analyst:** Steve Workman
**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Dilution Factor | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 1 | 30 | U | 30 | 30 |
| 7440-70-2 | CALCIUM | 1 | 88000 | | 1000 | 300 |
| 7439-89-6 | IRON | 1 | 300 | | 50 | 30 |
| 7439-95-4 | MAGNESIUM | 1 | 24000 | | 750 | 300 |
| 7440-09-7 | POTASSIUM | 1 | 8200 | | 1000 | 300 |
| 7440-23-5 | SODIUM | 1 | 21000 | | 500 | 300 |
| 7440-62-2 | VANADIUM | 1 | 22 | | 10 | 3 |

**Data Package ID:** *it1706444-1*

# Dissolved ICP Metals

## Method SW6010B

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NM3
**Lab ID:** 1706444-2

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 07-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** As Received
**File Name:** 170707A.

**Analyst:** Steve Workman
**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Dilution Factor | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 1 | 30 | U | 30 | 30 |
| 7440-70-2 | CALCIUM | 1 | 87000 | | 1000 | 300 |
| 7439-89-6 | IRON | 1 | 30 | U | 50 | 30 |
| 7439-95-4 | MAGNESIUM | 1 | 24000 | | 750 | 300 |
| 7440-09-7 | POTASSIUM | 1 | 8100 | | 1000 | 300 |
| 7440-23-5 | SODIUM | 1 | 20000 | | 500 | 300 |
| 7440-62-2 | VANADIUM | 1 | 21 | | 10 | 3 |

**Data Package ID:** *it1706444-1*

# Total Recoverable ICPMS Metals

## Method SW6020A

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NL8
**Lab ID:** 1706444-1

**Analysis ReqCode:** 6020_METALS_I

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 13-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** As Received
**File Name:** 161SMPL_

**Analyst:** Brent A. Stanfield
**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Dilution Factor | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 10 | 34 | BC | 100 | 14 |
| 7440-36-0 | ANTIMONY | 10 | 0.3 | U | 1 | 0.3 |
| 7440-38-2 | ARSENIC | 10 | 5.8 | | 2 | 0.6 |
| 7440-39-3 | BARIUM | 10 | 60 | | 5 | 1.8 |
| 7440-41-7 | BERYLLIUM | 10 | 0.15 | U | 0.5 | 0.15 |
| 7440-43-9 | CADMIUM | 10 | 0.6 | U | 2 | 0.6 |
| 7440-47-3 | CHROMIUM | 10 | 69 | | 10 | 3 |
| 7440-48-4 | COBALT | 10 | 1.5 | U | 5 | 1.5 |
| 7440-50-8 | COPPER | 10 | 7 | B | 8 | 6 |
| 7439-92-1 | LEAD | 10 | 0.85 | U | 2 | 0.85 |
| 7439-96-5 | MANGANESE | 10 | 7.1 | | 5 | 1.5 |
| 7439-98-7 | MOLYBDENUM | 10 | 3.2 | | 2 | 0.6 |
| 7440-02-0 | NICKEL | 10 | 34 | | 20 | 11 |
| 7782-49-2 | SELENIUM | 10 | 6 | B | 10 | 3.5 |
| 7440-22-4 | SILVER | 10 | 0.15 | U | 0.5 | 0.15 |
| 7440-24-6 | STRONTIUM | 10 | 470 | | 5 | 2 |
| 7440-28-0 | THALLIUM | 10 | 0.084 | U | 0.1 | 0.084 |
| 7440-29-1 | THORIUM | 10 | 0.06 | U | 0.2 | 0.06 |
| 7440-31-5 | TIN | 10 | 3 | U | 10 | 3 |
| 7440-61-1 | URANIUM | 10 | 2.8 | | 0.1 | 0.03 |
| 7440-66-6 | ZINC | 10 | 48 | U | 100 | 48 |

**Data Package ID:** *im1706444-1*

# Dissolved ICPMS Metals

## Method SW6020A

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NM3
**Lab ID:** 1706444-2

**Analysis ReqCode:** 6020_METALS_I

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 13-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** As Received
**File Name:** 162SMPL_

