Ft. Collins, Colorado LIMS Version: 6.824

Wednesday, August 17, 2016

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
2420 Stevens Center
Richland, WA 99352

Re: ALS Workorder: 1608020
Project Name: 100-KR-4, AUGUST 2016
Project Number: I16-027

Dear Ms. Waters-Husted:

Four water samples were received from CH2M HILL Plateau Remediation Company, on 8/2/2016. 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

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522
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ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1608020
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: 100-KR-4, AUGUST 2016
Client Project Number: I16-027
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B363Y9	1608020-1		WATER	01-Aug-16	10:24
B363Y3	1608020-2		WATER	01-Aug-16	10:24
B36416	1608020-3		WATER	01-Aug-16	10:04
B36407	1608020-4		WATER	01-Aug-16	10:04

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

1608020 / 1 1 1 65

C.O.C. # I16-027-011

Collector	Scott King /CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	I16-027	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	100KR4, AUGUST 2016	Logbook No.	HNF-N-506 87113	Ice Chest No.	GWS-437
Shipped To (Lab)	ALS Environmental Ft. Collins	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	7768 9024 3609
Protocol	CERCLA	Priority:	30 Days **PRIORITY**	Offsite Property No.	6887

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time**

N/A

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B363Y9 (1)	Y	W	8-1-16	1024	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B363Y3 (2)	N	W	8-1-16	1024	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

8/17/2016
ALS1608020

Relinquished By	Date/Time	Received By	Date/Time
Print: Scott King /CHPRC Sign: Scott King	1035 AUG 0 1 2016	Print: Troy Bacon CHPRC Sign: Troy L. Bacon	1035 AUG 0 1 2016
Print: Troy Bacon CHPRC Sign: Troy L. Bacon	AUG 0 1 2016 1400	FEDEX	
FED EX		CTrimble Carrie Trimble	8-2-16 1005

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

CH2MHill Plateau Remediation Company

1608020

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **I16-027-012**

Collector	Juan Aguilar /CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	I16-027	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	100KR4, AUGUST 2016	Logbook No.	HNF-N-506 86 / 169	Ice Chest No.	GWS-437
Shipped To (Lab)	ALS Environmental Ft. Collins	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	776890243609
Protocol	CERCLA	Priority:	30 Days **PRIORITY**	Offsite Property No.	68887

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time** N/A

Total Activity Exemption: Yes ☑ No ☐

Sample No	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B36416 (3)	Y	W	AUG 0 1 2016	1004	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B36407 (4)	N	W	AUG 0 1 2016	1004	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2

8/17/2016
ALS1608020

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Juan Aguilar /CHPRC			AUG 0 1 2016 1045	Troy Bacon CHPRC	Troy L. Bacon		AUG 0 1 2016 1045
Troy Bacon CHPRC	Troy L. Bacon		AUG 0 1 2016 1400	FEDEX			
FED EX				CTrimble	C Trimble		8-2-16 1005

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1608020

Project Manager: JE Initials: CDJ Date: 8-2-16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are Custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		YES	NO
5. Are the COC and bottle labels complete and legible?		YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		YES	NO
12. Are all samples within holding times for the requested analyses?		YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		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	N/A	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	NO
16. Were the samples shipped on ice?		YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	NO

Cooler #:	1							
Temperature (°C):	Amb							
No. of custody seals on cooler:	2							
DOT Survey/ Acceptance Information — External µR/hr reading:	12							
Background µR/hr reading:	11							

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: 8/3/16

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

Form 201r24.xls (06/04/2012)

ORIGIN ID:PSCA (509) 373-3580
JANELLE ZUNKER
CH2M
6269 LATAH ST.
RICHLAND, WA 99354
UNITED STATES US

SHIP DATE: 01AUG16
ACTWGT: 11.00 LB
CAD: 107066051/INET3790

BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

FORT COLLINS CO 80524
(970) 490-1511 REF: 6887
INV:
PO: DEPT:

12
2-

544J1/1370/14EB

1608020

TUE - 02 AUG 10:30A
PRIORITY OVERNIGHT
DSR
80524
CO-US DEN

TRK# 0201 7768 9024 3609

XH FTCA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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Metals

Case Narrative

CH2M HILL Plateau Remediation Company

100-KR-4, AUGUST 2016 – I16-027

Work Order Number: 1608020

1. This report consists of 4 water samples.

2. The samples were received intact at ambient temperature by ALS on 08/02/16.

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 Trace ICP and ICP-MS, the samples were digested following method 3005A and the current revision of SOP 806.

