Friday, August 30, 2019

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

Re: ALS Workorder: 1908302
Project Name: AEA, August 2019
Project Number: I19-025

Dear Ms. Waters-Husted:

One water sample was received from CH2M HILL Plateau Remediation Company, on 8/13/2019. The sample was 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
Katie M. OBrien
Project Manager

We certify that this data 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.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1908302
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: AEA, August 2019
Client Project Number: I19-025
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3PVB5	1908302-1		WATER	08-Aug-19	12:25

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1908302	C.O.C. # I19-025-028 Page 1 of 1

Collector: Juan Aguilar ACHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-025	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, August 2019	**Logbook No.:** HNF-N-506 -107194	**Ice Chest No.:** GWS-689
Shipped To (Lab): ALS Environmental Ft. Collins	**Method of Shipment** Commercial Carrier	**Bill of Lading/Air Bill No.:** 7759 5896 9954
Protocol: SURV	**Priority:** 30 Days	**Offsite Property No.:** 11435

POSSIBLE SAMPLE HAZARDS/REMARK
** ** 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
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3PVB5 (1)	N	W	8-8-19	1225	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2

Relinquished By: Juan Aguilar ACHPRC	—	AUG 0 8 2019 1300	Received By: SSU-1	AUG 0 8 2019 1300
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By: SSU-1		AUG 1 2 2019 0745	Received By: Troy Bacon ACHPRC	Troy L. Bacon	AUG 1 2 2019 0745
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By: Troy Bacon ACHPRC	Troy L. Bacon	AUG 1 2 2019 1400 0745	Received By: FEDEX		
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time
Relinquished By: FEDEX			Received By: EMILY LYONS	Emily Lyons	08.13.19 0950
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time

Matrix *
S = Soil, DS = Drum Solids
SE = Sediment, DL = Drum Liquid
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:

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1908302

Project Manager: KMO Initials: EW Date: 08·13·19

1.	Are airbills / shipping documents present and/or removable?	DROP OFF	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?		YES	NO *
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		YES	NO *
6.	Are short-hold samples present?		YES	NO
7.	Are all samples within holding times for the requested analyses?		YES	NO *
8.	Were all sample containers received intact? (not broken or leaking)		YES	NO *
9.	Is there sufficient sample for the requested analyses?		YES	NO *
10.	Are all samples in the proper containers for the requested analyses?		YES	NO *
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO *
12.	Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO *
13.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	NO
14.	Were the samples shipped on ice?		YES	NO
15.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #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:	12							
Background µR/hr reading:	13							

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

*** Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

All client bottle ID's vs ALS lab ID's double-checked by: EW

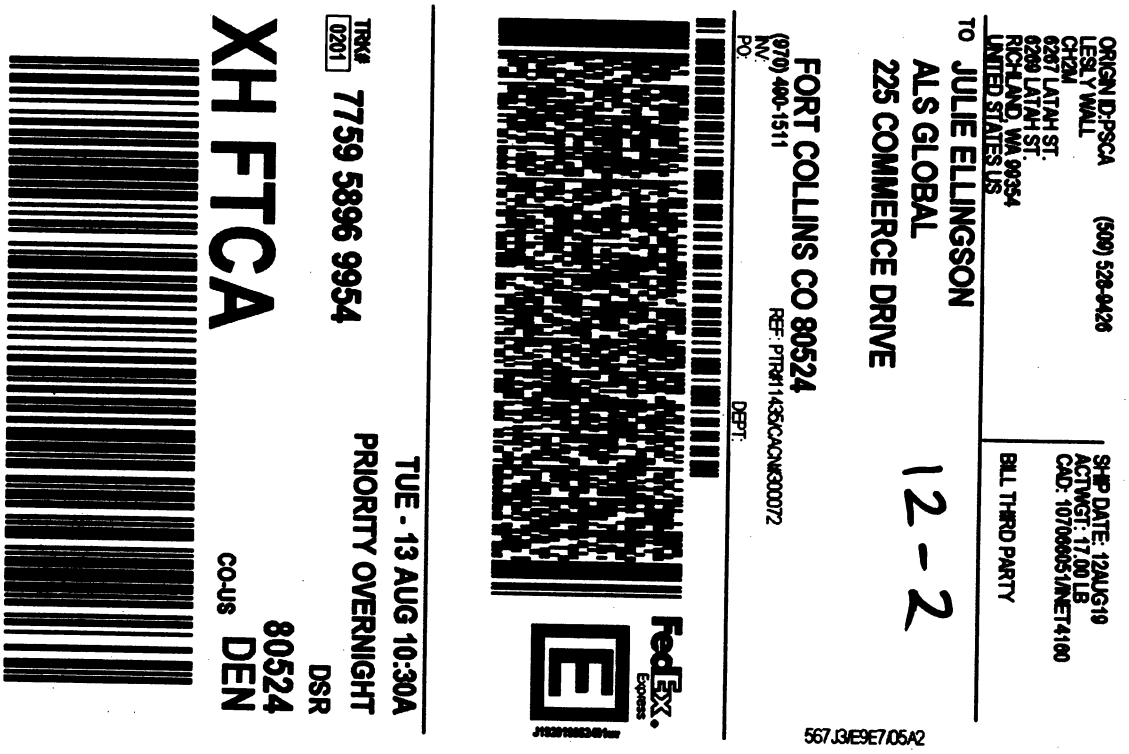
If applicable, was the client contacted? **YES / NO / NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: 8/13/19 8/13/19

