



Tuesday, July 18, 2017

Dave Todak
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1706258
Project Name: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Wa
Project Number: F16-007

Dear Mr. Todak:

One water sample was received from CH2M HILL Plateau Remediation Company, on 6/8/2017. 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

OrderNum: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Client Project Number: F16-007

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B36LK2	1706258-1		WATER	08-Jun-17	13:40

1706258

JAG12
46-007-409

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

PROJECT COORDINATOR
TODAK, D

COMPANY CONTACT
TODAK, D

CH2M Hill Plateau Remediation Company
Deniel Klug
CHPRC

COLLECTOR
Deniel Klug
CHPRC

PAGE 1 OF 1
PRICE CODE C05
AIR QUALITY
METHOD OF SHIPMENT
FEDERAL EXPRESS
DATA
TURNAROUND
7 Days / 7
Days
ORIGINAL

TELEPHONE NO.
376-6427
SAF NO.
F16-007
COA
300192
BILL OF LADING/AIR BILL NO.
7793 4859 06 45

PROJECT DESIGNATION
FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water
FIELD LOGBOOK NO.
437.25
ACTUAL SAMPLE DEPTH
437.25

SAMPLING LOCATION
C9567, I-016
ICE CHEST NO.
6 WS-400-409
OFFSITE PROPERTY NO.
8022

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HNO3 to pH
A=Air DL=Drum Liquids DS=Drum Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.	HOLDING TIME 6 Months	<2
	TYPE OF CONTAINER	G/P	
	NO. OF CONTAINER(S)	1	
	VOLUME	500ml	
	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
	SPECIAL HANDLING AND/OR STORAGE	NA	
SAMPLE NO. B36LK2	MATRIX*	WATER	
	SAMPLE DATE	JUN 08 2017	
	SAMPLE TIME	1340	

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM Deniel Klug CHPRC	D. Klug	SSU-1	JUN 08 2017 1420
RELINQUISHED BY/REMOVED FROM SSU-1 Janelle Zunker CHPRC	Janelle Zunker	Janelle Zunker CHPRC	JUN 09 2017 0720
RELINQUISHED BY/REMOVED FROM FED EX	FED EX	FED EX	JUN 09 2017 0720
RELINQUISHED BY/REMOVED FROM		ESTIMSK E Dumbel	6-10-17 1100
RELINQUISHED BY/REMOVED FROM			

SPECIAL INSTRUCTIONS
TRVL-16-060
(1) 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Uranium};
FILTER



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC

Workorder No: 1706258

Project Manager: SJS

Initials: JA Date: 6/10/17

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	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*: #2 #4		<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.0</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>13</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 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: Philah Dennis 6/12/17

~~1706246~~ JAG112
1706258

ORIGIN ID: PSCA (509) 373-3580
JANELLE ZUNKER
CH2M
6269 LATAH ST.

SHIP DATE: 09JUN17
ACTWGT: 67.00 LB
CAD: 107066051/NET3850

RICHLAND, WA 99354
UNITED STATES US

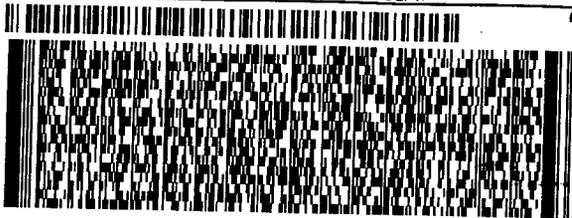
BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524

(970) 490-1511 REF: 8022
INV. PO: DEPT:

546.J1/A502/63C1



FedEx
Express



J1111762141111

2.0

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 7793 4859 0545
0201

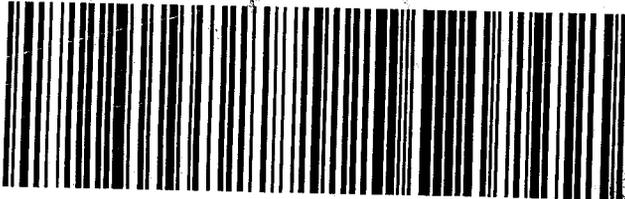
DSR

80524

CO-US

DEN

X0 FTCA





Metals

Case Narrative

CH2M HILL Plateau Remediation Company

FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis – Water -- F16-007

Work Order Number: 1706258

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 06/10/17.
3. The sample was to be analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.
4. The sample was prepared and analyzed based on SW-846, 3rd 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 analytes. Manganese was detected above the MDL. 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 1706258-1 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. All acceptance criteria for accuracy were met.
- A serial dilution was analyzed with this ICP batch. All acceptance criteria were met.

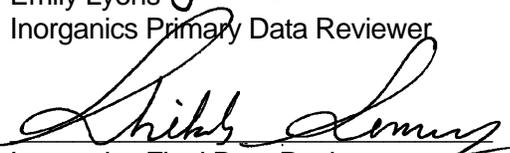
10. It is a standard practice that samples for ICP-MS are analyzed at a dilution. Sample -3 required a further dilution to bring chromium into the analytical range of the ICP-MS. The 10X factor can be considered an artifact of the prep and does not indicate a secondary dilution and is therefore not flagged 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.

Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID:	B36LK2
Lab ID:	1706258-1

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: 08-Jun-17
 Date Extracted: 20-Jun-17
 Date Analyzed: 12-Jul-17
 Prep Method: SW3005 Rev A

Prep Batch: IP170620-10
 QCBatchID: IP170620-10-7
 Run ID: IM170712-10A2
 Cleanup: NONE
 Basis: As Received
 File Name: 074SMPL_

Analyst: Brent A. Stanfield
 Sample Aliquot: 50 ml
 Final Volume: 50 ml
 Result Units: UG/L
 Clean DF: 1

Analysis ReqCode: 6020_METALS_I

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
7439-96-5	MANGANESE	10	43	C	5	1.5
7440-61-1	URANIUM	10	0.77		0.1	0.03

Data Package ID: IM1706258-1

ALS1706258

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: IP170620-10MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 20-Jun-17

Date Analyzed: 11-Jul-17

Prep Batch: IP170620-10

QCBatchID: IP170620-10-7

Run ID: IM170711-10A9

Cleanup: NONE

Basis: N/A

File Name: 077SMPL_

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: IM1706258-1

ALS1706258

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: IP170620-10MB

Sample Matrix: WATER

Prep Batch: IP170620-10

Sample Aliquot: 50 ml

% Moisture: N/A

QCBatchID: IP170620-10-7

Final Volume: 50 ml

Date Collected: N/A

Run ID: IM170712-10A2

Result Units: UG/L

Date Extracted: 20-Jun-17

Cleanup: NONE

Clean DF: 1

Date Analyzed: 12-Jul-17

Basis: N/A

File Name: 057SMPL_

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
7439-96-5	MANGANESE	10	3.2	B	5	1.5

Data Package ID: IM1706258-1

ALS1706258

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins

Work Order Number: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Lab ID: IM170620-10LCS

Sample Matrix: WATER

Prep Batch: IP170620-10

Sample Aliquot: 50 ml

% Moisture: N/A

QCBatchID: IP170620-10-7

Final Volume: 50 ml

Date Collected: N/A

Run ID: IM170712-10A2

Result Units: UG/L

Date Extracted: 06/20/2017

Cleanup: NONE

Clean DF: 1

Date Analyzed: 07/12/2017

Basis: N/A

Prep Method: SW3005A

File Name: 058SMPL_

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7439-96-5	MANGANESE	100	96.2	5		96	80 - 120%
7440-61-1	URANIUM	10	9.85	0.1		99	80 - 120%

Data Package ID: IM1706258-1

ALS1706258

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1706258

Client Name: CH2M HILL Plateau Remediation Company

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

Field ID: B36LK2

LabID: 1706258-1MS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 08-Jun-17

Date Extracted: 20-Jun-17

Date Analyzed: 12-Jul-17

Prep Method: SW3005 Rev A

Prep Batch: IP170620-10

QCBatchID: IP170620-10-7

Run ID: IM170712-10A2

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

File Name: 077SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7439-96-5	MANGANESE	43	C	158		5	100	115	75 - 125%
7440-61-1	URANIUM	0.77		11.5		0.1	10	107	75 - 125%

Field ID: B36LK2

LabID: 1706258-1MSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 08-Jun-17

Date Extracted: 20-Jun-17

Date Analyzed: 12-Jul-17

Prep Method: SW3005 Rev A

Prep Batch: IP170620-10

QCBatchID: IP170620-10-7

Run ID: IM170712-10A2

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

File Name: 078SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7439-96-5	MANGANESE	144		100	101	5	20	10
7440-61-1	URANIUM	11		10	103	0.1	20	4

Data Package ID: IM1706258-1

Prep Batch ID: IP170620-10

Start Date: 06/20/17	End Date: 06/20/17	Concentration Method: NONE	Batch Created By: ajl2
Start Time: 14:24	End Time: 18:00	Extract Method: SW3005A	Date Created: 06/20/17
Prep Analyst: Amanda J. Lynn		Initial Volume Units: ml	Time Created: 14:25
Comments:		Final Volume Units: ml	Validated By: ajl2
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 06/20/17
			Time Validated: 15:39

QC Batch ID: IP170620-10-7

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IP170620-10	MB	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1706258
IM170620-10	LCS	XXXXXX	WATER	XXXXXX	50	50	NONE	1	1706258
1706258-1	MS	B36LK2	WATER	6/8/2017	50	50	NONE	1	1706258
1706258-1	MSD	B36LK2	WATER	6/8/2017	50	50	NONE	1	1706258
1706258-1	DUP	B36LK2	WATER	6/8/2017	50	50	NONE	1	1706258
1706258-1	SMP	B36LK2	WATER	6/8/2017	50	50	NONE	1	1706258

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		