

Friday, July 29, 2016

Dave Todak  
CH2M HILL Plateau Remediation Company  
2420 Stevens Center  
Richland, WA 99352

Re: ALS Workorder: 1607185  
Project Name: 100-HR-3 Long Term & Interim Action Monitoring - Soil  
Project Number: F16-040

Dear Mr. Todak:

Two soil samples were received from CH2M HILL Plateau Remediation Company, on 7/13/2016. The samples were scheduled for the following analysis:

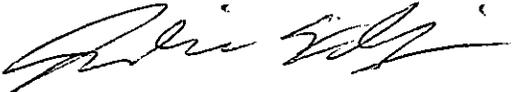
Metals

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 Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1607185  
**Client Name:** CH2M HILL Plateau Remediation Company  
**Client Project Name:** 100-HR-3 Long Term & Interim Action Monitoring - Soil  
**Client Project Number:** F16-040  
**Client PO Number:** BOA 54854

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B35YV7	1607185-1		SOIL	11-Jul-16	10:00
B35YV9	1607185-2		SOIL	11-Jul-16	10:00

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST <b>1607185</b>		PAGE 1 OF 1	
COLLECTOR Juan Aguilera	COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9614, I-001	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Soil	FIELD LOGBOOK NO. <b>605-469</b>	SAF NO. F16-040	AIR QUALITY	<input type="checkbox"/>
ICE CHEST NO.	ACTUAL SAMPLE DEPTH 94.1' - 96.6'	OFFSITE PROPERTY NO. <b>60822</b>	COA 300115	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO ALS Environmental Ft. Collins		BILL OF LADING/AIR BILL NO. <b>7767 2811 9544</b>			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION None	HOLDING TIME 6 Months	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 250mL	SAMPLE ANALYSIS 6020_METALS_ICPMS: COMMON (Chromium);
SPECIAL HANDLING AND/OR STORAGE							
SAMPLE NO. B35V7 <b>①</b>	MATRIX* SOIL	SAMPLE DATE JUL 11 2016	SAMPLE TIME 1200				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Juan Aguilera	DATE/TIME JUL 11 2016 1447	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUL 11 2016 1447		
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUL 12 2016	RECEIVED BY/STORED IN Leahy Wall ACPRC	DATE/TIME JUL 12 2016 1205		
RELINQUISHED BY/REMOVED FROM Leahy Wall ACPRC	DATE/TIME JUL 12 2016	RECEIVED BY/STORED IN PEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM FED	DATE/TIME	RECEIVED BY/STORED IN A Trumble Cumber	DATE/TIME 7/13/16 0958		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 1607185		F16-040-062	PAGE 1 OF 1
COLLECTOR Juan Aguilar C ttp/c	COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR TODAK, D	PRICE CODE 8C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION C9614, I-001 DUP	PROJECT DESIGNATION 100-HR-3 Long Term & Interim Action Monitoring - Soil	FIELD LOGBOOK NO. HNF-N-645-3195	SAF NO. F16-040	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. 605-469	OFFSITE PROPERTY NO. 60822	ACTUAL SAMPLE DEPTH 94.1' - 96.6'	COA 300.115	BILL OF LADING/AIR BILL NO. 770728119544	
SHIPPED TO ALS Environmental Ft. Collins	ORIGINAL				

MATRIX*	PRESERVATION	None
A=Air	HOLDING TIME	6 Months
DL=Drum	TYPE OF CONTAINER	G/P
Liquids	NO. OF CONTAINER(S)	1
DS=Drum	VOLUME	250ml
Solids	SAMPLE ANALYSIS	6020 METALS ICPMS: COMMON (Chromium);
L=Liquid	SAMPLE DATE	JUL 11 2016
O=Oil	SAMPLE TIME	1500
S=Soil		
SE=Sediment		
T=Tissue		
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		

SPECIAL HANDLING AND/OR STORAGE	
SAMPLE NO.	MATRIX*
B35YV9	SOIL

CHAIN OF POSSESSION	STGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Juan Aguilar	RECEIVED BY/STORED IN SSU-1	DATE/TIME JUL 11 2016 1447
RELINQUISHED BY/REMOVED FROM Juan Aguilar	RECEIVED BY/STORED IN Leahy Wall ACHRC	DATE/TIME JUL 12 2016
RELINQUISHED BY/REMOVED FROM Leahy Wall ACHRC	RECEIVED BY/STORED IN FEDEX	DATE/TIME JUL 12 2016
RELINQUISHED BY/REMOVED FROM Leahy Wall ACHRC	RECEIVED BY/STORED IN C-TRIMBLE C-Drumbe	DATE/TIME 7-13-16 0955
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
LABORATORY RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1607185

Project Manager: JE

Initials: CDT Date: 7-13-16

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)	<input checked="" type="radio"/> N/A	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		YES	<input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>Amb</u>			
No. of custody seals on cooler: <u>2</u>			
DOT Survey/ Acceptance Information	External µR/hr reading: <u>10</u>		
	Background µR/hr reading: <u>11</u>		
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES <input type="radio"/> 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] 7/13/16

ORIGIN D/PSCA (509) 373-3580  
JANELLE ZUNKER  
CH2M  
6289 LATAM ST.  
RICHLAND, WA 99354  
UNITED STATES US

SHIP DATE: 12 JUL 16  
ACT WT: 12.00 LB  
CAD: 107068057/NET3730  
BILL THIRD PARTY

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

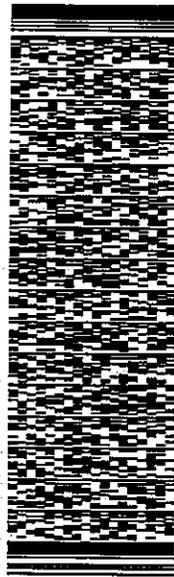
10  
-2

**FORT COLLINS CO 80524**

(970) 490-1511 REF: 8822



DEPT:



418191042009100

TRK# 7767 2811 9544  
L201

WED - 13 JUL 10:30A  
PRIORITY OVERNIGHT

**XH FTCA**

DSR 80524  
CO-US DEN



1607185

540J15CBD/727F

**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.

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## Metals Case Narrative

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

100-HR-3 Long Term & Interim Action Monitoring – Soil – F16-040

Work Order Number: 1607185

1. This report consists of 2 soil samples.
2. The samples were received intact at ambient temperature by ALS on 07/13/16.
3. The samples were prepared and analyzed based on SW-846, 3<sup>rd</sup> Edition procedures.

For analysis by ICP-MS, the samples were digested following method 3050B and the current revision of SOP 806.

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

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

7. 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.
8. Matrix specific quality control procedures.

Sample 1607185-2 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. All acceptance criteria for accuracy were met. .
- A serial dilution was analyzed with this ICP batch. Acceptance criteria was not met.

<u>Analyte</u>	<u>Sample ID</u>
Chromium	1607185-2L

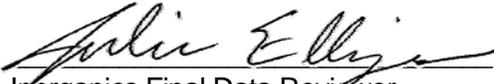
The native sample result is flagged for serial dilution failure.

9. 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.

  
\_\_\_\_\_  
Jill Latelle  
Inorganics Primary Data Reviewer

7/23/16  
Date

  
\_\_\_\_\_  
Julie Ellison  
Inorganics Final Data Reviewer

7/28/16  
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 CHROMIUM

## Method SW6020A

### Sample Results

**Lab Name:** ALS -- Fort Collins  
**Client Name:** CH2M HILL Plateau Remediation Company  
**Client Project ID:** 100-HR-3 Long Term & Interim Action Monitoring - Soil F16-040  
**Work Order Number:** 1607185      **Final Volume:** 100 ml  
**Reporting Basis:** Dry Weight      **Matrix:** SOIL  
**Analyst:** Brent A. Stanfield      **Result Units:** UG/KG

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Flag	Sample Aliquot
B35YV7	1607185-1	7/11/2016	7/14/2016	07/18/2016	20.11	10	11000	1200	99		1.036 g
B35YV9	1607185-2	7/11/2016	7/14/2016	07/18/2016	17.48	10	11000	1200	97	E	1.02 g

**Comments:**

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

**Data Package ID:** *im1607185-1*

7/29/2016  
ALS1607185

# ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1607185

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Soil F16-040

Lab ID: IP160714-1MB

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 14-Jul-16

Date Analyzed: 18-Jul-16

Prep Batch: IP160714-1

QCBatchID: IP160714-1-3

Run ID: IM160718-11A5

Cleanup: NONE

Basis: N/A

File Name: 179SMPL\_

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-47-3	CHROMIUM	10	82	1000	82	U	

Data Package ID: *im1607185-1*

Date Printed: Saturday, July 23, 2016

ALS -- Fort Collins

Page 1 of 1

LIMS Version: 6.820

7/29/2016  
ALS1607185

# ICPMS Metals

Method SW6020A

## Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1607185

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Soil F16-040

Lab ID: IM160714-1LCS

Sample Matrix: SOIL

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07/14/2016

Date Analyzed: 07/18/2016

Prep Method: SW3050B

Prep Batch: IP160714-1

QCBatchID: IP160714-1-3

Run ID: IM160718-11A5

Cleanup: NONE

Basis: N/A

File Name: 181SMPL\_

Sample Aliquot: 1 g

Final Volume: 100 ml

Result Units: UG/KG

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-47-3	CHROMIUM	50000	56500	1000		113	80 - 120%

Data Package ID: *im1607185-1*

7/29/2016  
ALS1607185

# ICPMS Metals

Method SW6020A

## Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1607185

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-HR-3 Long Term & Interim Action Monitoring - Soil F16-0

Field ID: B35YV9  
LabID: 1607185-2MS

Sample Matrix: SOIL  
% Moisture: 17.5  
Date Collected: 11-Jul-16  
Date Extracted: 14-Jul-16  
Date Analyzed: 19-Jul-16  
Prep Method: SW3050 Rev B

Prep Batch: IP160714-1  
QCBatchID: IP160714-1-3  
Run ID: IM160718-11A5  
Cleanup: NONE  
Basis: Dry Weight

Sample Aliquot: 1.018 g  
Final Volume: 100 ml  
Result Units: UG/KG  
File Name: 192SMPL\_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	11000		78300		1190	59500	113	75 - 125%

Field ID: B35YV9  
LabID: 1607185-2MSD

Sample Matrix: SOIL  
% Moisture: 17.5  
Date Collected: 11-Jul-16  
Date Extracted: 14-Jul-16  
Date Analyzed: 19-Jul-16  
Prep Method: SW3050 Rev B

Prep Batch: IP160714-1  
QCBatchID: IP160714-1-3  
Run ID: IM160718-11A5  
Cleanup: NONE  
Basis: Dry Weight

Sample Aliquot: 1.019 g  
Final Volume: 100 ml  
Result Units: UG/KG  
File Name: 193SMPL\_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	77600		59500	112	1190	20	1

Data Package ID: *im1607185-1*