5. Analysis by Trace ICP followed method 6010B and the current revision of SOP 834.

   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 each digestion batch.
   - The preparation (method) blank associated with each digestion batch was below the reporting limit for the requested analytes. Aluminum, antimony, barium, lead, potassium, strontium, and sodium were 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 and high standard readbacks associated with Method 6010B were within acceptance criteria.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.

   Sample 1608019-1 was designated as the quality control sample for each 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 each batch. All acceptance criteria for accuracy were met.
   - Matrix spike recoveries could not be evaluated for the following analytes:

Analyte	Sample ID
Calcium	1608019-1
Sodium	1608019-1
Strontium	1608019-1

     The concentrations of these analytes in the native sample were greater than four times the concentration of matrix spike added during the digestion. When sample concentration is that much greater than the spike added, spike recoveries may not be accurate. The laboratory control samples indicate that the digestion and analysis were in control.
   - A serial dilution was analyzed with each ICP batch. All acceptance criteria were met with the following exception:

Analyte	Sample ID
Barium	1608019-1L

     The native sample result is flagged for serial dilution failure.

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 — 8/16/16
Jill Latelle — Date
Inorganics Primary Data Reviewer

8/17/16
Inorganics Final Data Reviewer — 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 <=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 ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B363Y9
Lab ID: 1608020-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received
File Name: 160808A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	7.9	30	6.4	B	
7440-70-2	CALCIUM	1	38000	1000	23		
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	10000	750	21		
7440-09-7	POTASSIUM	1	4900	1000	170		
7440-23-5	SODIUM	1	12000	500	26		
7440-62-2	VANADIUM	1	11	10	0.93		

Data Package ID: *it1608020-1*

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B363Y3
Lab ID: 1608020-2

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received
File Name: 160808A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	7.1	30	6.4	B	
7440-70-2	CALCIUM	1	37000	1000	23		
7439-89-6	IRON	1	18	50	16	B	
7439-95-4	MAGNESIUM	1	10000	750	21		
7440-09-7	POTASSIUM	1	4900	1000	170		
7440-23-5	SODIUM	1	12000	500	26		
7440-62-2	VANADIUM	1	12	10	0.93		

Data Package ID: *it1608020-1*

Dissolved ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B36416
Lab ID: 1608020-3

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received
File Name: 160808A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	8.4	30	6.4	B	
7440-70-2	CALCIUM	1	36000	1000	23		
7439-89-6	IRON	1	49	50	16	B	
7439-95-4	MAGNESIUM	1	10000	750	21		
7440-09-7	POTASSIUM	1	4600	1000	170		
7440-23-5	SODIUM	1	14000	500	26		
7440-62-2	VANADIUM	1	9.5	10	0.93	B	

Data Package ID: *it1608020-1*

Total Recoverable ICP Metals

Method SW6010B

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B36407
Lab ID: 1608020-4

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received
File Name: 160808A.

Analyst: Steve Workman
Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7440-42-8	BORON	1	6.4	30	6.4	B	
7440-70-2	CALCIUM	1	36000	1000	23		
7439-89-6	IRON	1	390	50	16		
7439-95-4	MAGNESIUM	1	10000	750	21		
7440-09-7	POTASSIUM	1	4600	1000	170		
7440-23-5	SODIUM	1	14000	500	26		
7440-62-2	VANADIUM	1	11	10	0.93		

Data Package ID: *it1608020-1*

Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B363Y9
Lab ID: 1608020-1

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received
File Name: 103SMPL_

