

April 6, 2016
ALS1604026



Ft. Collins, Colorado

LIMS Version: 6.809

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Wednesday, April 06, 2016

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

Re: ALS Workorder: 1604026
Project Name: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Wa
Project Number: F16-025

Dear Mr. Todak:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 4/2/2016. 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 -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1604026

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-

Client Project Number: F16-025

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B34WM8	1604026-1		WATER	31-Mar-16	14:55
B34TJ1	1604026-2		WATER	29-Mar-16	10:31

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		PAGE 1 OF 1	
COLLECTOR	M.A. White/CHPRC	COMPANY CONTACT	TODAK, D	PROJECT COORDINATOR	TODAK, D
SAMPLING LOCATION	C9416, I-005	PROJECT DESIGNATION	FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water	SAF NO.	F16-025
ICE CHEST NO.	GWS 086 493	FIELD LOGBOOK NO.	HNF-N-645-3 pg 59	COA	303979
SHIPPED TO	ALS Environmental Ft. Collins	OFFSITE PROPERTY NO.	6483	BILL OF LADING/AIR BILL NO.	nm6021186217
Possible Sample Hazards/Remarks *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA		Preservation HNO3 to pH <2 6 Months G/P 1 500ml SEE ITEM (1) IN SPECIAL INSTRUCTIONS			
Matrix* A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		Sample No. B34WM8 ① WATER			
SPECIAL HANDLING AND/OR STORAGE		Sample Date MAR 31 2016 Sample Time 1455			

1604026

FILTER

CHAIN OF POSSESSION		SIGN/PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	FILTER (1) 6020_METALS_ICPMS: COMMON {Chromium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese};	
M.A. White/CHPRC	MAR 31 2016 1550	SSU-1	MAR 31 2016		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
SSU	APR 01 2016 0900	M.A. White/CHPRC	APR 01 2016 0900		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
M.A. White/CHPRC	APR 01 2016 1400	FEDEX	4-2-16 0916		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
FEDEX	4-2-16 0915	SSU	4-2-16 0916		
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		
PRINTED ON 3/15/2016	FSR ID# FSR26276	TRVL NUM# TRVL-16-103		AT 03-518 (REV 2)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST	
COLLECTOR J.R. Aguilar/CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D
SAMPLING LOCATION C9416, I-003	PROJECT DESIGNATION FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water	FIELD LOGBOOK NO. 4NF-N-507-25/94	SAF NO. F16-025
ICE CHEST NO. GW5-086 493	ACTUAL SAMPLE DEPTH 344.3'	OFFSITE PROPERTY NO. 6483	COA 303979
SHIPPED TO ALS Environmental Ft. Collins	BILL OF LADING/AIR BILL NO. 77602118 6217		

F16-025-050	PAGE 1 OF 1
PRICE CODE 7A	DATA TURNAROUND 3 Days / 15 Days
AIR QUALITY	METHOD OF SHIPMENT FEDERAL EXPRESS
ORIGINAL	

1604026

MATRIX* A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESCRIPTION HNO3 to pH <2	HOLDING TIME 6 Months	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 500ml	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	SPECIAL HANDLING AND/OR STORAGE					
SAMPLE NO. B34TJ1	MATRIX* WATER	SAMPLE DATE MAR 29 2016	SAMPLE TIME 1031			

FILTER

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM J.R. Aguilar/CHPRC	DATE/TIME MAR 29 2016 1040	RECEIVED BY/STORED IN L.D. Wall	DATE/TIME MAR 29 2016 1040	FILTER (1) 6020_METALS_ICPMS: COMMON {Chromium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese};	
RELINQUISHED BY/REMOVED FROM L.D. Wall	DATE/TIME MAR 29 2016 1100	RECEIVED BY/STORED IN M.A. White	DATE/TIME APR 01 2016 0900		
RELINQUISHED BY/REMOVED FROM M.A. White	DATE/TIME APR 01 2016 1400	RECEIVED BY/STORED IN Felex	DATE/TIME 4-2-16 0915		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1604026

Project Manager: JME

Initials: SDM

Date: 4-2-16

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)	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	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*: <input checked="" type="radio"/> #2 #4		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>0.2</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 / NO / NA (If no, see Form 008.)			