Form 201r27.xls
(02/11/2019)

*IR Gun #1, VWR SN 170560549 8/13/19
*IR Gun #3, VWR SN 170647571
*IR Gun #4, Oakton, SN 2372220101-0002

1908302



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

CH2M HILL Plateau Remediation Company

AEA, August 2019 -- I19-025

Work Order Number: 1908302

1. The sample was prepared and analyzed based on SW-846, 3rd Edition procedures.

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

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

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

4. The sample was prepared and analyzed within the established hold time.

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

5. General quality control procedures.

   - A preparation (method) blank and laboratory control sample were digested and analyzed with the samples in this digestion batch.
   - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analyte. Sample results have been compared to the blank results and are flagged as appropriate.
   - All laboratory control sample criteria were met.
   - All initial and continuing calibration blanks were below the reporting limit for the requested analyte.
   - All initial and continuing calibration verifications were within the acceptance criteria for the requested analyte.

- The interference check samples associated with Method 6020B were analyzed.

6. Matrix specific quality control procedures.

   Sample 1908191-5 was designated as the quality control sample for this analysis. Results for the shared quality control samples are included at the client's request.

   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 this batch. All acceptance criteria for accuracy and precision were met.
   - A serial dilution was analyzed with this ICP batch. All acceptance criteria were met.

7. 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.

Megan Johnstone — 8/28/19
Megan Johnstone
Inorganics Primary Data Reviewer
Date

Inorganics Final Data Reviewer — 8/30/19
Inorganics 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 URANIUM

Method SW6020B

Sample Results

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: AEA, August 2019 I19-025
Work Order Number: 1908302 **Final Volume:** 50 ml
Reporting Basis: As Received **Matrix:** WATER
Analyst: Nicole C. Chirban **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
B3PVB5	1908302-1	8/8/2019	8/24/2019	08/26/2019	N/A	10	12	0.1	0.0049		50 ml

Comments:

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

Data Package ID: *IM1908302-1*

ICPMS Metals

Method SW6020B

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1908302
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: AEA, August 2019 I19-025

Lab ID: IP190824-4MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 24-Aug-19
Date Analyzed: 26-Aug-19

Prep Batch: IP190824-4
QCBatchID: IP190824-4-5
Run ID: IM190826-10A5
Cleanup: NONE
Basis: N/A
File Name: 052SMPL_

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
7440-61-1	URANIUM	10	0.0049	U	0.1	0.0049

Data Package ID: *IM1908302-1*

ICPMS Metals

Method SW6020B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
Work Order Number: 1908302
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: AEA, August 2019 I19-025

Lab ID: IM190824-4LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/24/2019
Date Analyzed: 08/26/2019
Prep Method: SW3005A

Prep Batch: IP190824-4
QCBatchID: IP190824-4-5
Run ID: IM190826-10A5
Cleanup: NONE
Basis: N/A
File Name: 053SMPL_

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
7440-61-1	URANIUM	10	9.24	0.1		92	80 - 120%

Data Package ID: *IM1908302-1*

ICPMS Metals

Method SW6020B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1908302
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: AEA, August 2019 I19-025

Field ID: SHARED QC
LabID: 1908191-5MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Aug-19
Date Extracted: 24-Aug-19
Date Analyzed: 26-Aug-19
Prep Method: SW3005 Rev A

Prep Batch: IP190824-4
QCBatchID: IP190824-4-5
Run ID: IM190826-10A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 060SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-61-1	URANIUM	6.6		16.1		0.1	10	96	75 - 125%

Field ID: SHARED QC
LabID: 1908191-5MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 06-Aug-19
Date Extracted: 24-Aug-19
Date Analyzed: 26-Aug-19
Prep Method: SW3005 Rev A

Prep Batch: IP190824-4
QCBatchID: IP190824-4-5
Run ID: IM190826-10A5
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 061SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-61-1	URANIUM	16.1		10	95	0.1	20	0

Data Package ID: *IM1908302-1*

Prep Batch ID: IP190824-4

Start Date: 08/24/19
Start Time: 10:12
Prep Analyst: Jill M. Latelle

End Date: 08/24/19
End Time: 18:00

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

Batch Created By: jml
Date Created: 08/24/19
Time Created: 10:12
Validated By: jml
Date Validated: 08/24/19
Time Validated: 11:07

Comments:

QC Batch ID: IP190824-4-5

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP190824-4	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
IM190824-4	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	MS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-3	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-4	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908191-5	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908191
1908302-1	SMP	B3PVB5	WATER	8/8/2019	50	50	NONE	1	1908302
1908303-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908303
1908331-3	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908331
1908331-5	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908331
1908377-1	SMP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1908377

QC Types

CAR	Carrier reference sample		DLS	Detection Limit Standard
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification		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