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	47	100	14	BC	
7440-36-0	ANTIMONY	10	0.41	1	0.084	BC	
7440-38-2	ARSENIC	10	3.7	2	0.18		
7440-39-3	BARIUM	10	36	5	0.23	C	
7440-41-7	BERYLLIUM	10	0.27	0.5	0.27	U	
7440-43-9	CADMIUM	10	0.099	2	0.099	U	
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7440-48-4	COBALT	10	0.15	5	0.07	B	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-92-1	LEAD	10	0.36	2	0.16	BC	
7439-96-5	MANGANESE	10	0.48	5	0.3	B	
7439-98-7	MOLYBDENUM	10	5.6	2	0.41		
7440-02-0	NICKEL	10	4.2	20	4.2	U	
7782-49-2	SELENIUM	10	0.83	10	0.66	B	
7440-22-4	SILVER	10	0.039	0.5	0.039	U	
7440-24-6	STRONTIUM	10	210	5	0.31		
7440-28-0	THALLIUM	10	0.014	0.1	0.014	U	
7440-29-1	THORIUM	10	0.032	0.2	0.032	U	
7440-31-5	TIN	10	2.8	10	1.3	B	
7440-61-1	URANIUM	10	2	0.1	0.027		
7440-66-6	ZINC	10	9.1	100	9.1	U	

Data Package ID: *im1608020-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B363Y3
Lab ID: 1608020-2

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received
File Name: 104SMPL_

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	45	100	14	BC	
7440-36-0	ANTIMONY	10	0.34	1	0.084	BC	
7440-38-2	ARSENIC	10	3.8	2	0.18		
7440-39-3	BARIUM	10	34	5	0.23	C	
7440-41-7	BERYLLIUM	10	0.27	0.5	0.27	U	
7440-43-9	CADMIUM	10	0.099	2	0.099	U	
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7440-48-4	COBALT	10	0.07	5	0.07	U	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-92-1	LEAD	10	0.24	2	0.16	BC	
7439-96-5	MANGANESE	10	0.54	5	0.3	B	
7439-98-7	MOLYBDENUM	10	5.9	2	0.41		
7440-02-0	NICKEL	10	4.2	20	4.2	U	
7782-49-2	SELENIUM	10	0.72	10	0.66	B	
7440-22-4	SILVER	10	0.039	0.5	0.039	U	
7440-24-6	STRONTIUM	10	220	5	0.31		
7440-28-0	THALLIUM	10	0.02	0.1	0.014	B	
7440-29-1	THORIUM	10	0.032	0.2	0.032	U	
7440-31-5	TIN	10	1.3	10	1.3	U	
7440-61-1	URANIUM	10	2	0.1	0.027		
7440-66-6	ZINC	10	9.1	100	9.1	U	

Data Package ID: *im1608020-1*

Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B36416
Lab ID: 1608020-3

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received
File Name: 107SMPL_

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	52	100	14	BC	
7440-36-0	ANTIMONY	10	0.25	1	0.084	BC	
7440-38-2	ARSENIC	10	2.8	2	0.18		
7440-39-3	BARIUM	10	24	5	0.23	C	
7440-41-7	BERYLLIUM	10	0.27	0.5	0.27	U	
7440-43-9	CADMIUM	10	0.099	2	0.099	U	
7440-47-3	CHROMIUM	10	25	10	1.1		
7440-48-4	COBALT	10	0.12	5	0.07	B	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-92-1	LEAD	10	0.44	2	0.16	BC	
7439-96-5	MANGANESE	10	4.5	5	0.3	B	
7439-98-7	MOLYBDENUM	10	10	2	0.41		
7440-02-0	NICKEL	10	4.9	20	4.2	B	
7782-49-2	SELENIUM	10	1.2	10	0.66	B	
7440-22-4	SILVER	10	0.039	0.5	0.039	U	
7440-24-6	STRONTIUM	10	240	5	0.31		
7440-28-0	THALLIUM	10	0.014	0.1	0.014	U	
7440-29-1	THORIUM	10	0.032	0.2	0.032	U	
7440-31-5	TIN	10	1.3	10	1.3	U	
7440-61-1	URANIUM	10	3.1	0.1	0.027		
7440-66-6	ZINC	10	22	100	9.1	B	

