



Tuesday, July 18, 2017

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

Re: ALS Workorder: 1706410  
Project Name: SURV, JUNE 2017  
Project Number: S17-006

Dear Ms. Waters-Husted:

One water sample was received from CH2M HILL Plateau Remediation Company, on 6/17/2017. 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  
Shiloh J. Summy  
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, 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

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**OrderNum:** 1706410

**Client Name:** CH2M HILL Plateau Remediation Company

**Client Project Name:** SURV, JUNE 2017

**Client Project Number:** S17-006

**Client PO Number:** BOA 54854

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B39T22	1706410-1		WATER	16-Jun-17	8:50

Collector: **DAVE WIGHT** / 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 / 54  
 Ice Chest No. 6-WS-5-63  
 Method of Shipment: Commercial Carrier  
 Bill of Lading/Air Bill No. 77942508 3521  
 Protocol: SURV  
 Priority: 30 Days  
 Offsite Property No. 8059

**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 438.1  
**SPECIAL INSTRUCTIONS**  
 Low Volume Wells. Do not use for QC.  
 Hold Time: \_\_\_\_\_  
 Total Activity Exemption: Yes  No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39T22	N	W	JUN 15 2017	0850	1x125-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
DAVE WIGHT CHPRC			JUN 16 2017 1205	Kevin Patterson CHPRC			JUN 16 2017 1205	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Kevin Patterson CHPRC			JUN 16 2017 1430	Received By FEDEX				DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Received By 3				Received By 6-11-17 1005				

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: 1706410

Project Manager: \_\_\_\_\_

Initials: CDJ Date: 6-17-17

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
3. Are Custody seals on sample containers intact?	NONE	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
9. Are all aqueous non-preserved samples pH 4-9?	<input checked="" type="radio"/> N/A	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> 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	<input checked="" type="radio"/> N/A	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
15. Do any water samples contain sediment? Amount Amount of sediment: ___ dusting ___ moderate ___ heavy	N/A	<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 #4 RAD ONLY		<input checked="" type="radio"/> YES	<input checked="" type="radio"/> NO
Cooler #:	<u>1</u>		
Temperature (°C):	<u>1.7</u>		
No. of custody seals on cooler:	<u>2</u>		
External µR/hr reading:	<u>10</u>		
Background µR/hr reading:	<u>10</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES / <input checked="" type="radio"/> NO / <input checked="" type="radio"/> 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: [Signature] 6/19/17

ORIGIN ID: PSCA (309) 531-0450  
THOMAS BACON  
1225  
6287 LATAH ST.  
RICHLAND, WA 99352  
UNITED STATES US

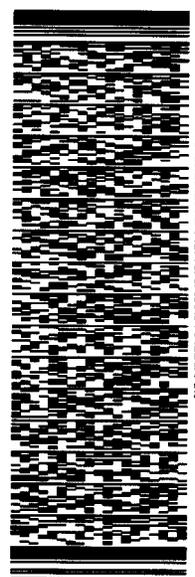
SHIP DATE: 16 JUN 17  
ACT WT: 45.00 LB  
CAD: 1070680571

BILL THIRD PARTY

TO JULIE ELLINGSON  
ALS GLOBAL-FORT COLLINS  
225 COMMERCE DR

FORT COLLINS CO 80524

(970) 490-1511 REF: PTR#0039  
NV DEPT



J171178214101

TRK# 7794 2505 3527 SATURDAY 12:00P  
0201 PRIORITY OVERNIGHT

DSR 80524  
CO-US DEN



X0 FTCA

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# Metals

## Case Narrative

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### **CH2M HILL Plateau Remediation Company**

**SURV, JUNE 2017 -- S17-006**

Work Order Number: 1706410

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 06/17/17.
3. The sample had a pH less than 2 upon receipt.
4. The sample was prepared and analyzed based on SW-846, 3<sup>rd</sup> Edition procedures.

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

5. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.
6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold time.

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 sample 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.
  - 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 6020A were analyzed.

9. Matrix specific quality control procedures.

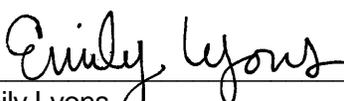
Sample 1706444-2 was designated as the quality control sample for this analysis. Results for the shared quality control samples are included at the client's request.

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.

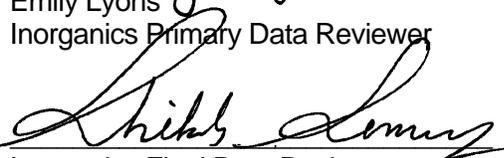
- A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with each ICP batch. All acceptance criteria were met.

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  
Inorganics Primary Data Reviewer

7/18/17  
Date

  
\_\_\_\_\_  
Keith Loney  
Inorganics Final Data Reviewer

7/18/17  
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  $\leq 20X$  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 SW6020A

### Sample Results

**Lab Name:** ALS -- Fort Collins  
**Client Name:** CH2M HILL Plateau Remediation Company  
**Client Project ID:** SURV, JUNE 2017 S17-006  
**Work Order Number:** 1706410      **Final Volume:** 50 ml  
**Reporting Basis:** As Received      **Matrix:** WATER  
**Analyst:** Brent A. Stanfield      **Result Units:** UG/L

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Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
B39T22	1706410-1	6/16/2017	7/6/2017	07/13/2017	N/A	10	0.14	0.1	0.03		50 ml

**Comments:**

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

**Data Package ID:** *IM1706410-1*

ALS1706410

# ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1706410

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, JUNE 2017 S17-006

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: IP170706-2-2  
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
7440-61-1	URANIUM	10	0.03	U	0.1	0.03

Data Package ID: IM1706410-1

07/18/2017

ALS1706410

# ICPMS Metals

Method SW6020A

## Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1706410

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, JUNE 2017 S17-006

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: IP170706-2-2

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
7440-61-1	URANIUM	10	9.63	0.1		96	80 - 120%

Data Package ID: IM1706410-1

# ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1706410

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, JUNE 2017 S17-006

Field ID: SHARED QC
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: IP170706-2-2  
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
7440-61-1	URANIUM	2.8		12.6		0.1	10	98	75 - 125%

Field ID: SHARED QC
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: IP170706-2-2  
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
7440-61-1	URANIUM	12.5		10	97	0.1	20	1

Data Package ID: IM1706410-1

**Prep Batch ID: IP170706-2**

<b>Start Date:</b> 07/06/17	<b>End Date:</b> 07/06/17	<b>Concentration Method:</b> NONE	<b>Batch Created By:</b> jml
<b>Start Time:</b> 11:01	<b>End Time:</b> 18:00	<b>Extract Method:</b> SW3005A	<b>Date Created:</b> 07/06/17
<b>Prep Analyst:</b> Jill M. Latelle		<b>Initial Volume Units:</b> ml	<b>Time Created:</b> 11:02
<b>Comments:</b>		<b>Final Volume Units:</b> ml	<b>Validated By:</b> jml
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			<b>Date Validated:</b> 07/06/17
			<b>Time Validated:</b> 13:01

QC Batch ID: IP170706-2-2

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	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1706444
1706444-2	MSD	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1706444
1706444-2	DUP	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1706444
1706410-1	SMP	B39T22	WATER	6/16/2017	50	50	NONE	1	1706410
1706444-2	SMP	XXXXXX	WATER	XXXXXX	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		