



Wednesday, March 21, 2018

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

Re: ALS Workorder: 1802344
Project Name: Sitewide Surv, February 2018
Project Number: S18-002

Dear Ms. Waters-Husted:

Four water samples were received from CH2M HILL Plateau Remediation Company, on 2/21/2018. 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
Katie M. O'Brien
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, 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: 1802344

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: Sitewide Surv, February 2018

Client Project Number: S18-002

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3H665	1802344-1		WATER	15-Feb-18	12:54
B3H676	1802344-2		WATER	15-Feb-18	12:54
B3H666	1802344-3		WATER	15-Feb-18	12:54
B3H677	1802344-4		WATER	15-Feb-18	12:54

<p>1802344</p> <p>CH2M Hill Plateau Remediation Company</p>		<p>C.O.C. # S18-002-023</p> <p>Page 1 of 1</p>	
<p>Chain of Custody/Sample Analysis Request</p>		<p>Telephone No.: 509-376-4650</p>	
<p>Collector: Madeon Churn CHPRC</p>	<p>Contact/Requester: Karen Waters-Husted</p>	<p>Purchase Order/Charge Code: 300071</p>	
<p>SAF No.: S18-002</p>	<p>Sampling Origin: Hanford Site</p>	<p>Ice Chest No.: 605628</p>	
<p>Project Title: Sitewide Surv, February 2018</p>	<p>Logbook No.: HNF-N-506 95/96</p>	<p>Bill of Lading/Air Bill No.: 77152658 9140</p>	
<p>Shipped To (Lab): ALS Environmental Ft. Collins</p>	<p>Method of Shipment: Commercial Carrier</p>	<p>Offsite Property No.: 9069</p>	
<p>Protocol: SURV</p>	<p>Priority: 30 Days</p>		
<p>POSSIBLE SAMPLE HAZARDS/REMARK</p> <p>** ** 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</p>			
<p>SPECIAL INSTRUCTIONS</p> <p>N/A</p>			
<p>Sample No. B3H665</p>	<p>Filter N</p>	<p>Date FEB 15 2018 1254</p>	<p>Time 1</p>
<p>Sample No. B3H676</p>	<p>Filter Y</p>	<p>Date 1</p>	<p>Time 1</p>
<p>No/Type Container 1x500 -mL G/P</p>	<p>Sample Analysis 6020_METALS_ICPMS: Chromium (1)</p>	<p>Holding Time 6 Months</p>	<p>Preservative HNO3 to pH <2</p>
<p>No/Type Container 1x500 -mL G/P</p>	<p>Sample Analysis 6020_METALS_ICPMS: Chromium (1)</p>	<p>Holding Time 6 Months</p>	<p>Preservative HNO3 to pH <2</p>

<p>Relinquished By: MCD</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time FEB 15 2018 1330</p>	<p>Received By: SSU-1</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time 2/15/18</p>	<p>Matrix *</p> <p>S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air</p> <p>DS = Drum Solids DL = Drum Liquid T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other</p>
<p>Relinquished By: SSU-1</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time FEB 20 2018 0805</p>	<p>Received By: Lesly Wall</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time FEB 20 2018 0805</p>	
<p>Relinquished By: Lesly Wall</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time FEB 20 2018 1400</p>	<p>Received By: FEDEX</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time</p>	
<p>Relinquished By: Felix</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time</p>	<p>Received By: Dan Skene</p> <p>Print First and Last Name</p>	<p>Signature</p>	<p>Date/Time 2-21-18 1030</p>	
<p>FINAL SAMPLE DISPOSITION</p>			<p>Disposal Method (e.g., Return to customer, per lab procedure, used in process):</p>			<p>Date/Time:</p>

1902344

ALS1802344
3/21/2018

REV 0

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# S18-002-024
				Page 1 of 1
Collector: Madam Chunn CHPRC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650		
SAF No.: S18-002	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071		
Project Title: Sitewide Surv, February 2018	Logbook No.: HNF-N-506 95/96	Ice Chest No.: 605-628		
Shipped To (Lab): ALS Environmental Ft. Collins	Method of Shipment: Commercial Carrier	Bill of Lading/Air Bill No.: 771526589140		
Protocol: SURV	Priority: 30 Days	Offsite Property No.: 9069		
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
B3H666	N	FEB 15 2018	1254	1x500-mL G/P
B3H677	Y			1x500-mL G/P
		Sample Analysis		Holding Time
		6020_METALS_ICPMS: Chromium (1)		6 Months
		6020_METALS_ICPMS: Chromium (1)		6 Months
				Preservative
				HNO3 to pH <2
				HNO3 to pH <2

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Relinquished By: MRC Print First and Last Name	Signature	Date/Time FEB 15 2018 1330	Received By: SSU-1 Print First and Last Name	Signature	Date/Time 2/15/18 1330
Relinquished By: SSU-1 Print First and Last Name	Signature	Date/Time FEB 20 2018 0805	Received By: Leah West CHPRC Print First and Last Name	Signature	Date/Time FEB 20 2018 0805
Relinquished By: FedEx Print First and Last Name	Signature	Date/Time FEB 20 2018 1400	Received By: FEDEX Print First and Last Name	Signature	Date/Time
Relinquished By: Dan Sheveman Print First and Last Name	Signature	Date/Time 2-21-18	Received By: Dan Sheveman Print First and Last Name	Signature	Date/Time 2-21-18
FINAL SAMPLE DISPOSITION			Disposal Method (e.g., Return to customer, per lab procedure, used in process):		
Disposal Method (e.g., Return to customer, per lab procedure, used in process):			Disposed By:		
			Date/Time:		

A-6004-842 (REV 3)

FSR ID = FSR55333

Printed On 12/13/2017

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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC/CH2MHill