**Analyst:** Brent A. Stanfield
**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Dilution Factor | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 10 | 14 | U | 100 | 14 |
| 7440-36-0 | ANTIMONY | 10 | 0.3 | U | 1 | 0.3 |
| 7440-38-2 | ARSENIC | 10 | 5.7 | | 2 | 0.6 |
| 7440-39-3 | BARIUM | 10 | 55 | | 5 | 1.8 |
| 7440-41-7 | BERYLLIUM | 10 | 0.15 | U | 0.5 | 0.15 |
| 7440-43-9 | CADMIUM | 10 | 0.6 | U | 2 | 0.6 |
| 7440-47-3 | CHROMIUM | 10 | 3.6 | B | 10 | 3 |
| 7440-48-4 | COBALT | 10 | 1.5 | U | 5 | 1.5 |
| 7440-50-8 | COPPER | 10 | 6 | U | 8 | 6 |
| 7439-92-1 | LEAD | 10 | 0.85 | U | 2 | 0.85 |
| 7439-96-5 | MANGANESE | 10 | 1.5 | U | 5 | 1.5 |
| 7439-98-7 | MOLYBDENUM | 10 | 2.4 | | 2 | 0.6 |
| 7440-02-0 | NICKEL | 10 | 11 | U | 20 | 11 |
| 7782-49-2 | SELENIUM | 10 | 6.3 | B | 10 | 3.5 |
| 7440-22-4 | SILVER | 10 | 0.15 | U | 0.5 | 0.15 |
| 7440-24-6 | STRONTIUM | 10 | 460 | | 5 | 2 |
| 7440-28-0 | THALLIUM | 10 | 0.084 | U | 0.1 | 0.084 |
| 7440-29-1 | THORIUM | 10 | 0.06 | U | 0.2 | 0.06 |
| 7440-31-5 | TIN | 10 | 3 | U | 10 | 3 |
| 7440-61-1 | URANIUM | 10 | 2.8 | | 0.1 | 0.03 |
| 7440-66-6 | ZINC | 10 | 48 | U | 100 | 48 |

**Data Package ID:** *im1706444-1*

# Dissolved MERCURY

## Method SW7470A

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Client Name:** CH2M HILL Plateau Remediation Company
**Client Project ID:** RCRA, JUNE 2017 W17-006
**Work Order Number:** 1706444 **Final Volume:** 10 ml
**Reporting Basis:** As Received **Matrix:** WATER
**Analyst:** Christina H. Williams **Result Units:** UG/L

| Client Sample ID | Lab ID | Date Collected | Date Prepared | Date Analyzed | Percent Moisture | Dilution Factor | Result | RptLimit/ LOQ/LOD | MDL/DL | Flag | Sample Aliquot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B39NM3 | 1706444-2 | 6/16/2017 | 6/27/2017 | 06/28/2017 | N/A | 1 | 0.06 | 0.2 | 0.06 | U | 10 ml |

**Comments:**

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *hg1706444-1*

# Total MERCURY

## Method SW7470A

## Sample Results

**Lab Name:** ALS -- Fort Collins
**Client Name:** CH2M HILL Plateau Remediation Company
**Client Project ID:** RCRA, JUNE 2017 W17-006
**Work Order Number:** 1706444
**Reporting Basis:** As Received
**Analyst:** Christina H. Williams
**Final Volume:** 10 ml
**Matrix:** WATER
**Result Units:** UG/L

| Client Sample ID | Lab ID | Date Collected | Date Prepared | Date Analyzed | Percent Moisture | Dilution Factor | Result | RptLimit/ LOQ/LOD | MDL/DL | Flag | Sample Aliquot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B39NL8 | 1706444-1 | 6/16/2017 | 6/27/2017 | 06/28/2017 | N/A | 1 | 0.06 | 0.2 | 0.06 | UN | 10 ml |

**Comments:**

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *hg1706444-1*

# ICP Metals

## Method SW6010B

## Method Blank

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** IP170706-2MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 07-Jul-17

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** N/A
**File Name:** 170707A.