Data Package ID: *im1608020-1*

Total Recoverable ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: B36407
Lab ID: 1608020-4

Analysis ReqCode: 6020_METALS_I

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 01-Aug-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received
File Name: 108SMPL_

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

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7429-90-5	ALUMINUM	10	54	100	14	BC	
7440-36-0	ANTIMONY	10	0.16	1	0.084	BC	
7440-38-2	ARSENIC	10	3.5	2	0.18		
7440-39-3	BARIUM	10	25	5	0.23	C	
7440-41-7	BERYLLIUM	10	0.27	0.5	0.27	U	
7440-43-9	CADMIUM	10	0.099	2	0.099	U	
7440-47-3	CHROMIUM	10	53	10	1.1		
7440-48-4	COBALT	10	0.21	5	0.07	B	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-92-1	LEAD	10	0.23	2	0.16	BC	
7439-96-5	MANGANESE	10	7.1	5	0.3		
7439-98-7	MOLYBDENUM	10	10	2	0.41		
7440-02-0	NICKEL	10	7.2	20	4.2	B	
7782-49-2	SELENIUM	10	0.85	10	0.66	B	
7440-22-4	SILVER	10	0.039	0.5	0.039	U	
7440-24-6	STRONTIUM	10	230	5	0.31		
7440-28-0	THALLIUM	10	0.014	0.1	0.014	U	
7440-29-1	THORIUM	10	0.032	0.2	0.032	U	
7440-31-5	TIN	10	1.3	10	1.3	U	
7440-61-1	URANIUM	10	3	0.1	0.027		
7440-66-6	ZINC	10	37	100	9.1	B	

Data Package ID: *im1608020-1*

ICP Metals

Method SW6010B

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Lab ID: IP160805-11MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: N/A
File Name: 160808A.

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
7440-42-8	BORON	1	6.4	30	6.4	U	
7440-70-2	CALCIUM	1	23	1000	23	U	
7439-89-6	IRON	1	16	50	16	U	
7439-95-4	MAGNESIUM	1	21	750	21	U	
7440-09-7	POTASSIUM	1	220	1000	170	B	
7440-23-5	SODIUM	1	76	500	26	B	
7440-62-2	VANADIUM	1	0.93	10	0.93	U	

Data Package ID: *it1608020-1*

ICP Metals

Method SW6010B

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Lab ID: IP160805-11LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/05/2016
Date Analyzed: 08/08/2016
Prep Method: SW3005A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: N/A
File Name: 160808A.

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
7440-42-8	BORON	1000	1000	30		100	80 - 120%
7440-70-2	CALCIUM	40000	39200	1000		98	80 - 120%
7439-89-6	IRON	1000	920	50		92	80 - 120%
7439-95-4	MAGNESIUM	40000	37900	750		95	80 - 120%
7440-09-7	POTASSIUM	40000	39700	1000		99	80 - 120%
7440-23-5	SODIUM	40000	39600	500		99	80 - 120%
7440-62-2	VANADIUM	500	488	10		98	80 - 120%

Data Package ID: *it1608020-1*

ICP Metals

Method SW6010B

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: SHARED QC
LabID: 1608019-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 160808A.

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-42-8	BORON	21	B	1030		30	1000	101	80 - 120%
7440-70-2	CALCIUM	190000		226000		1000	40000	97	80 - 120%
7439-89-6	IRON	530		1400		50	1000	87	80 - 120%
7439-95-4	MAGNESIUM	50000		87700		750	40000	94	80 - 120%
7440-09-7	POTASSIUM	25000		66700		1000	40000	103	80 - 120%
7440-23-5	SODIUM	290000	D	332000		5000	40000	111	80 - 120%
7440-62-2	VANADIUM	11		484		10	500	95	80 - 120%

