

Tuesday, March 31, 2015

Laine Sumner  
CH2M HILL Plateau Remediation Company  
2420 Stevens Center  
Richland, WA 99352

Re: ALS Workorder: 1503380  
Project Name: 100-KX Pump and Treat Influent & Effluent Tanks - Water  
Project Number: F11-003

Dear Ms. Sumner:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 3/19/2015. 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

JME/jme  
Enclosure(s):

ALS 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 Laboratory Certifications	
Accreditation Body	License or Certification Number
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
Maryland (MD)	285
Missouri	175
Nebraska	NE-OS-24-13
Nevada (NV)	CO000782008A
New Jersey (NJ)	CO003
North Dakota (ND)	R-057
Oklahoma	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington	C1280

**ALS Environmental -- FC****Sample Number(s) Cross-Reference Table**

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**OrderNum:** 1503380**Client Name:** CH2M HILL Plateau Remediation Company**Client Project Name:** 100-KX Pump and Treat Influent & Effluent Tanks - Water**Client Project Number:** F11-003**Client PO Number:** BOA 54854

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B30C81	1503380-1		WATER	17-Mar-15	8:26
B30C79	1503380-2		WATER	17-Mar-15	8:26

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-003-087	PAGE 1 OF 1
COLLECTOR	S.W. King CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	Effluent Valve, V-X030A DUP	PROJECT DESIGNATION	100-KX Pump and Treat Influent & Effluent Tanks - Water	PRICE CODE	7H
ICE CHEST NO.	GWS-420	FIELD LOGBOOK NO.	HAF-N 506 69	AIR QUALITY	<input type="checkbox"/>
SHIPPED TO	ALS Environmental	OFFSITE PROPERTY NO.	5490	METHOD OF SHIPMENT	FEDERAL EXPRESS
MATRIX*	A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	ACTUAL SAMPLE DEPTH	N/A	COA	302879
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.	BILL OF LADING/AIR BILL NO.	733/54699514		
SPECIAL HANDLING AND/OR STORAGE	TRVL-15-019 ** The 200 Area 5&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.		1503380		ORIGINAL

PRESCRIPTION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME
HNO3 to pH <2	6 Months	G/P	1	500mL	6020 METALS - ICPMS - COMMON (Chromium);	MAR 17 2015	0826
							✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM S.W. King CHPRC	RECEIVED BY/STORED IN SSU-1 CHRIS FULTON CHPRC	DATE/TIME 1/20 MAR 17 2015
RELINQUISHED BY/REMOVED FROM SSU-1 CHRIS FULTON CHPRC	RECEIVED BY/STORED IN FED SA C. Jumblich C Trimbic	DATE/TIME 0815 MAR 18 2015
RELINQUISHED BY/REMOVED FROM FED SA	RECEIVED BY/STORED IN C. Jumblich C Trimbic	DATE/TIME 1400 MAR 18 2015
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 SECTION	RECEIVED BY	TITLE
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME
	C. Jumblich C Trimbic	SCGL
		3-19-15 0950

TRVL-15-019

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST		F11-003-085	PAGE 1 OF 1
COLLECTOR	S.W. King CHPRC	COMPANY CONTACT	SUMNER, LC	PROJECT COORDINATOR	SUMNER, LC
SAMPLING LOCATION	Effluent Valve, V-X3030A	PROJECT DESIGNATION	100-KX Pump and Treat Influent & Effluent Tanks - Water	SAF NO.	F11-003
ICE CHEST NO.	GWS-446	FIELD LOGBOOK NO.	HWF-N-826-69	COA	302879
SHIPPED TO	ALS Environmental	OFFSITE PROPERTY NO.	5490	BILL OF LADING/AIR BILL NO.	773154699514
MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	PRESERVATION	HNO3 to pH <2	METHOD OF SHIPMENT	FEDERAL EXPRESS
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.	HOLDING TIME	6 Months		
SPECIAL HANDLING AND/OR STORAGE	TRVL-15-019 ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.	TYPE OF CONTAINER	G/P		
		NO. OF CONTAINER(S)	1		
		VOLUME	500mL		
		SAMPLE ANALYSIS	6020. METALS. ICPKS. COMMON (Chromium);		
SAMPLE NO.	B30C79	MATRIX*	WATER		
		SAMPLE DATE	MAR 17 2015		
		SAMPLE TIME	0826		

1503380

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM S.W. King	RECEIVED BY/STORED IN SSU-1 CHRIS FULTON	DATE/TIME MAR 17 2015
RELINQUISHED BY/REMOVED FROM CHRIS FULTON	RECEIVED BY/STORED IN CHRIS FULTON	DATE/TIME MAR 18 2015
RELINQUISHED BY/REMOVED FROM FED EX	RECEIVED BY/STORED IN C Trimble	DATE/TIME 3-15-15
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 SECTION	RECEIVED BY	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME

TRVL 15- 110

3-19-15 0950

SCAL



ALS Environmental - Fort Collins  
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC  
Project Manager: JE

Workorder No: 1503380  
Initials: CDT Date: 3-19-15

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?		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>Amb</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>11</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 / 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: JE 3/23/15