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | DF | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 1 | 30 | U | 30 | 30 |
| 7440-70-2 | CALCIUM | 1 | 300 | U | 1000 | 300 |
| 7439-89-6 | IRON | 1 | 30 | U | 50 | 30 |
| 7439-95-4 | MAGNESIUM | 1 | 300 | U | 750 | 300 |
| 7440-09-7 | POTASSIUM | 1 | 300 | U | 1000 | 300 |
| 7440-23-5 | SODIUM | 1 | 300 | U | 500 | 300 |
| 7440-62-2 | VANADIUM | 1 | 3 | U | 10 | 3 |

**Data Package ID:** *it1706444-1*

# ICP Metals

## Method SW6010B

## Laboratory Control Sample

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** IP170706-2LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 07/06/2017
**Date Analyzed:** 07/07/2017
**Prep Method:** SW3005A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** N/A
**File Name:** 170707A.

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 100 | 116 | 30 | | 116 | 80 - 120% |
| 7440-70-2 | CALCIUM | 40000 | 39400 | 1000 | | 98 | 80 - 120% |
| 7439-89-6 | IRON | 1000 | 972 | 50 | | 97 | 80 - 120% |
| 7439-95-4 | MAGNESIUM | 40000 | 40400 | 750 | | 101 | 80 - 120% |
| 7440-09-7 | POTASSIUM | 40000 | 39700 | 1000 | | 99 | 80 - 120% |
| 7440-23-5 | SODIUM | 40000 | 39800 | 500 | | 100 | 80 - 120% |
| 7440-62-2 | VANADIUM | 500 | 515 | 10 | | 103 | 80 - 120% |

**Data Package ID:** *it1706444-1*

# ICP Metals

## Method SW6010B

## Matrix Spike And Matrix Spike Duplicate

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NM3
**LabID:** 1706444-2MS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 07-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**File Name:** 170707A.

| CASNO | Target Analyte | Sample Result | Samp Qual | MS Result | MS Qual | Reporting Limit | Spike Added | MS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 30 | U | 105 | | 30 | 100 | 105 | 80 - 120% |
| 7440-70-2 | CALCIUM | 87000 | | 125000 | | 1000 | 40000 | 94 | 80 - 120% |
| 7439-89-6 | IRON | 30 | U | 928 | | 50 | 1000 | 93 | 80 - 120% |
| 7439-95-4 | MAGNESIUM | 24000 | | 63100 | | 750 | 40000 | 97 | 80 - 120% |
| 7440-09-7 | POTASSIUM | 8100 | | 48500 | | 1000 | 40000 | 101 | 80 - 120% |
| 7440-23-5 | SODIUM | 20000 | | 60900 | | 500 | 40000 | 102 | 80 - 120% |
| 7440-62-2 | VANADIUM | 21 | | 512 | | 10 | 500 | 98 | 80 - 120% |

**Field ID:** B39NM3
**LabID:** 1706444-2MSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 07-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-8
**Run ID:** IT170707-1A5
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**File Name:** 170707A.

| CASNO | Target Analyte | MSD Result | MSD Qual | Spike Added | MSD % Rec. | Reporting Limit | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 7440-42-8 | BORON | 105 | | 100 | 105 | 30 | 20 | |
| 7440-70-2 | CALCIUM | 125000 | | 40000 | 95 | 1000 | 20 | 0 |
| 7439-89-6 | IRON | 931 | | 1000 | 93 | 50 | 20 | 0 |
| 7439-95-4 | MAGNESIUM | 63400 | | 40000 | 98 | 750 | 20 | 0 |
| 7440-09-7 | POTASSIUM | 48500 | | 40000 | 101 | 1000 | 20 | 0 |
| 7440-23-5 | SODIUM | 60700 | | 40000 | 101 | 500 | 20 | 0 |
| 7440-62-2 | VANADIUM | 515 | | 500 | 99 | 10 | 20 | 0 |

**Data Package ID:** *it1706444-1*

# Prep Batch ID: IP170706-2

**Start Date:** 07/06/17
**Start Time:** 11:01
**Prep Analyst:** Jill M. Latelle

**End Date:** 07/06/17
**End Time:** 18:00

**Concentration Method:** NONE
**Extract Method:** SW3005A
**Initial Volume Units:** ml
**Final Volume Units:** ml

**Batch Created By:** jml
**Date Created:** 07/06/17
**Time Created:** 11:02
**Validated By:** jml
**Date Validated:** 07/06/17
**Time Validated:** 13:01