DOT Survey/ Acceptance Information

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] 4/3/16

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

1604026

ORIGIN ID: PSCA (509) 528-9426
LESLIE WALL
072M
6287 LATAH ST.
8289 LATAH ST.
RICHLAND WA 99354
UNITED STATES US

SHIP DATE: 01 APR 16
ACTWGT: 73.00 LB
CAD: 107066051INMET3730

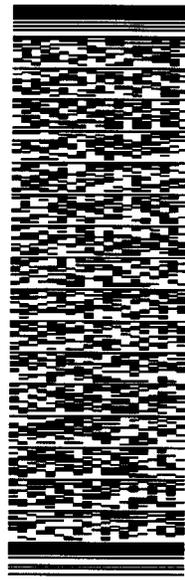
BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511
INV
DEPT

REF: PTR# 6483, COOLEF# GWS-493

10
-2
0.20c
540J1/CF34/727F



J10101002001w

TRK# 7760 2118 6217
0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 FTCA

DSR 80524
CO-US DEN



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Metals

Case Narrative

CH2M HILL Plateau Remediation Company

FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis- Water -- F16-025

Work Order Number: 1604026

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 04/02/16.
3. The samples were to be analyzed for dissolved metals. The samples had been filtered prior to receipt, and 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 times.

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 analytes. 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 analytes.
- All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

Sample 1604027-1 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 sample duplicate and matrix spike duplicate were digested and analyzed with this batch. All acceptance criteria for precision 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.



Jill Latelle
Inorganics Primary Data Reviewer

4/6/16
Date



Jeff Kja
Inorganics Final Data Reviewer

4/06/16
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 $\leq 5X$ 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 Environmental -- FC
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Water
Work Order Number: 1604026 **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
B34WM8	1604026-1	3/31/2016	4/5/2016	04/05/2016	N/A	10	23	10	1.1		50 ml
B34TJ1	1604026-2	3/29/2016	4/5/2016	04/05/2016	N/A	10	4.2	10	1.1	B	50 ml

Comments:

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

Data Package ID: *im1604026-1*

Dissolved MANGANESE

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: CH2M HILL Plateau Remediation Company
Client Project ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Water
Work Order Number: 1604026 **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
B34WM8	1604026-1	3/31/2016	4/5/2016	04/05/2016	N/A	10	3.7	5	0.3	B	50 ml
B34TJ1	1604026-2	3/29/2016	4/5/2016	04/05/2016	N/A	10	29	5	0.3		50 ml

Comments:

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

Data Package ID: *im1604026-1*

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ALS1604026

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1604026

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IP160405-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05-Apr-16

Date Analyzed: 05-Apr-16

Prep Batch: IP160405-1

QCBatchID: IP160405-1-6

Run ID: IM160405-10A11

Cleanup: NONE

Basis: N/A

File Name: 010SMPL_

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
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7439-96-5	MANGANESE	10	0.3	5	0.3	U	

Data Package ID: *im1604026-1*

Date Printed: Wednesday, April 06, 2016

ALS Environmental -- FC

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ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1604026

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IM160405-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 04/05/2016

Date Analyzed: 04/05/2016

Prep Method: SW3005A

Prep Batch: IP160405-1

QCBatchID: IP160405-1-6

Run ID: IM160405-10A11

Cleanup: NONE

Basis: N/A

File Name: 011SMPL_

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	527	10		105	80 - 120%
7439-96-5	MANGANESE	100	104	5		104	80 - 120%

Data Package ID: *im1604026-1*

April 6, 2016
ALS1604026

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1604026

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Anal

Field ID: SHARED QC
LabID: 1604027-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 31-Mar-16
Date Extracted: 05-Apr-16
Date Analyzed: 05-Apr-16
Prep Method: SW3005 Rev A

Prep Batch: IP160405-1
QCBatchID: IP160405-1-6
Run ID: IM160405-10A11
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 038SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	3.2	B	514		10	500	102	75 - 125%
7439-96-5	MANGANESE	49		149		5	100	100	75 - 125%

Field ID: SHARED QC
LabID: 1604027-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 31-Mar-16
Date Extracted: 05-Apr-16
Date Analyzed: 05-Apr-16
Prep Method: SW3005 Rev A

Prep Batch: IP160405-1
QCBatchID: IP160405-1-6
Run ID: IM160405-10A11
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 039SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	526		500	104	10	20	2
7439-96-5	MANGANESE	153		100	104	5	20	3

Data Package ID: im1604026-1