



Wednesday, August 17, 2016

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
2420 Stevens Center
Richland, WA 99352

Re: ALS Workorder: 1608080
Project Name: SURV, AUGUST 2016
Project Number: S16-008

Dear Ms. Waters-Husted:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 8/4/2016. 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
Julie Ellingson
Project Manager

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1608080

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: SURV, AUGUST 2016

Client Project Number: S16-008

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B365L7	1608080-1		WATER	02-Aug-16	12:26
B365L6	1608080-2		WATER	02-Aug-16	12:26

CH2MHill Plateau Remediation Company		C.O.C. # S16-008-052 Page 1 of 1	
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			
Collector: Kevin Patterson CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650	
SAF No.: S16-008	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071	
Project Title: SURV, AUGUST 2016	Logbook No.: HNF-N-506 86/71	Ice Chest No.: GWS-460	
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 7769 09912276	
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 6898	
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: N/A	Total Activity Exemption: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Sample No.: B365L7 (1)	Filter: N	No/Type Container: 1x500-mL G/P	Holding Time: 6 Months
		Date: AUG 02 2016 1200	Preservative: HNO3 to pH <2

Relinquished By: Kevin Patterson CHPRC	Date/Time: AUG 02 2016 1440	Sign:	Pmt:	Received By: SSU-1	Date/Time: AUG 02 2016 1440	Sign:	Matrix *
Relinquished By: SSU-1	Date/Time: AUG 03 2016 1040	Sign:	Pmt:	Received By: Janelle Zunker CHPRC	Date/Time: AUG 03 2016 1040	Sign:	Matrix *
Relinquished By: Janelle Zunker CHPRC	Date/Time: AUG 03 2016 1200	Sign:	Pmt:	Received By: FED EX	Date/Time:	Sign:	Matrix *
Relinquished By: OFF EX	Date/Time:	Sign:	Pmt:	Received By: CTrimble Cumber	Date/Time: 8-4-16 0910	Sign:	Matrix *
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By:	Date/Time:	Matrix *		

1608080

Collector	Kevin Patterson CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S16-008	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, AUGUST 2016	Logbook No.	HNF-N-506 <u>86171</u>	Ice Chest No.	<u>6WS-466</u>
Shipped To (Lab)	ALS Environmental Ft. Collins	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	<u>7769 09912274</u>
Protocol	SURV	Priority:	30 Days	Offsite Property No.	<u>6884</u>
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
*** 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		N/A		Hold Time	
Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis
B365L6	N	W AUG 02 2016	1226	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)
					Holding Time
					6 Months
					Preservative
					HNO3 to pH <2

8/17/2016
ALS1608080

Relinquished By	Kevin Patterson CHPRC	Date/Time	AUG 02 2016 1440	Received By	SSU-1	Date/Time	AUG 02 2016 1440	Print	Sign
Relinquished By	Janelle Zunker CHPRC	Date/Time	AUG 03 2016 1040	Received By	Janelle Zunker CHPRC	Date/Time	AUG 03 2016 1040		
Relinquished By	Janelle Zunker CHPRC	Date/Time	AUG 03 2016 1200	Received By	FEDEx	Date/Time			
Relinquished By	4 FED	Date/Time		Received By	CTrimble Cumber	Date/Time	8-4-16 0910		
FINAL SAMPLE DISPOSITION		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time			

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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1608080

Project Manager: JR

Initials: CDJ Date: 8-4-14

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	NO
3. Are Custody seals on sample containers intact?	NONE	<input checked="" type="radio"/> YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	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	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	<input checked="" type="radio"/> N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> 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	<input checked="" type="radio"/> N/A	YES	NO
15. Do any water samples contain sediment? Amount of sediment: ___ dusting ___ moderate ___ heavy	Amount N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4	RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u> <u>2</u>			
Temperature (°C): <u>3.6</u> <u>4.2</u>			
No. of custody seals on cooler: <u>3</u> <u>2</u>			
External µR/hr reading: <u>11</u> <u>11</u>			
Background µR/hr reading: <u>12</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> 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: [Signature] 8/4/14

ORIGIN ID: PSCA (509) 373-3580
JANELLE ZUNKER
CH 2A
8269 LATAM ST.
RICHLAND, WA 99334
UNITED STATES US

SHIP DATE: 03AUG16
ACTWGT: 21.00 LB
CAD: 10706605 INMET3780
BILL THIRD PARTY

1608080

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

11-2

FORT COLLINS CO 80524
(970) 480-1511 REF: 6999
NV DEPT:
PO:

544J1/137014EB



TRKA (0201) 7769 1233 4513

THU - 04 AUG 10:30A
PRIORITY OVERNIGHT
DSR

XH FTCA

CO-US DEN
80524



After printing this label:

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Metals

Case Narrative

CH2M HILL Plateau Remediation Company

SURV, AUGUST 2016 – S16-008

Work Order Number: 1608080

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 08/04/16.
3. The 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 ICP-MS, the samples were 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 samples were 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 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.
 - 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 1608019-1 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 were met.
- A serial dilution was analyzed with this ICP batch. All acceptance criteria were met.

10. Both samples were analyzed at a dilution in order to protect the ICP-MS from the high metal content of the samples.

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.



Jill Latelle
Inorganics Primary Data Reviewer

8/16/16
Date



April E. Ellinger
Inorganics Final Data Reviewer

8/17/16
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, AUGUST 2016 S16-008
Work Order Number: 1608080 **Final Volume:** 50 ml
Reporting Basis: As Received **Matrix:** WATER
Analyst: Brent A. Stanfield **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
B365L7	1608080-1	8/2/2016	8/5/2016	08/08/2016	N/A	100	2300	1	0.27	D	50 ml
B365L6	1608080-2	8/2/2016	8/5/2016	08/08/2016	N/A	100	2400	1	0.27	D	50 ml

Comments:

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

Data Package ID: *im1608080-1*

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ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1608080

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, AUGUST 2016 S16-008

Lab ID: IP160805-11MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05-Aug-16

Date Analyzed: 08-Aug-16

Prep Batch: IP160805-11

QCBatchID: IP160805-11-2

Run ID: IM160808-10A7

Cleanup: NONE

Basis: N/A

File Name: 095SMPL_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	

Data Package ID: *im1608080-1*

Date Printed: Tuesday, August 16, 2016

ALS -- Fort Collins

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LIMS Version: 6.823

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ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1608080

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, AUGUST 2016 S16-008

Lab ID: IM160805-11LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/05/2016

Date Analyzed: 08/08/2016

Prep Method: SW3005A

Prep Batch: IP160805-11

QCBatchID: IP160805-11-2

Run ID: IM160808-10A7

Cleanup: NONE

Basis: N/A

File Name: 096SMPL_

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	10.2	0.1		102	80 - 120%

Data Package ID: *im1608080-1*

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ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1608080

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, AUGUST 2016 S16-008

Field ID: SHARED QC
LabID: 1608019-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-2
Run ID: IM160808-10A7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 101SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-61-1	URANIUM	16		26.2		0.1	10	104	75 - 125%

Field ID: SHARED QC
LabID: 1608019-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-2
Run ID: IM160808-10A7
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 102SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-61-1	URANIUM	25.8		10	100	0.1	20	2

Data Package ID: *im1608080-1*