**Comments:**

**QC Batch ID:** IP170706-2-8

| Lab ID | QC Type | Field ID | Matrix | Date Collected | Initial Wt/Vol | Final Wt/Vol | Cleanup Method | Cleanup DF | Order Number |
|---|---|---|---|---|---|---|---|---|---|
| IP170706-2 | MB | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706444 |
| IP170706-2 | LCS | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | MS | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | MSD | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | DUP | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706411-1 | SMP | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706411 |
| 1706411-2 | SMP | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706411 |
| 1706444-1 | SMP | B39NL8 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | SMP | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |

**QC Types**

| | | | | |
|---|---|---|---|---|
| CAR | Carrier reference sample | | DUP | Laboratory Duplicate |
| LCS | Laboratory Control Sample | | LCSD | Laboratory Control Sample Duplicat |
| MB | Method Blank | | MS | Laboratory Matrix Spike |
| MSD | Laboratory Matrix Spike Duplicate | | REP | Sample replicate |
| RVS | Reporting Level Verification Standar | | SMP | Field Sample |
| SYS | Sample Yield Spike | | | |

# ICPMS Metals

## Method SW6020A

## Method Blank

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** IP170706-2MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 13-Jul-17

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** N/A
**File Name:** 156SMPL_

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | DF | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 10 | 16 | B | 100 | 14 |
| 7440-36-0 | ANTIMONY | 10 | 0.3 | U | 1 | 0.3 |
| 7440-38-2 | ARSENIC | 10 | 0.6 | U | 2 | 0.6 |
| 7440-39-3 | BARIUM | 10 | 1.8 | U | 5 | 1.8 |
| 7440-43-9 | CADMIUM | 10 | 0.6 | U | 2 | 0.6 |
| 7440-47-3 | CHROMIUM | 10 | 3 | U | 10 | 3 |
| 7440-48-4 | COBALT | 10 | 1.5 | U | 5 | 1.5 |
| 7440-50-8 | COPPER | 10 | 6 | U | 8 | 6 |
| 7439-92-1 | LEAD | 10 | 0.85 | U | 2 | 0.85 |
| 7439-96-5 | MANGANESE | 10 | 1.5 | U | 5 | 1.5 |
| 7439-98-7 | MOLYBDENUM | 10 | 0.6 | U | 2 | 0.6 |
| 7440-02-0 | NICKEL | 10 | 11 | U | 20 | 11 |
| 7782-49-2 | SELENIUM | 10 | 3.5 | U | 10 | 3.5 |
| 7440-22-4 | SILVER | 10 | 0.15 | U | 0.5 | 0.15 |
| 7440-24-6 | STRONTIUM | 10 | 2 | U | 5 | 2 |
| 7440-28-0 | THALLIUM | 10 | 0.084 | U | 0.1 | 0.084 |
| 7440-29-1 | THORIUM | 10 | 0.06 | U | 0.2 | 0.06 |
| 7440-31-5 | TIN | 10 | 3 | U | 10 | 3 |
| 7440-61-1 | URANIUM | 10 | 0.03 | U | 0.1 | 0.03 |
| 7440-66-6 | ZINC | 10 | 48 | U | 100 | 48 |

**Data Package ID:** *im1706444-1*

# ICPMS Metals

## Method SW6020A

## Method Blank

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** IP170706-2MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 14-Jul-17

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170714-10A6
**Cleanup:** NONE
**Basis:** N/A
**File Name:** 056SMPL_

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | DF | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7440-41-7 | BERYLLIUM | 10 | 0.15 | U | 0.5 | 0.15 |

**Data Package ID:** *im1706444-1*

# ICPMS Metals

## Method SW6020A

## Laboratory Control Sample

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** IM170706-2LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 07/06/2017
**Date Analyzed:** 07/13/2017
**Prep Method:** SW3005A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** N/A
**File Name:** 157SMPL_