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ALS1503380

April 1, 2015 Page 2 of 2

Amb

1503380

From: (509) 373-3547  
chris fulton  
CH2M  
6287 latak st  
richland, WA 99354

Origin ID: PSCA



Ship Date: 18MAR  
ActWgt: 21.0 LB  
CAD: 107088051/NET3810

Delivery Address Bar Code



SHIP TO: (970) 490-1511  
Julie Ellingson

BILL THIRD PARTY

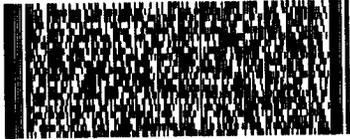
Ref # ptr#5490  
Invoice #  
PO #  
Dept #

225 Commerce Drive  
FORT COLLINS, CO 80524

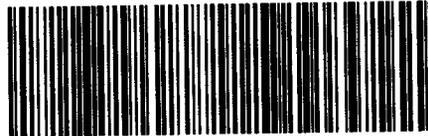
THU - 19 MAR 10:30A  
PRIORITY OVERNIGHT

TRK# 7731 5489 9514  
6291

DSR  
80524  
CO-US  
DEN



XH FTCA



53711879MEE48

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# Metals

## Case Narrative

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

100-KX Pump and Treat Influent & Effluent Tanks – Water -- F11-003

Work Order Number: 1503380

1. This report consists of 2 water samples.
2. The samples were received intact at ambient temperature by ALS on 03/19/15.
3. The samples had a pH less than 2 upon receipt.
4. 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 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 1503380-1 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 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

3/30/15  
Date

  
\_\_\_\_\_  
Julie Ellinger  
Inorganics Final Data Reviewer

3/30/15  
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.

**Total Recoverable CHROMIUM****Method SW6020A****Sample Results****Lab Name:** ALS Environmental -- FC**Client Name:** CH2M HILL Plateau Remediation Company**Client Project ID:** 100-KX Pump and Treat Influent & Effluent Tanks - Water F11-003**Work Order Number:** 1503380**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
B30C81	1503380-1	3/17/2015	3/25/2015	03/27/2015	N/A	10	2.2	10	0.74	B	50 ml
B30C79	1503380-2	3/17/2015	3/25/2015	03/27/2015	N/A	10	2.3	10	0.74	B	50 ml

**Comments:**

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

**Data Package ID:** *IM1503380-1*

ALS1503380  
**ICPMS Metals**

April 1, 2015

**Method SW6020A**  
**Method Blank**

Lab Name: ALS Environmental -- FC

Work Order Number: 1503380

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-KX Pump and Treat Influent & Effluent Tanks - Water F11-0

Lab ID: IP150325-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 25-Mar-15

Date Analyzed: 26-Mar-15

Prep Batch: IP150325-3

QCBatchID: IP150325-3-3

Run ID: im150326-10a2

Cleanup: NONE

Basis: N/A

File Name: 100SMPL\_

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	0.74	10	0.74	U	

Data Package ID: IM1503380-1

Date Printed: Tuesday, March 31, 2015

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.754

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ALS1503380  
**ICPMS Metals**

April 1, 2015

**Method SW6020A**  
**Laboratory Control Sample**

Lab Name: ALS Environmental -- FC

Work Order Number: 1503380

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-KX Pump and Treat Influent & Effluent Tanks - Water F11-0

Lab ID: IM150325-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 03/25/2015

Date Analyzed: 03/26/2015

Prep Method: SW3005A

Prep Batch: IP150325-3

QCBatchID: IP150325-3-3

Run ID: im150326-10a2

Cleanup: NONE

Basis: N/A

File Name: 101SMPL\_

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	477	10		95	80 - 120%

Data Package ID: IM1503380-1

**ICPMS Metals**

Method SW6020A

**Matrix Spike And Matrix Spike Duplicate**

Lab Name: ALS Environmental -- FC

Work Order Number: 1503380

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-KX Pump and Treat Influent &amp; Effluent Tanks - Water F

Field ID: B30C81	Sample Matrix: WATER	Prep Batch: IP150325-3	Sample Aliquot: 50 ml
LabID: 1503380-1MS	% Moisture: N/A	QCBatchID: IP150325-3-3	Final Volume: 50 ml
	Date Collected: 17-Mar-15	Run ID: im150326-10a2	Result Units: UG/L
	Date Extracted: 25-Mar-15	Cleanup: NONE	File Name: 115SMPL_
	Date Analyzed: 27-Mar-15	Basis: As Received	
	Prep Method: SW3005 Rev A		

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-47-3	CHROMIUM	2.2	B	492		10	500	98	75 - 125%

Field ID: B30C81	Sample Matrix: WATER	Prep Batch: IP150325-3	Sample Aliquot: 50 ml
LabID: 1503380-1MSD	% Moisture: N/A	QCBatchID: IP150325-3-3	Final Volume: 50 ml
	Date Collected: 17-Mar-15	Run ID: im150326-10a2	Result Units: UG/L
	Date Extracted: 25-Mar-15	Cleanup: NONE	File Name: 116SMPL_
	Date Analyzed: 27-Mar-15	Basis: As Received	
	Prep Method: SW3005 Rev A		

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-47-3	CHROMIUM	482		500	96	10	20	2

Data Package ID: IM1503380-1