Field ID: SHARED QC
LabID: 1608019-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-7
Run ID: IT160808-1A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 160808A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-42-8	BORON	1030		1000	101	30	20	0
7440-70-2	CALCIUM	225000		40000	93	1000	20	1
7439-89-6	IRON	1400		1000	86	50	20	1
7439-95-4	MAGNESIUM	87300		40000	93	750	20	0
7440-09-7	POTASSIUM	66400		40000	102	1000	20	0
7440-23-5	SODIUM	324000		40000	93	5000	20	2
7440-62-2	VANADIUM	484		500	95	10	20	0

Data Package ID: *it1608020-1*

ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Lab ID: IP160805-11MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: N/A
File Name: 095SMPL_

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
7429-90-5	ALUMINUM	10	38	100	14	B	
7440-36-0	ANTIMONY	10	0.18	1	0.084	B	
7440-38-2	ARSENIC	10	0.18	2	0.18	U	
7440-39-3	BARIUM	10	4.5	5	0.23	B	
7440-41-7	BERYLLIUM	10	0.27	0.5	0.27	U	
7440-43-9	CADMIUM	10	0.099	2	0.099	U	
7440-47-3	CHROMIUM	10	1.1	10	1.1	U	
7440-48-4	COBALT	10	0.07	5	0.07	U	
7440-50-8	COPPER	10	1.1	8	1.1	U	
7439-92-1	LEAD	10	0.24	2	0.16	B	
7439-96-5	MANGANESE	10	0.3	5	0.3	U	
7439-98-7	MOLYBDENUM	10	0.41	2	0.41	U	
7440-02-0	NICKEL	10	4.2	20	4.2	U	
7782-49-2	SELENIUM	10	0.66	10	0.66	U	
7440-22-4	SILVER	10	0.039	0.5	0.039	U	
7440-24-6	STRONTIUM	10	2	5	0.31	B	
7440-28-0	THALLIUM	10	0.014	0.1	0.014	U	
7440-29-1	THORIUM	10	0.032	0.2	0.032	U	
7440-31-5	TIN	10	1.3	10	1.3	U	
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	
7440-66-6	ZINC	10	9.1	100	9.1	U	

Data Package ID: *im1608020-1*

ICPMS Metals

Method SW6020A

Laboratory Control Sample

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Lab ID: IM160805-11LCS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/05/2016
Date Analyzed: 08/08/2016
Prep Method: SW3005A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: N/A
File Name: 096SMPL_

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
7429-90-5	ALUMINUM	5000	4770	100		95	80 - 120%
7440-36-0	ANTIMONY	30	29.6	1		99	80 - 120%
7440-38-2	ARSENIC	100	97.4	2		97	80 - 120%
7440-39-3	BARIUM	100	102	5		102	80 - 120%
7440-41-7	BERYLLIUM	50	51	0.5		102	80 - 120%
7440-43-9	CADMIUM	30	30.4	2		101	80 - 120%
7440-47-3	CHROMIUM	500	480	10		96	80 - 120%
7440-48-4	COBALT	100	99.2	5		99	80 - 120%
7440-50-8	COPPER	1000	1030	8		103	80 - 120%
7439-92-1	LEAD	50	52.5	2		105	80 - 120%
7439-96-5	MANGANESE	100	98.3	5		98	80 - 120%
7439-98-7	MOLYBDENUM	100	96.3	2		96	80 - 120%
7440-02-0	NICKEL	500	486	20		97	80 - 120%
7782-49-2	SELENIUM	100	94.7	10		95	80 - 120%
7440-22-4	SILVER	10	10.2	0.5		102	80 - 120%
7440-24-6	STRONTIUM	100	98.3	5		98	80 - 120%
7440-28-0	THALLIUM	2	1.96	0.1		98	80 - 120%
7440-29-1	THORIUM	10	10.2	0.2		101	80 - 120%
7440-31-5	TIN	500	504	10		101	80 - 120%
7440-61-1	URANIUM	10	10.2	0.1		102	80 - 120%
7440-66-6	ZINC	2000	1930	100		97	80 - 120%