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 5000 | 4540 | 100 | | 91 | 80 - 120% |
| 7440-36-0 | ANTIMONY | 30 | 28.2 | 1 | | 94 | 80 - 120% |
| 7440-38-2 | ARSENIC | 100 | 94.9 | 2 | | 95 | 80 - 120% |
| 7440-39-3 | BARIUM | 100 | 97 | 5 | | 97 | 80 - 120% |
| 7440-41-7 | BERYLLIUM | 50 | 51.3 | 0.5 | | 103 | 80 - 120% |
| 7440-43-9 | CADMIUM | 30 | 30.4 | 2 | | 101 | 80 - 120% |
| 7440-47-3 | CHROMIUM | 500 | 464 | 10 | | 93 | 80 - 120% |
| 7440-48-4 | COBALT | 100 | 98 | 5 | | 98 | 80 - 120% |
| 7440-50-8 | COPPER | 1000 | 975 | 8 | | 97 | 80 - 120% |
| 7439-92-1 | LEAD | 50 | 49.4 | 2 | | 99 | 80 - 120% |
| 7439-96-5 | MANGANESE | 100 | 94.7 | 5 | | 95 | 80 - 120% |
| 7439-98-7 | MOLYBDENUM | 100 | 92.5 | 2 | | 92 | 80 - 120% |
| 7440-02-0 | NICKEL | 500 | 473 | 20 | | 95 | 80 - 120% |
| 7782-49-2 | SELENIUM | 100 | 97.6 | 10 | | 98 | 80 - 120% |
| 7440-22-4 | SILVER | 10 | 10.2 | 0.5 | | 102 | 80 - 120% |
| 7440-24-6 | STRONTIUM | 100 | 93.7 | 5 | | 94 | 80 - 120% |
| 7440-28-0 | THALLIUM | 2 | 1.92 | 0.1 | | 96 | 80 - 120% |
| 7440-29-1 | THORIUM | 10 | 9.21 | 0.2 | | 92 | 80 - 120% |
| 7440-31-5 | TIN | 500 | 453 | 10 | | 91 | 80 - 120% |
| 7440-61-1 | URANIUM | 10 | 9.63 | 0.1 | | 96 | 80 - 120% |
| 7440-66-6 | ZINC | 2000 | 1940 | 100 | | 97 | 80 - 120% |

**Data Package ID:** *im1706444-1*

# ICPMS Metals

## Method SW6020A

## Matrix Spike And Matrix Spike Duplicate

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NM3
**LabID:** 1706444-2MS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 13-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**File Name:** 167SMPL_

| CASNO | Target Analyte | Sample Result | Samp Qual | MS Result | MS Qual | Reporting Limit | Spike Added | MS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 14 | U | 4500 | | 100 | 5000 | 90 | 75 - 125% |
| 7440-36-0 | ANTIMONY | 0.3 | U | 28.8 | | 1 | 30 | 96 | 75 - 125% |
| 7440-38-2 | ARSENIC | 5.7 | | 99.8 | | 2 | 100 | 94 | 75 - 125% |
| 7440-39-3 | BARIUM | 55 | | 160 | | 5 | 100 | 104 | 75 - 125% |
| 7440-41-7 | BERYLLIUM | 0.15 | U | 51.7 | | 0.5 | 50 | 103 | 75 - 125% |
| 7440-43-9 | CADMIUM | 0.6 | U | 29.4 | | 2 | 30 | 98 | 75 - 125% |
| 7440-47-3 | CHROMIUM | 3.6 | B | 482 | | 10 | 500 | 96 | 75 - 125% |
| 7440-48-4 | COBALT | 1.5 | U | 96.8 | | 5 | 100 | 97 | 75 - 125% |
| 7440-50-8 | COPPER | 6 | U | 987 | | 8 | 1000 | 99 | 75 - 125% |
| 7439-92-1 | LEAD | 0.85 | U | 48.3 | | 2 | 50 | 97 | 75 - 125% |
| 7439-96-5 | MANGANESE | 1.5 | U | 96.7 | | 5 | 100 | 97 | 75 - 125% |
| 7439-98-7 | MOLYBDENUM | 2.4 | | 99.3 | | 2 | 100 | 97 | 75 - 125% |
| 7440-02-0 | NICKEL | 11 | U | 483 | | 20 | 500 | 97 | 75 - 125% |
| 7782-49-2 | SELENIUM | 6.3 | B | 102 | | 10 | 100 | 95 | 75 - 125% |
| 7440-22-4 | SILVER | 0.15 | U | 10.2 | | 0.5 | 10 | 102 | 75 - 125% |
| 7440-24-6 | STRONTIUM | 460 | | 556 | | 5 | 100 | 99 | 75 - 125% |
| 7440-28-0 | THALLIUM | 0.084 | U | 1.94 | | 0.1 | 2 | 97 | 75 - 125% |
| 7440-29-1 | THORIUM | 0.06 | U | 9.26 | | 0.2 | 10 | 93 | 75 - 125% |
| 7440-31-5 | TIN | 3 | U | 460 | | 10 | 500 | 92 | 75 - 125% |
| 7440-61-1 | URANIUM | 2.8 | | 12.6 | | 0.1 | 10 | 98 | 75 - 125% |
| 7440-66-6 | ZINC | 48 | U | 1990 | | 100 | 2000 | 99 | 75 - 125% |