Workorder No: 1802344

Project Manager: lms

Initials: PS Date: 2-21-18

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 Amount of sediment: ___ dusting ___ moderate ___ heavy	<input checked="" type="radio"/> N/A	YES	NO
16. Were the samples shipped on ice?		YES	<input checked="" type="radio"/> NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4 RAD ONLY		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>12</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>11</u>			
Background µR/hr reading: <u>10</u>			
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: [Signature] 2/21/18

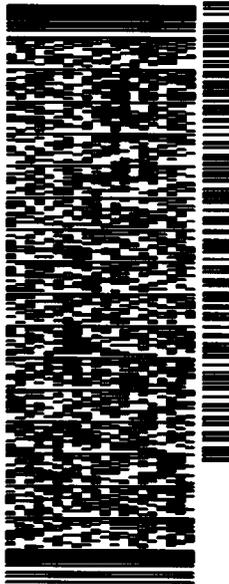
1802344
3/21/2018

ORIGIN D/PSCA (509) 528-9426
LESLY WALL
CH2M
6267 LATAH ST.
8269 LATAH ST.
RICHLAND WA 99354
UNITED STATES US

SHIP DATE: 20FEB18
ACTWGT: 9.00 LB
CAD: 10706605/INNET3980
BILL THIRD PARTY

TO **JULIE ELLINGSON**
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 480-1511
NAV
PO
REF: PTR# 9089COOLER# GMS-628
DEPT



TRK# 7715 2658 9140
0201
WED - 21 FEB 10:30A
PRIORITY OVERNIGHT
DSR

XH FTCA
CO-US
80524 DEN



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Metals

Case Narrative

CH2M HILL Plateau Remediation Company

Sitewide Surv, February 2018 – S18-002

Work Order Number: 1802344

1. This report consists of 4 water samples.
2. The samples were received intact at ambient temperature by ALS on 02/21/18.
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 1802344-1 was designated as the quality control sample for this 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 this batch indicated above. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with this 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

3/18/18
Date



Inorganics Final Data Reviewer

3/21/18
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.

Dissolved CHROMIUM

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: Sitewide Surv, February 2018 S18-002
Work Order Number: 1802344 **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
B3H676	1802344-2	2/15/2018	3/5/2018	03/07/2018	N/A	10	20	10	0.82		50 ml
B3H677	1802344-4	2/15/2018	3/5/2018	03/07/2018	N/A	10	20	10	0.82		50 ml

Comments:

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

Data Package ID: *IM1802344-1*

Total Recoverable CHROMIUM

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: Sitewide Surv, February 2018 S18-002
Work Order Number: 1802344 **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
B3H665	1802344-1	2/15/2018	3/5/2018	03/07/2018	N/A	10	20	10	0.82		50 ml
B3H666	1802344-3	2/15/2018	3/5/2018	03/07/2018	N/A	10	20	10	0.82		50 ml

Comments:

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

Data Package ID: *IM1802344-1*

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1802344

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: Sitewide Surv, February 2018 S18-002

Lab ID: IP180305-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05-Mar-18

Date Analyzed: 07-Mar-18

Prep Batch: IP180305-2

QCBatchID: IP180305-2-2

Run ID: IM180307-10A4

Cleanup: NONE

Basis: N/A

File Name: 059SMPL_

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
7440-47-3	CHROMIUM	10	0.82	U	10	0.82

Data Package ID: IM1802344-1

ICPMS Metals
Method SW6020A
Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1802344

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: Sitewide Surv, February 2018 S18-002

Lab ID: IM180305-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 03/05/2018

Date Analyzed: 03/07/2018

Prep Method: SW3005A

Prep Batch: IP180305-2

QCBatchID: IP180305-2-2

Run ID: IM180307-10A4

Cleanup: NONE

Basis: N/A

File Name: 060SMPL_

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
7440-47-3	CHROMIUM	500	501	10		100	80 - 120%

Data Package ID: IM1802344-1

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1802344

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: Sitewide Surv, February 2018 S18-002

Field ID: B3H665
LabID: 1802344-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 15-Feb-18
Date Extracted: 05-Mar-18
Date Analyzed: 07-Mar-18
Prep Method: SW3005 Rev A

Prep Batch: IP180305-2
QCBatchID: IP180305-2-2
Run ID: IM180307-10A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 064SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	20		522		10	500	100	75 - 125%

Field ID: B3H665
LabID: 1802344-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 15-Feb-18
Date Extracted: 05-Mar-18
Date Analyzed: 07-Mar-18
Prep Method: SW3005 Rev A

Prep Batch: IP180305-2
QCBatchID: IP180305-2-2
Run ID: IM180307-10A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 065SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	512		500	98	10	20	2

Data Package ID: IM1802344-1

Prep Batch ID: IP180305-2

Start Date: 03/05/18

End Date: 03/05/18

Concentration Method: NONE

Batch Created By: jml

Start Time: 9:27

End Time: 18:00

Extract Method: SW3005A

Date Created: 03/05/18

Prep Analyst: Jill M. Latelle

Initial Volume Units: ml

Time Created: 9:27

Comments:

Final Volume Units: ml

Validated By: jml

Date Validated: 03/05/18

Time Validated: 10:46

QC Batch ID: IP180305-2-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP180305-2	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1802344
IM180305-2	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1802344
1802344-1	MS	B3H665	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-1	MSD	B3H665	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-1	DUP	B3H665	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-1	SMP	B3H665	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-2	SMP	B3H676	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-3	SMP	B3H666	WATER	2/15/2018	50	50	NONE	1	1802344
1802344-4	SMP	B3H677	WATER	2/15/2018	50	50	NONE	1	1802344

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		