Data Package ID: *im1608020-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: SHARED QC
LabID: 1608019-1MS

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 101SMPL_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7429-90-5	ALUMINUM	38	BC	4750		100	5000	94	75 - 125%
7440-36-0	ANTIMONY	0.27	BC	29.2		1	30	97	75 - 125%
7440-38-2	ARSENIC	4.8		103		2	100	98	75 - 125%
7440-39-3	BARIUM	120		208		5	100	86	75 - 125%
7440-41-7	BERYLLIUM	0.27	U	49.3		0.5	50	99	75 - 125%
7440-43-9	CADMIUM	0.099	U	30.1		2	30	100	75 - 125%
7440-47-3	CHROMIUM	23		507		10	500	97	75 - 125%
7440-48-4	COBALT	1.4	B	98.9		5	100	98	75 - 125%
7440-50-8	COPPER	1.1	U	1010		8	1000	101	75 - 125%
7439-92-1	LEAD	1.2	BC	50.7		2	50	99	75 - 125%
7439-96-5	MANGANESE	10		107		5	100	97	75 - 125%
7439-98-7	MOLYBDENUM	5.8		103		2	100	97	75 - 125%
7440-02-0	NICKEL	4.2	U	481		20	500	96	75 - 125%
7782-49-2	SELENIUM	17		109		10	100	92	75 - 125%
7440-22-4	SILVER	0.039	U	10.2		0.5	10	102	75 - 125%
7440-24-6	STRONTIUM	990		1070		5	100	79	75 - 125%
7440-28-0	THALLIUM	0.014	U	1.94		0.1	2	97	75 - 125%
7440-29-1	THORIUM	0.032	U	9.94		0.2	10	99	75 - 125%
7440-31-5	TIN	1.3	U	505		10	500	101	75 - 125%
7440-61-1	URANIUM	16		26.2		0.1	10	104	75 - 125%
7440-66-6	ZINC	180		2100		100	2000	96	75 - 125%

Data Package ID: *im1608020-1*

ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS -- Fort Collins
Work Order Number: 1608020
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: 100-KR-4, AUGUST 2016 I16-027

Field ID: SHARED QC
LabID: 1608019-1MSD

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 29-Jul-16
Date Extracted: 05-Aug-16
Date Analyzed: 08-Aug-16
Prep Method: SW3005 Rev A

Prep Batch: IP160805-11
QCBatchID: IP160805-11-3
Run ID: IM160808-10A4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 50 ml
Final Volume: 50 ml
Result Units: UG/L
File Name: 102SMPL_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7429-90-5	ALUMINUM	4730		5000	94	100	20	0
7440-36-0	ANTIMONY	29.6		30	98	1	20	1
7440-38-2	ARSENIC	103		100	98	2	20	0
7440-39-3	BARIUM	215		100	92	5	20	3
7440-41-7	BERYLLIUM	49.3		50	99	0.5	20	0
7440-43-9	CADMIUM	29.5		30	98	2	20	2
7440-47-3	CHROMIUM	504		500	96	10	20	1
7440-48-4	COBALT	98.7		100	97	5	20	0
7440-50-8	COPPER	1000		1000	100	8	20	1
7439-92-1	LEAD	50.5		50	99	2	20	0
7439-96-5	MANGANESE	106		100	96	5	20	1
7439-98-7	MOLYBDENUM	102		100	97	2	20	1
7440-02-0	NICKEL	474		500	95	20	20	2
7782-49-2	SELENIUM	112		100	94	10	20	2
7440-22-4	SILVER	10.1		10	101	0.5	20	1
7440-24-6	STRONTIUM	1070		100	83	5	20	0
7440-28-0	THALLIUM	1.96		2	98	0.1	20	1
7440-29-1	THORIUM	10.1		10	101	0.2	20	1
7440-31-5	TIN	512		500	102	10	20	1
7440-61-1	URANIUM	25.8		10	100	0.1	20	2
7440-66-6	ZINC	2070		2000	95	100	20	1

Data Package ID: *im1608020-1*