**Data Package ID:** *im1706444-1*

# ICPMS Metals

## Method SW6020A

## Matrix Spike And Matrix Spike Duplicate

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NM3
**LabID:** 1706444-2MSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 06-Jul-17
**Date Analyzed:** 13-Jul-17
**Prep Method:** SW3005 Rev A

**Prep Batch:** IP170706-2
**QCBatchID:** IP170706-2-3
**Run ID:** IM170712-10A2
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 50 ml
**Final Volume:** 50 ml
**Result Units:** UG/L
**File Name:** 168SMPL_

| CASNO | Target Analyte | MSD Result | MSD Qual | Spike Added | MSD % Rec. | Reporting Limit | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 7429-90-5 | ALUMINUM | 4460 | | 5000 | 89 | 100 | 20 | 1 |
| 7440-36-0 | ANTIMONY | 28.2 | | 30 | 94 | 1 | 20 | 2 |
| 7440-38-2 | ARSENIC | 98.4 | | 100 | 93 | 2 | 20 | 1 |
| 7440-39-3 | BARIUM | 150 | | 100 | 94 | 5 | 20 | 6 |
| 7440-41-7 | BERYLLIUM | 50.2 | | 50 | 100 | 0.5 | 20 | 3 |
| 7440-43-9 | CADMIUM | 29.6 | | 30 | 99 | 2 | 20 | 1 |
| 7440-47-3 | CHROMIUM | 463 | | 500 | 92 | 10 | 20 | 4 |
| 7440-48-4 | COBALT | 95.4 | | 100 | 95 | 5 | 20 | 2 |
| 7440-50-8 | COPPER | 966 | | 1000 | 97 | 8 | 20 | 2 |
| 7439-92-1 | LEAD | 47.3 | | 50 | 95 | 2 | 20 | 2 |
| 7439-96-5 | MANGANESE | 94.6 | | 100 | 95 | 5 | 20 | 2 |
| 7439-98-7 | MOLYBDENUM | 95.1 | | 100 | 93 | 2 | 20 | 4 |
| 7440-02-0 | NICKEL | 468 | | 500 | 94 | 20 | 20 | 3 |
| 7782-49-2 | SELENIUM | 102 | | 100 | 96 | 10 | 20 | 0 |
| 7440-22-4 | SILVER | 9.7 | | 10 | 97 | 0.5 | 20 | 5 |
| 7440-24-6 | STRONTIUM | 542 | | 100 | 85 | 5 | 20 | 3 |
| 7440-28-0 | THALLIUM | 1.88 | | 2 | 94 | 0.1 | 20 | 3 |
| 7440-29-1 | THORIUM | 9.1 | | 10 | 91 | 0.2 | 20 | 2 |
| 7440-31-5 | TIN | 457 | | 500 | 91 | 10 | 20 | 1 |
| 7440-61-1 | URANIUM | 12.5 | | 10 | 97 | 0.1 | 20 | 1 |
| 7440-66-6 | ZINC | 1920 | | 2000 | 96 | 100 | 20 | 3 |

**Data Package ID:** *im1706444-1*

# Prep Batch ID: IP170706-2

**Start Date:** 07/06/17
**Start Time:** 11:01
**Prep Analyst:** Jill M. Latelle

**End Date:** 07/06/17
**End Time:** 18:00

**Concentration Method:** NONE
**Extract Method:** SW3005A
**Initial Volume Units:** ml
**Final Volume Units:** ml

**Batch Created By:** jml
**Date Created:** 07/06/17
**Time Created:** 11:02
**Validated By:** jml
**Date Validated:** 07/06/17
**Time Validated:** 13:01

**Comments:**

**QC Batch ID:** IP170706-2-3

| Lab ID | QC Type | Field ID | Matrix | Date Collected | Initial Wt/Vol | Final Wt/Vol | Cleanup Method | Cleanup DF | Order Number |
|---|---|---|---|---|---|---|---|---|---|
| IP170706-2 | MB | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706444 |
| IM170706-2 | LCS | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | MS | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | MSD | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | DUP | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706411-1 | SMP | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706411 |
| 1706411-2 | SMP | XXXXXX | WATER | XXXXXX | 50 | 50 | NONE | 1 | 1706411 |
| 1706444-1 | SMP | B39NL8 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |
| 1706444-2 | SMP | B39NM3 | WATER | 6/16/2017 | 50 | 50 | NONE | 1 | 1706444 |

**QC Types**

| | | | | |
|---|---|---|---|---|
| CAR | Carrier reference sample | | DUP | Laboratory Duplicate |
| LCS | Laboratory Control Sample | | LCSD | Laboratory Control Sample Duplicat |
| MB | Method Blank | | MS | Laboratory Matrix Spike |
| MSD | Laboratory Matrix Spike Duplicate | | REP | Sample replicate |
| RVS | Reporting Level Verification Standar | | SMP | Field Sample |
| SYS | Sample Yield Spike | | | |

# Mercury

## Method SW7470A

## Method Blank

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** HG170627-1MB

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 27-Jun-17
**Date Analyzed:** 28-Jun-17

**Prep Batch:** HG170627-1
**QCBatchID:** HG170627-1-1
**Run ID:** HG170628-2A2
**Cleanup:** NONE
**Basis:** N/A
**File Name:** HG170628-2

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | DF | Result | Result Qualifier | Reporting Limit | MDL |
|---|---|---|---|---|---|---|
| 7439-97-6 | MERCURY | 1 | 0.06 | U | 0.2 | 0.06 |

**Data Package ID:** *HG1706444-1*

# Mercury

## Method SW7470A

## Laboratory Control Sample

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Lab ID:** HG170627-1LCS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** N/A
**Date Extracted:** 06/27/2017
**Date Analyzed:** 06/28/2017
**Prep Method:** METHOD

**Prep Batch:** HG170627-1
**QCBatchID:** HG170627-1-1
**Run ID:** HG170628-2A2
**Cleanup:** NONE
**Basis:** N/A
**File Name:** HG170628-2

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**Clean DF:** 1

| CASNO | Target Analyte | Spike Added | LCS Result | Reporting Limit | Result Qualifier | LCS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|
| 7439-97-6 | MERCURY | 1 | 1.05 | 0.2 | | 105 | 80 - 120% |

**Data Package ID:** *HG1706444-1*

# Mercury

## Method SW7470A

## Matrix Spike And Matrix Spike Duplicate

**Lab Name:** ALS -- Fort Collins
**Work Order Number:** 1706444
**Client Name:** CH2M HILL Plateau Remediation Company
**ClientProject ID:** RCRA, JUNE 2017 W17-006

**Field ID:** B39NL8
**LabID:** 1706444-1MS

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 27-Jun-17
**Date Analyzed:** 28-Jun-17
**Prep Method:** METHOD

**Prep Batch:** HG170627-1
**QCBatchID:** HG170627-1-1
**Run ID:** HG170628-2A2
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**File Name:** HG170628-2

| CASNO | Target Analyte | Sample Result | Samp Qual | MS Result | MS Qual | Reporting Limit | Spike Added | MS % Rec. | Control Limits |
|---|---|---|---|---|---|---|---|---|---|
| 7439-97-6 | MERCURY | 0.06 | U | 2.02 | | 0.2 | 2 | 101 | 80 - 120% |

**Field ID:** B39NL8
**LabID:** 1706444-1MSD

**Sample Matrix:** WATER
**% Moisture:** N/A
**Date Collected:** 16-Jun-17
**Date Extracted:** 27-Jun-17
**Date Analyzed:** 28-Jun-17
**Prep Method:** METHOD

**Prep Batch:** HG170627-1
**QCBatchID:** HG170627-1-1
**Run ID:** HG170628-2A2
**Cleanup:** NONE
**Basis:** As Received

**Sample Aliquot:** 10 ml
**Final Volume:** 10 ml
**Result Units:** UG/L
**File Name:** HG170628-2

| CASNO | Target Analyte | MSD Result | MSD Qual | Spike Added | MSD % Rec. | Reporting Limit | RPD Limit | RPD |
|---|---|---|---|---|---|---|---|---|
| 7439-97-6 | MERCURY | 0.886 | N | 2 | 44 | 0.2 | 20 | 78 |

**Data Package ID:** *HG1706444-1*

# Prep Batch ID: HG170627-1

**Start Date:** 06/27/17
**Start Time:** 14:01
**Prep Analyst:** Christina H. William

**End Date:** 06/27/17
**End Time:** 18:00

**Concentration Method:** NONE
**Extract Method:** METHOD
**Initial Volume Units:** ml
**Final Volume Units:** ml

**Batch Created By:** chw
**Date Created:** 06/27/17
**Time Created:** 14:01
**Validated By:** chw
**Date Validated:** 06/27/17
**Time Validated:** 14:55

**Comments:**

**QC Batch ID:** HG170627-1-1

| Lab ID | QC Type | Field ID | Matrix | Date Collected | Initial Wt/Vol | Final Wt/Vol | Cleanup Method | Cleanup DF | Order Number |
|---|---|---|---|---|---|---|---|---|---|
| EX170626-4 | MB | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| EX170626-5 | MB | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| HG170627-1 | MB | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706444 |
| HG170627-1 | LCS | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706444 |
| 1706210-4 | MS | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| 1706444-1 | MS | B39NL8 | WATER | 6/16/2017 | 10 | 10 | NONE | 1 | 1706444 |
| 1706510-1 | MS | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706510 |
| 1706511-1 | MS | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706511 |
| 1706210-4 | MSD | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| 1706444-1 | MSD | B39NL8 | WATER | 6/16/2017 | 10 | 10 | NONE | 1 | 1706444 |
| 1706510-1 | MSD | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706510 |
| 1706511-1 | MSD | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706511 |
| 1706210-4 | DUP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| 1706444-1 | DUP | B39NL8 | WATER | 6/16/2017 | 10 | 10 | NONE | 1 | 1706444 |
| 1706510-1 | DUP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706510 |
| 1706511-1 | DUP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706511 |
| 1706210-4 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706210 |
| 1706316-2 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706316 |
| 1706351-4 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706351 |
| 1706434-4 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706434 |
| 1706444-1 | SMP | B39NL8 | WATER | 6/16/2017 | 10 | 10 | NONE | 1 | 1706444 |
| 1706444-2 | SMP | B39NM3 | WATER | 6/16/2017 | 10 | 10 | NONE | 1 | 1706444 |
| 1706459-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706459 |
| 1706460-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706460 |
| 1706461-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706461 |
| 1706463-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706463 |
| 1706495-4 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706495 |
| 1706500-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706500 |
| 1706501-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706501 |
| 1706502-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706502 |

# Prep Batch ID: HG170627-1

**Start Date:** 06/27/17
**Start Time:** 14:01
**Prep Analyst:** Christina H. William

**End Date:** 06/27/17
**End Time:** 18:00

**Concentration Method:** NONE
**Extract Method:** METHOD
**Initial Volume Units:** ml
**Final Volume Units:** ml

**Batch Created By:** chw
**Date Created:** 06/27/17
**Time Created:** 14:01
**Validated By:** chw
**Date Validated:** 06/27/17
**Time Validated:** 14:55

**Comments:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1706510-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706510 |
| 1706511-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706511 |
| 1706511-2 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706511 |
| 1706515-2 | SMP | XXXXXX | LEACHA | XXXXXX | 10 | 10 | NONE | 1 | 1706515 |
| 1706532-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706532 |
| 1706533-1 | SMP | XXXXXX | WATER | XXXXXX | 10 | 10 | NONE | 1 | 1706533 |

**QC Types**

| | | | |
|---|---|---|---|
| CAR | Carrier reference sample | DUP | Laboratory Duplicate |
| LCS | Laboratory Control Sample | LCSD | Laboratory Control Sample Duplicat |
| MB | Method Blank | MS | Laboratory Matrix Spike |
| MSD | Laboratory Matrix Spike Duplicate | REP | Sample replicate |
| RVS | Reporting Level Verification Standar | SMP | Field Sample |
| SYS | Sample Yield Spike | | |